

Thesis submitted for the Ph.D. Degree in Geography

(Faculty of Arts) in the University of London.

"Settlements in the United Provinces of Agra and Oudh".

by

Enayat Ahmad.

London School of Economics
and Political Science.

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'Settlements in the United Provinces of Agra and Oudh'

by Enayat Ahmad.

The thesis is a geographical study of the rural and urban settlements of the United Provinces. The work falls into three sections. Part I deals with the salient geographical features of the area, and the distribution and recent changes of population in relation to the geographical setting; Parts II and III are devoted respectively to rural and urban settlements.

In Part II the distribution, siting and size of rural settlements have first been discussed in relation to physiography, soils, hydrography and arable land. The types of settlements (agglomerated, dispersed and intermediate arrangements) have next been considered and the physical and cultural factors influencing the various types and their distribution have been examined. Thereafter are described and interpreted the shape and pattern of villages (on the basis of the arrangement of their dwellings and lanes) and lastly the main house types and their regional distribution.

In Part III the origin and growth of towns has been discussed, their existing distribution examined and explanations offered for their regional concentration. The size and functions of the towns have next been considered bringing out the relation between the town and country and the relative importance of the

various functions in the cities and smaller towns. After this we study the morphology of the towns with some detailed discussion of the five biggest cities, followed by a general classification and interpretation of the town plans of the Province.

Finally the main findings have been brought together in a concluding chapter.

The new contributions consist essentially in a detailed study of the correlations of the physical and cultural features with settlements. The analysis of the relations between the number, size and spacing of villages is new as are the studies of village patterns and settlement types. Original observations have been made on the aspect and morphology of towns and attention has been drawn to their historical origins as affecting their general distributional pattern.

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(Figures 1 and 4 are based on the 'Southern Asia Series', India and Adjacent Countries' and Quarter-inch Maps; figures 10 - 14 on the 'Season and Crop Reports'; figures 20, 21, 23, 24, 59 - 61 on the Census statistics; figure 22 on the Quarter-inch and Half-inch Topographical Maps; figures 25, 26, 28 - 40, 43, 45, 46 and 74 - 80 on One-inch Topographical Maps. The sources of figures 66, 68 and 71 - 73 are mentioned in the text (p. 307) while those of the others are given on the respective maps and illustrations.)

Abbreviations and Terminology.

Abbreviations have been avoided as far as possible. 'D.G.' in the foot-notes refers to the 'District Gazetteers of the United Provinces'. When we use the expression 'Ganges Plain' or 'Ganges Valley' we mean, unless mentioned otherwise, that portion of the Valley which falls within the borders of the province. Wherever the word 'Foreland' is used it implies the 'Central Indian Foreland'. The term 'Doab' is used with its popular connotation in the area and refers to the Ganges-Jumna Interfluvium. When we mention other interfluvies we invariably prefix to the word 'Doab' the name of the bounding rivers.

The portion of the Province that falls in the Indo-Gangetic Plain comprises the lower part of the Upper and part of the Middle Ganges Valley. This division of the plain into the Upper and Middle Ganges Valley is a natural one and is well marked by a climatic belt which is also supported by our study of the local and general features of the region. The climatic belt is well marked by the annual rainfall in the western part of the plain which are substantially different from those in the more easterly portion.

Along, L. B. Shaw, 'The Natural Features of India', The Geographical Magazine, Vol. XIV (1902-03), pp. 287-294.

Introduction.

(Scope and sources of the Thesis).

This Thesis is an attempt to study the geography of the villages and towns in the United Provinces. Although it follows well-tried methods, the inquiry is new in the sense that such a detailed study of the settlements of an Indian province has probably not been so far undertaken.

While the major and most important part of the Province falls in the Ganges Valley it also includes a full cross-section of the Himalayan Wall extending from the Siwalik foothills to the Tibetan border, as well as a considerable portion of the 'Central Indian Foreland.' These physical diversities afford an opportunity for a comparative study of the environment and settlements in parts of the three major geographical units of India, the Mountain Wall, the Indo-Gangetic Plain and the Peninsular Plateau.

The portion of the Province that falls in the Indo-Gangetic Plain comprises the whole of the Upper and part of the Middle Ganges Valley. This division of the Plain into the Upper and Middle Ganges Valley (with which we are concerned) which has a climatic basis¹ is also supported by our study which shows that such facts of human geography as the distribution and types of settlements as well as the rural house in the western part of the province are materially different from those in the more humid eastern portion.

¹

Stamp, L. Dudley, 'The Natural Regions of India', The Geographical Teacher, Vol. XIV (1927-28), pp. 502-506.

In order that our discussions should have a sound geographical basis we have outlined the general geography of the area in the first chapter. Factors having a bearing on settlements i.e. physical features, rainfall, drainage, watertable and water supply, soils, vegetation cover, land and crops, communication pattern and industries have been discussed, the description being condensed by the help of a number of maps. The area is divided into physical subunits which have been constantly used in later discussions.

In the next chapter ~~are~~ considered the distribution and recent changes of population. The relation between the distributional pattern of population and the physical and cultural features described in the preceding chapter has been clearly brought out. This essay on population is an integral part of the study but its place in the first part of the thesis apart from the sections on rural and urban settlements is due to the fact that it considers both the rural and urban populations.

Part II is devoted to rural settlements. In the third chapter we examine their distribution, siting and size. Every village and hamlet in the Ganges Plain forming a distinct occupance unit in the landscape has been considered as a separate settlement for the purposes of this chapter. In the hilly Himalayan region and the area south of the Son River, however, it is not always easy to distinguish a settlement from its neighbours owing to the general absence of compact villages or hamlets. But although the dwellings are relatively dispersed an inhabited site as a whole stands apart from the latter by cultivated, barren or wooded land. In parts of these tracts, however, where the dwellings are highly disseminated it has been impossible to distinguish one settlement from the other.

The size and frequency of settlements show an inverse ratio; their distribution and siting is related to relief, climate, hydrography, vegetation, soils and arable land. Not only are variations in the settlement distribution introduced by the physically distinct Himalayan and Fore-land regions, but considerable diversities are noticed in the Ganges Valley itself due to such physical features as the Bhabar, Terai, Khadar, ravine and Usar zones. The typical diagrams accompanying the chapter speak of the diversity in the regional distribution and size of settlements.

In the next chapter we examine the compactness, dispersal, and intermediate arrangement of settlements by taking into consideration the relative position of all the dwellings or their groups in the mauza, which is a compact agricultural area with defined boundaries. The factors which appear to account for the compactness, hamletting or dispersal have been examined, their influence in the various tracts brought out and the extent of the various types shown on a map.

In the fifth chapter, we consider the shape and pattern of the villages, especially the compact village, and analyse the relations between the historical factor, site, field pattern, cart tracks, rivers, canals, ponds, wells, mosques, and temples etc. on the one hand and the shape and form of the village on the other and finally indicate the regional distribution of the characteristic patterns.

In the last chapter of this part we take into consideration the smallest unit of rural settlement viz. the house, and examine the dwellings according to their building materials, size, plan and structure. It has been possible to indicate on a map the extent of the prevalent types and to illustrate the typical dwellings. The house types are related to

geology, relief, soils, vegetation, rainfall, religious and superstitious ideas and economic factors.

The seventh chapter opens the third part of the thesis which is devoted to towns, and traces their origin and evolution. The dominance of the historical factor on the growth of the towns of the area has been brought out. Particular stress has been laid on the period after 1800 A.D. when the advent of a new era of peace and order characterised by administrative organization, settlement of land, construction of metalled roads, railways and bridges and the establishment of modern industries led not only to a general revival and growth of the towns but also brought about a change in their relative importance. The causes of the decrease in population of the smaller towns have been briefly discussed. Finally the main types of origin which the towns of the province appear to have had, have been summarised.

In the next chapter we examine the distribution of the towns and try to show how the existing distribution is related to the historical antecedents of the area as well as to the physical and economic factors.

In Chapters IX and X we deal with the size and functions of the towns, the former being devoted to the cities and the latter to the smaller towns. As no statistics of occupations (which would have rendered the functional classification of towns more rational) are available, we have grouped the towns according to their size and discussed the location, functions and relative importance of the various groups.

In the eleventh chapter is discussed the morphology of the towns and their aspect and ground plans are examined. The chapter deals in some detail with the location, morphology and functional topography of the five

'master towns' of the area - Benares, Allahabad, Agra, Lucknow and Cawnpore - which apart from representing the periods of successive cultures (Benares and Allahabad representing the ancient times, Agra, the Mughal period, Lucknow the Oudh days and Cawnpore, the British regime), have undergone considerable transformation during modern times, and are important regional and even national cities.

The total picture has been summed up in the last chapter.

No attempt has been made in this study to draw a line of distinction between villages and towns for the simple reason that the statistics of occupations which alone could have made such a classification possible are (except for the cities up to 1931) non-existent. We have, of necessity, considered those settlements as towns which are so treated in the Census publications. The boundary line between the villages and towns probably lies in the group of the small towns with a population below 10,000 and it is relevant to examine their status here. "Some revenue ~~MAUZAA~~," says Turner, "are very extensive and the population necessary to their cultivation is consequently also large. In such cases, if the original site is adhered to and no hamlets spring up, the site may grow so populous that in most countries it would be considered a small town. But in such villages the inhabitants have no urban occupations themselves, though on account of their size they become convenient centres for itinerant merchants and rural artizans. Hence such a village grows and sanitary precautions become essential, it is duly placed under the provisions of the Village Sanitation Act. When this has been done the site though still in all its essentials a village, is on its way becoming a town. The chief difficulty in classification lies in determining when such villages cease to be villages

and become towns ... The next dividing line is a clear one. When the non-agricultural population grows so large that the chaukideri (village watchman) cess becomes too small to pay for sufficient watch and ward the area is put under the Town Area Act and provision for the increased essential expenditure is made by the imposition of a house-tax. As a house-tax is never levied from a purely agricultural population its existence is evidence that the place is more or less urban in character. All such places are therefore treated as census towns ... As such a town increases in its non-agricultural population it may become a 'notified area' or a 'municipality'.¹

Apart from the Town Area Act there is another, rather vague criterion by which a village is recognised as a town. It is applied to "any continuous group of houses permanently inhabited by not less than 5,000 persons which, having regard to the character of the population, the relative density of the dwellings, the importance of the place as a centre of trade and its historic associations, the Provincial Census Superintendent decided to treat as a town."²

But this criterion, applied probably to the villages which are in a stage intermediate between the Village Sanitation and Town Area Acts, has not been much used and most of our small towns are 'Town Areas,' whose "more or less urban character" in the words of Turner, has been stated above.

1

Turner, A.C., Census of India, 1931. United Provinces of Agra and Oudh, Vol. XVIII, Part I, Report (1933), pp. 123-124.

2

Ibid, p. 122.

We, however, agree with him when he remarks that "the entire rural area is indeed rural in the fullest sense of the word, but the urban character of some of the urban units is not above suspicion, as it is often hard to decide whether a particular collection of houses, even if under the Town Area Act, should more correctly be treated as a large village or small town".¹

Yet this still leaves unsettled the question of which towns are predominantly agricultural in function, and which predominantly non-agricultural. Thus although the small towns appear to form a transition group between the really urban centres and villages it is impossible to sort out, in the absence of occupation figures, the towns which are really urban and those which are, in fact, rural. In order to complete the picture we have had to consider this 'intermediate class' of settlements either with towns or villages, and we have adopted the first alternative for which we have the support of the census authorities. Only in the second chapter, when considering the changes of population, we have been obliged to amalgamate the population of the towns with less than 10,000 persons with the rural population not because we consider it entirely rural but because of convenience in cartographic representation.

In view of the fact that the truly urban character of some of the smaller towns is doubtful, our use of the term 'urban settlements' in the list of contents or elsewhere may seem objectionable when applied to all the small towns. The word 'urban', however, is only roughly used as an adjective for town, rather than as signifying settlements where non-agricultural functions predominate.

¹ Turner, A.C., (op. cit.), p. 122.

The difficulties encountered in the completion of this work have been great. There is a general lack of data on the settlements of the area. The Survey maps have been one of the main sources of this inquiry so that chapters III, IV, V and XI are largely based on a sheet-to-sheet study of the one-inch maps. Though the District Gazetteers and Settlement Reports are greatly useful in geographical studies of other kinds they are not so helpful in an inquiry like ours. Yet they form the main sources from which facts relevant to our topic can be gleaned. Information on settlements is sparsely scattered through these works, and one can sieve out the relevant facts only after a close study of the entire volumes. Another fact, but for which this study would not have been undertaken, and to which is largely due any local colour that may be noticed, is the writer's personal knowledge of the area.

All possible sources e.g. Census Reports and Tables, Agricultural statistics, the Industrial Surveys of the province, the list of large industrial establishments, Labour Bulletins, Agricultural Marketing Reports and similar sources, apart from maps on various scales, were closely studied for facts having a bearing on our subject.

The States of Tehri Garhwal, Rampur and Benares are included in this study. In the first chapter, however, wherever the description does not refer to these states (because statistics for these are not available for so recent years as for the districts), this fact has been stated. The tiny 'islands' of Central Indian States falling in the Bundelkhand portion of the province have been excluded from this study because no facts and figures are available for these. It is evident, however, that in respect

CHAPTER I.

GEOGRAPHICAL SETTING.

In order to appreciate the nature of the settlements of the United Provinces it is necessary to know the salient geographical features of the area. The object of outlining the environmental background is to see the picture of the settlements in its true areal perspective.

Position. The United Provinces of Agra and Oudh lie between¹ 23° 52' and 31° 18' N. and 77° 3' and 84° 39' E. and include with the states within their borders (Rampur, Tehri and Benares) an area of 112,523 square² miles. In respect of area U.P. stands³ second only to Madras among the provinces⁴. The maximum length of the province is about 500 miles north-south and 450 miles east-west. Excluding the Himalayan and 'Central Indian Foreland'⁵ portions, the province occupies a central position in the Indo-Gangetic Plain. The boundaries of the province run through widely different areas. (Fig. 1). In the extreme north the western part of the border marches with Simla Hill States on the snowy heights of the Great Himalayan Range and further east the undemarcated boundary between Tibet and U.P. lies on the equally high Zaskar Range. Thence the border, demarcating Nepal to the east follows the upper course of the Garda River actually making a section

¹ Imperial Gazetteer of India, Provincial Series, U.P., Vol. I, (Calcutta, 1908), p. 1.

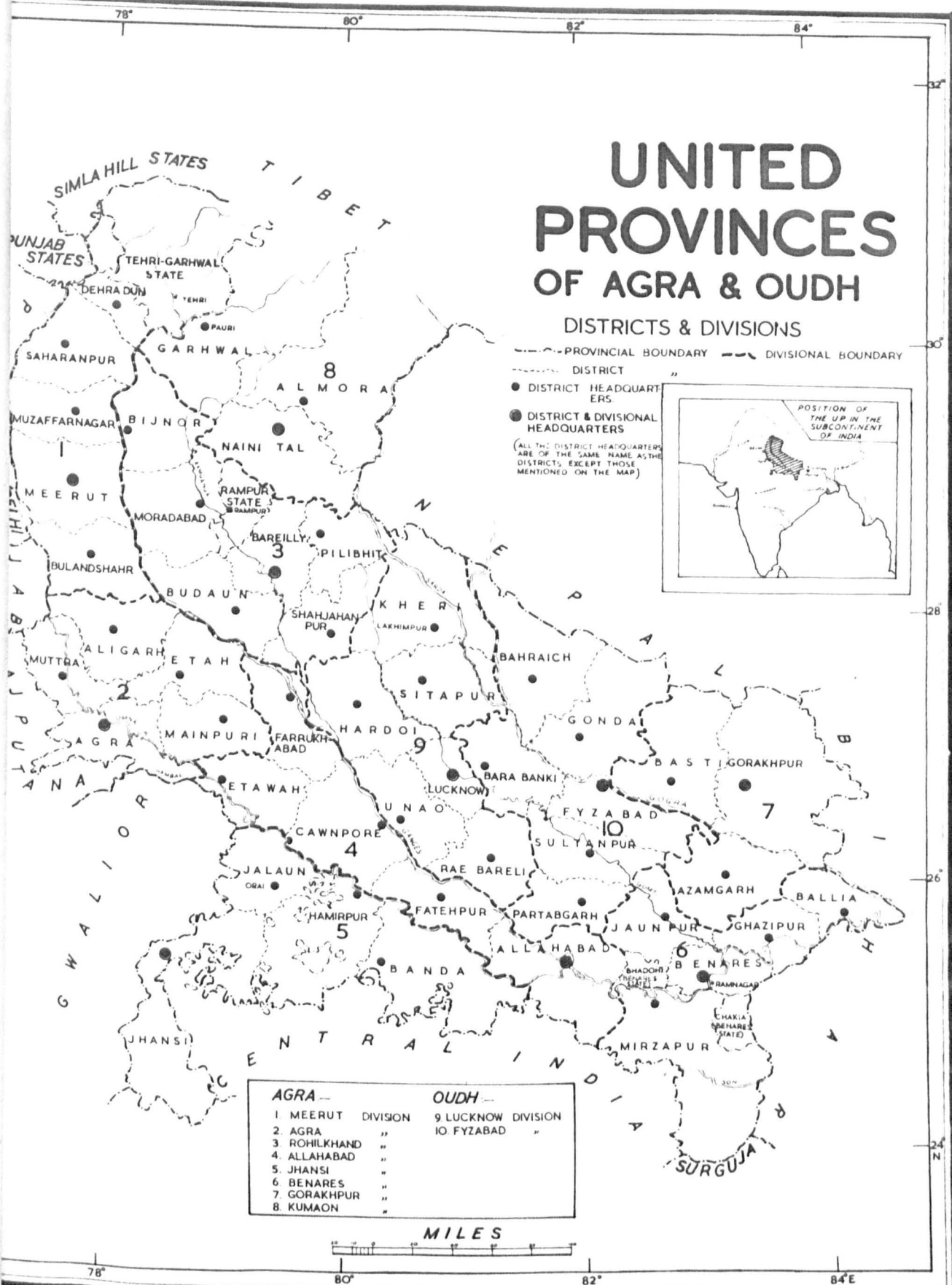
² Sahay, B. Census of India, 1941, V.U.P., (Delhi, 1942), p. 4.

³ It seems reasonable to use singular verbs for U.P. (United Provinces of Agra and Oudh) which refers to the whole territory, in analogy with a similar use of singular verbs for U.S.A.

⁴ Yeatts, M.W.M., Census of India, 1941, I, (Delhi, 1943), p. 56. Before partition U.P. was third among the provinces (including the states within their borders) in respect of area, the Punjab and Madras occupying the first and second places respectively.

⁵ Stamp, L. Dudley, 'Natural Regions of India', The Geographical Teacher.

Fig.1



across the descending ranges of the Himalayas down to the Bhabar zone, again turning east the boundary marches south of Nepal through the forested Bhabar and Tarai areas up to the Gandak whence it runs roughly south through the Ganges Plain. The easternmost limit of the border is marked by the Ganges-Gogra confluence. The southern boundary winds irregularly over the relatively precarious and wooded tracts of the Central Indian Foreland while in the south-west the province borders the relatively arid country of Gwalior, Dholpur and Bharatpur. On the west the deep-channelled Jumna forms a natural boundary between the somewhat arid Ghaggar Plain and the prosperous Doab. Further north-west in the Himalayan area the provincial border runs along the Tons, a tributary of the Jumna.

The province, consequently is not a homogeneous area. While the south-western portion partakes the characteristics of Eastern Rajputana the eastern part is a humid rice land. In the north about ¹ 15% of the provincial area falls within the Himalayan region which, from the view^{point} of settlements, is quite a distinct unit. The Foreland portion of the province is also different from the Ganges Plain in several respects. Both the central situation and the fertility of the greater part of the province lying in the Ganges Plain have worked as centripetal forces for settlers in all times. On account of its position midway across the North Indian Plain the province has been the seat of successive rulers during both Hindu and Muslim periods and even during British rule the headquarters of India returned in 1911 to Delhi, the historic capital on the border of the province. These facts have made the province the scene of fusion between various peoples and cultures and have a significant bearing on the urban geography of the area.

¹ The Himalayan region of the province consists of the districts of Dehra-Dun, Garhwal, Almora and Naini Tal (minus the Tarai and Bhabar of Naini-Tal) and Tehri State.

geography of the area.

Hammed in between the Himalayas and the Vindhyan ranges the area has lain on the chief routes of movements from north-west to east in the past times and up to the present. Some of the main gaps that have afforded communication between the Peninsular and ^{Northern} India lie between the Aravalli and Khairur Ranges and converge on the southern and southwestern borders of the province. They are the valleys of the Chambal, Betwa, Ken and Tons. The three chief rail routes from the south partly utilise the Chambal, Betwa and the Tons valleys reaching Agra, Cawnpore and Allahabad respectively.

Physical Divisions. As already remarked the province includes three distinct physical units viz. the Himalayan section of Tertiary folded mountains comprising about 15% of the area of the province, the alluvial Gangetic Plain accounting for about 77% of the U.P. and the Central Indian Foreland occupying about 8% of the provincial area. Within these broad divisions, however, there are considerable varieties and each of them can safely be subdivided into the following physiographic units (Fig.3) for a somewhat detailed study of the physical features (Fig.2) which to a great extent account for the varieties of the settlements in the area.¹

1. The Himalayan Area.

- (a) The Great Himalayas.
- (b) The Lesser Himalayas.
- (c) The 'Duns'
- (d) The Siwaliks.














1

It must be added here that by the division of the Gangetic Plain into its various sub-units based on the major rivers, we do not mean to show that the various divisions are physically quite distinct from one another. Such a subdivision, however, has greatly facilitated regional discussions.

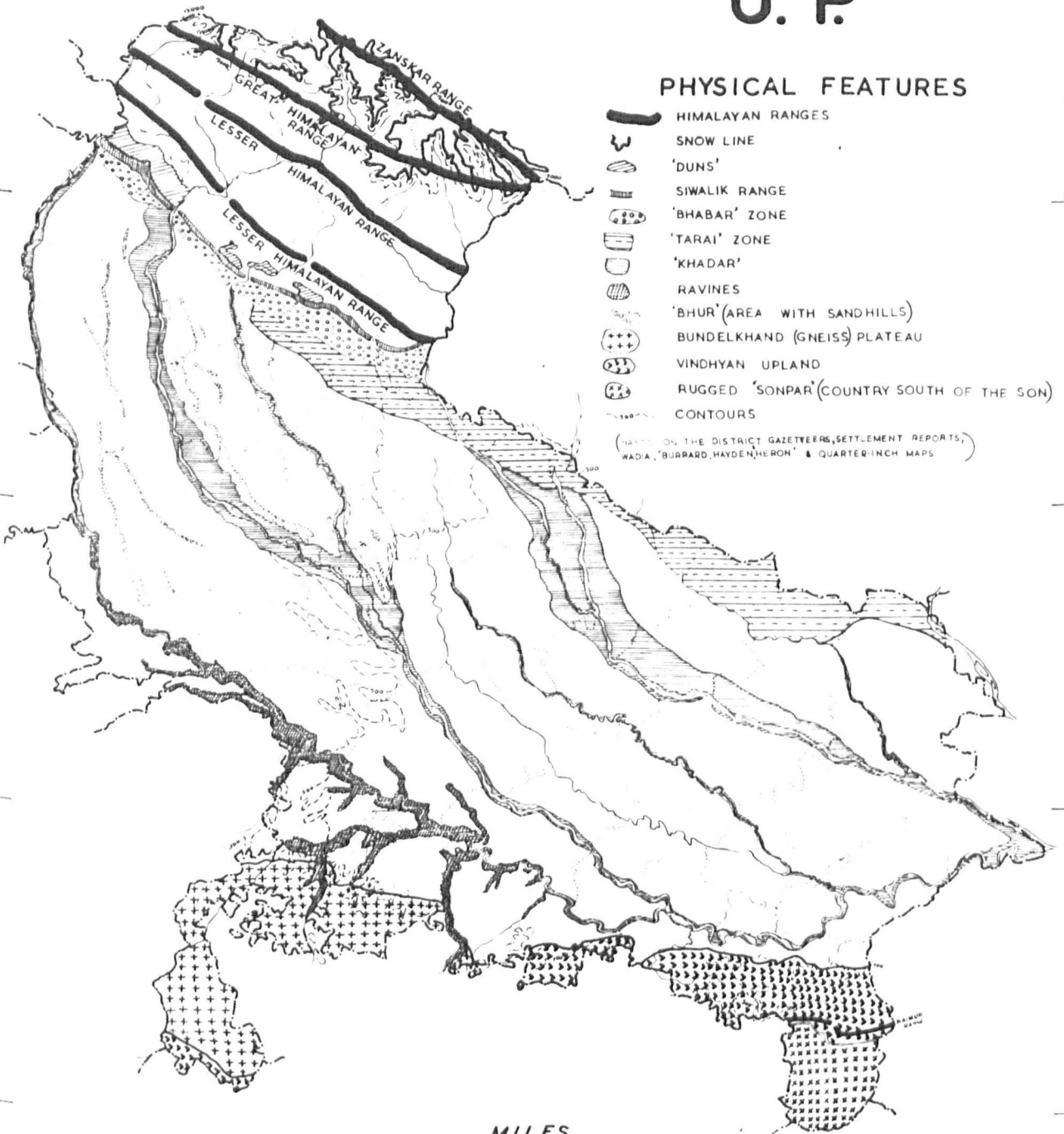
Fig. 2

U. P.

PHYSICAL FEATURES

-  HIMALAYAN RANGES
-  SNOW LINE
-  'DUNS'
-  SIWALIK RANGE
-  'BHABAR' ZONE
-  'TARAI' ZONE
-  'KHADAR'
-  RAVINES
-  'BHUR' (AREA WITH SANDHILLS)
-  BUNDELKHAND (GNEISS) PLATEAU
-  VINDHYAN UPLAND
-  RUGGED 'SONPAR' (COUNTRY SOUTH OF THE SON)
-  CONTOURS

(BASED ON THE DISTRICT GAZETTEERS, SETTLEMENT REPORTS, WADA, BURBARD, HAYDEN, HERON & QUARTER-INCH MAPS)



2. The Sub Himalayan Plain.

- (a) The 'Bhabar'.
- (b) The 'Tarai'.

U.P.

3. The Gangetic Plain.

- (a) The Doab.¹
- (b) The Ganges-Cogra Doab.
- (c) The Sarjupar² or Trans-Cogra Plain.
- (d) The Trans-Jumna Plain.
- (e) The Trans-Ganges Plain.

4. The Central Indian Foreland.

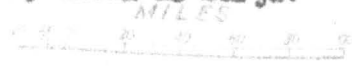
- (a) The Bundelkhand (gneiss) plateau.
- (b) The South-Eastern Uplands.

1. The Himalayan Area.

(a) The Great Himalayas. Along the extreme northern boundary of the province runs the Zaskar Range, a branch of the Great Himalayan Range bifurcating near the north-eastern corner of Almora. It is mostly above 15,000 feet while the majority of its peaks rise above 20,000, feet, the culminating point being Kamet (25,477 feet). Except in the lower valleys the Range is always covered with snow. Its crest forms the water parting between U.P. and Tibet. High transverse ridges capped with snow project from it towards south. These ridges are separated from each other by the headstreams of the Jumna, Ganges, and Sarja and it is at the extreme

¹ In popular usage the 'Doab' always means the Jumna-Ganges Interfluvium. We shall use the word in the same sense unless mentioned otherwise.

² The Cogra is popularly known as Sarju.



U. P.

PHYSICAL DIVISIONS

1. THE HIMALAYAN REGION

- a. THE GREAT HIMALAYAS
- b. THE LESSER HIMALAYAS
- c. THE 'DUNS'
- d. THE SIWALIK RANGE

2. THE SUB-HIMALAYAN PLAIN

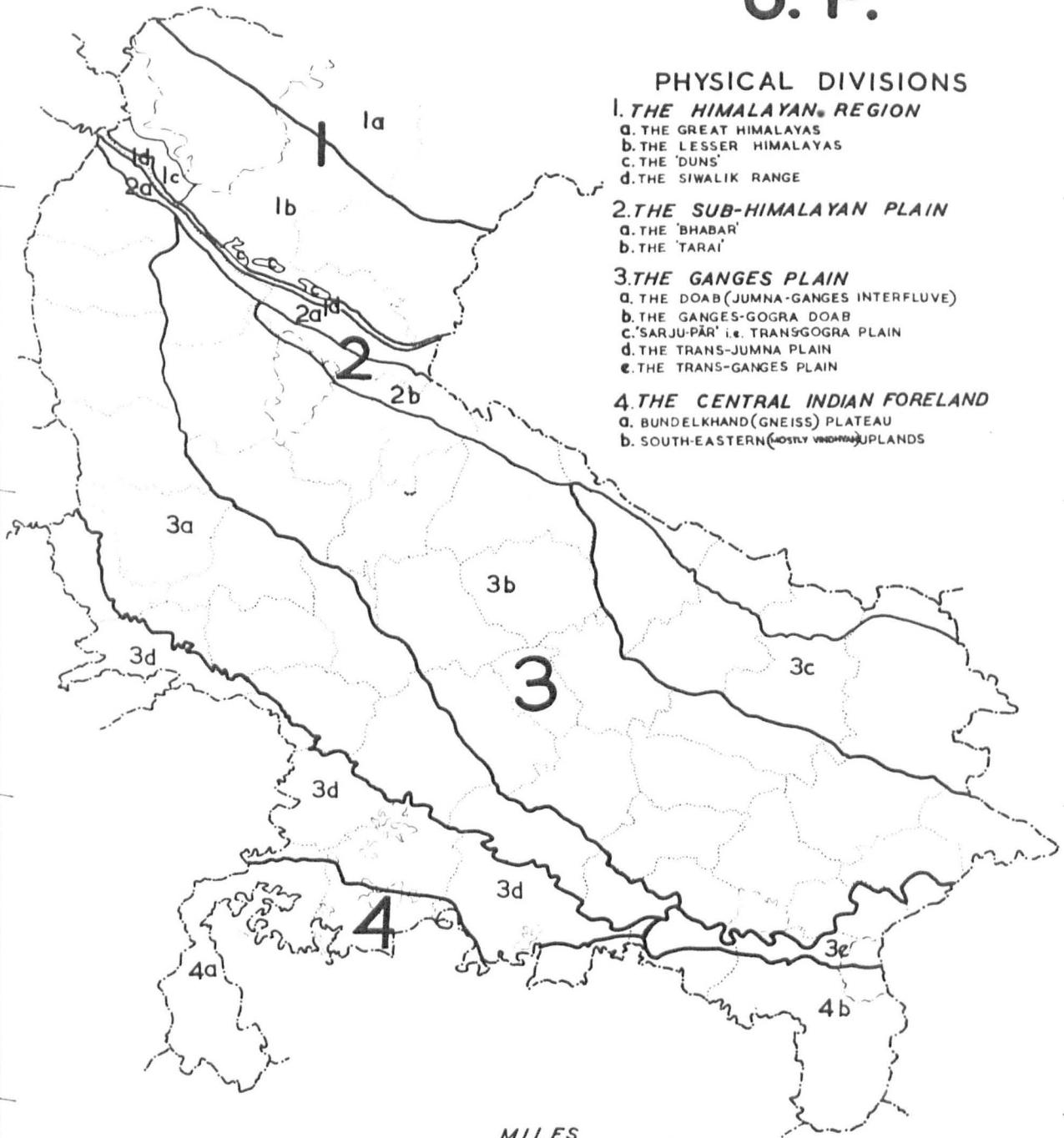
- a. THE 'BHABAR'
- b. THE 'TARAI'

3. THE GANGES PLAIN

- a. THE DOAB (JUMNA-GANGES INTERFLUVE)
- b. THE GANGES-GOGRA DOAB
- c. 'SARJU-PAR' i.e. TRANS-GOGRA PLAIN
- d. THE TRANS-JUMNA PLAIN
- e. THE TRANS-GANGES PLAIN

4. THE CENTRAL INDIAN FORELAND

- a. BUNDELKHAND (GNEISS) PLATEAU
- b. SOUTH-EASTERN (MOSTLY VINDHYAN) UPLANDS



MILES
20 10 0 20 40 60 80 100

northern end of some of these narrow valleys that the chief passes¹ into Tibet, of Mana, Niti, Kungribingri and Lipu are situated. (49-16) South of this area which is also known as the cis-Tibetan zone is the Great Himalayan Range, mostly above the line of perpetual snow except in the gorges cut across by the headwaters of the Jumna, Ganges and Serda. Its crest which is often many miles broad extends from Nampa, where it merges with the Zaskar Range through the high peaks of Nanda Devi (25,640 feet), Badri Nath (23,190 feet) and Kedar Nath (22,770 feet). Immediately to the south of this great range is a rugged² zone, about ten miles broad, consisting of spurs with peaks often above 15,000 feet, offshooting in a southerly direction from the Great Himalayan Range. As a whole the Zaskar and the Great Himalayan Zone, covering a width of about 40 miles in the north of the province, and extending for about 140 miles from north-west to south-east, is a relatively barren area and settlements are confined to the narrow valleys.

(b) The Lesser Himalayas cover a zone 50 to 60 miles wide south of the Great Himalayan tract, ranging in height roughly from 2,000 to 10,000 feet. Though there appear to be two ranges roughly parallel to each other and to the Great Himalayan Range, the relief is made intricate by ridges and spurs running in different directions. The rocks consist³ of slates, shales and quartzites with occasional patches of gneisses and granites.

1. Burrard, Hayden and Heron, A Sketch of the Geography and Geology of the Himalaya Mountains and Tibet. Delhi, 1933, p. 102.

2. Ibid, p. 85.

3. Ibid, pp. 288 - 294.

Limestones occur *frequently* among the slates especially in the southern portion. This zone is the main inhabited tract of the Himalayan Region.

(c) The 'Duns' Between the outer Range of the Lesser Himalayas and the Siwalik Range lie a number of narrow disconnected longitudinal valleys ('Duns') (Fig. 2). They are non-existent where the Siwalik Range runs close against the Lesser Himalayas. The chief 'Duns' from west to east are :- the Dehra Dun (some 45 miles long, lying between the Jumna and the Ganges), the Kotri¹ and Ch_hokum Duns (some 12 miles long, drained by the western affluents of the Ranganga), the Patli Dun (some ten miles long and drained by the Ranganga), and the Kotah Dun (14 miles long). All these lie above the level of the Gangetic Plain, being invariably higher than 1,000 feet above sea-level. They are composed of gravel deposits and alluvial flats laid down by the mountain streams. Only the Dehra and Kotah Duns are cultivated and inhabited. The other 'Duns' are forest-clad.

(d) The Siwalik Range. The Siwalik Range extends from the Jumna to the Sarada and has a width varying from 2 to 8 miles. It is a low range rarely rising above 3,000 feet, with a steep face towards the plains and sloping sides towards the 'duns'. It exists as a separate range where the 'duns' occur; elsewhere it merges² with the outer Himalayas. The range, mostly wooded and uninhabited consists of relatively uncompact rocks (sandstone, sandrock, clays and conglomerates) which supply ample debris to the Bhabar zone. Drainage of a large area of the watershed lies on the crest of a

1. Journal of the Asiatic Society which has been separated from the Journal of the Asiatic Society, Middlemiss, C.S. 'Physical Geology of the Sub-Himalaya of Garhwal and Kumaun' Mem. G.S.I. Vol. XXIV, Article 2, (1891) pp. 1-17.

2. D.G. Naini Tal (1904) P. 4. Dist. of the Garhwal and Kumaun

2. The Sub-Himalayan Plain.

(a) The Bhabar* Immediately below the Siwalik Range is a narrow strip (Fig. 2) of gravelly plain extending from the Jumna to the Sarada. In Saharanpur and Naini Tal it is as wide as 10 to 15 miles, elsewhere it is as narrow as 5 miles. It is formed by the boulders and shingle deposited by the torrents rushing down the Siwaliks and lies between an average elevation of 2,000 feet on its northern edge and 1,000 feet at its southern margin. The gradient is consequently considerable; the rapid drainage and the absorptive character of the gravel and sand into which most of the streams sink and disappear, make the Bhabar a typically waterless region. Much of it is covered with forests which derive moisture from the subsoil. Inhabited tracts depend on irrigation channels, (mostly the porous ground), into which the water of the streams are diverted before they reach the gravelly zone.

(b) The Tarai† The Tarai is a strip of lowlying moist (often marshy) plain extending continuously from the ^{a little east of} Ramganga (Fig. 2) to the eastern border of the province. The absence of the Tarai west of the Ramganga may partly be ascribed to the nature of the Siwalik Range. This range stands apart from the Outer Himalayas west of the Ganges so that the torrents coming down to the submontane plain bring relatively small amounts of water from the Siwalik crests. Between the Ganges and the Ramganga, though the Siwalik Range is not so well-defined, the submontane streams do not receive the drainage of a large area as their watershed lies on the crest of a narrow Outer Himalayan Range which has been separated from the Lesser Himalayan zone by the valley of the Nayar, an affluent of the Ganges running south-east to north-west. East of the Ramganga the Siwalik range

† Bhabar means 'porous'. * Tarai means moist land.

which is jammed against the outer Himalayas does not form a separate watershed. The mountain catchment areas of many of the streams in this section extend north into the Lesser Himalayas resulting in large quantities of water being carried into the plain.

The Tarai is of varying width. Towards the west it is about 8 miles broad but it gradually widens in the east to approximately 20 miles. The water that has found a subterranean drainage through the Bhabar zone reappears at the northern margin of the Tarai in the form of innumerable springs the fountain heads of hundreds of streams wandering through relatively ill-defined channels. The northern portion of the Tarai is frequently under forests and tall grasses. The southern portion is less moist and forms a rich rice tract.

3. The Gangetic Plain. The Gangetic Plain¹ is, as a whole, a dead level fertile alluvial plain imperceptibly sloping from an elevation of about 1,000 feet in the northwest to some 200 feet in the east. Though the monotony of its relief baffles any physiographic subdivision the area is not entirely homogeneous in its physical characteristics.

(a) Much of the Doab lies above 500 feet, it has a considerable tract of ravines in its lower half along the Jumna and is fringed on either side by the Bhabar (riverain tracts of newer alluvium) which in the case of the Ganges is 5 to 15 miles wide. The central Bangar (older alluvium) is traversed in its northern half up to Etah district by some bhar (low sandy ridges) remaining close to the Ganges (Fig. 2) in Muzaffarnagar and Meerut

1

The Bhabar and Tarai zones are part of the Gangetic Plain. They have been treated separately because their physical characteristics are so different from the rest of the region.

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and subdividing into 2 to 3 ridges towards south. The areas covered by these sandy ridges are being reclaimed by tube-well irrigation. Patches of Usar (see the description of soils in this chapter, p. 13) are common in the middle¹ and Lower Doab.

(b) The Ganges-Gogra Doab. has fewer bhur^{*} tracts. The watertable, as a whole, is higher than in the Doab. Ravines are rare but patches of usar are disseminated in the central districts (Fig. 8).

(c) The 'Sarjupar' i.e. the country north of the Gogra and east of its tributary, the Sarda, is a moist tract with a high watertable. About one-third of the area ^(excluding the Tarai) consists of khadar. Ravines are non-existent.

(d) The Trans-Jumna Plain extending southwest and south of the Jumna from Muttra up to Allahabad is as a whole one of the most precarious tracts in the Gangetic Plain of the province. A considerable proportion of the ground is cut up by ravines along the Jumna, Chambal, ^{and Ken} ~~Pahuj~~, Betwa rivers. In the extreme west tiny ridges, outliers of the Aravalli Range appear in Muttra district. Ridges of Vindhyan sandstone cover the south-western corner of Agra district. The main streams flow in deep-cut channels 50 to 150 feet below the general level of the country. East of Agra district, ^{and Etawah} the plain is generally composed of the mar (a kind of black-soil) and its lighter variants. The gradient here is greater than that of any other tract in the Gangetic Plain, ^{except the Bhabar} (e) The Trans-Ganges Plain covering the plain portion of Mirzapur and those parts of Benares and Ghazipur which lie south of the Ganges is wetter than the Trans-Jumna Plain, has a higher watertable and its soil consisting of loam is distinct from the mar of Bundelkhand.

1

That is, south of the district of Bulandshahr.

2

'Bundelkhand' with reference to U.P. means the Jhansi Division, i.e. the districts of Jalaun, Jhansi, Hamirpur and Banda. Here we are referring only to that part of Bundelkhand which is in the Gangetic Plain, and, therefore, in the Trans-Jumna Plain.

* Bhur in the sense of sand hills is uncommon in this interfluve except in the Ramganga-Ganges Doab, Settlement officers, however, also use Bhur for soils with a high proportion of sand which as we shall see in the 2nd. Chapter are not infrequent in this Doab.

4. The Central Indian Foreland. is divisible into two portions:-

(a) The Western Portion comprising almost the whole of Jhansi district, the southern part of Hamirpur district and the south-western corner of Banda district, consists mostly of the gneiss upland of Bundelkhand. It is interspersed in its northern portion with short narrow and low ridges running parallel to the lines of drainage in Jhansi and tending to form clusters in Hamirpur. In the south of Jhansi district these ridges are less frequent while still further south lie the scarps of the Vindhyan tableland. Many villages are situated at the base and sides of the hills of the gneiss upland for reasons mentioned later.

(b) The South-Eastern Uplands, north of the Son is composed of Vindhyan formations. The tract faces the plain in Banda, Allahabad and Mirzapur, often with abrupt scarps called 'ghats'. North of the scarps there is a more or less continuous hilly wooded or bare belt consisting of "A - B. often with abrupt scarps and 'ghats'".

The country between the scarps, in the north, and the Kaimur Range (immediately north of the Son), in the south, is relatively a level plateau and the isolated tiny hills so characteristic of the Gneiss Upland are practically absent. The ground, however, in the case of Mirzapur imperceptibly slopes from the 'ghats' and the Kaimur Range towards the centre thus resulting in an east-west central depression occupied by the Belan river. The seepage from north and south raises the watertable in this depression and makes it a deep-soiled fertile rice tract. South of the Son the topography is rather wild. It is a rugged tract characterised by hills and ravines and isolated basins. The watertable is variable and habitable spots few and far between.

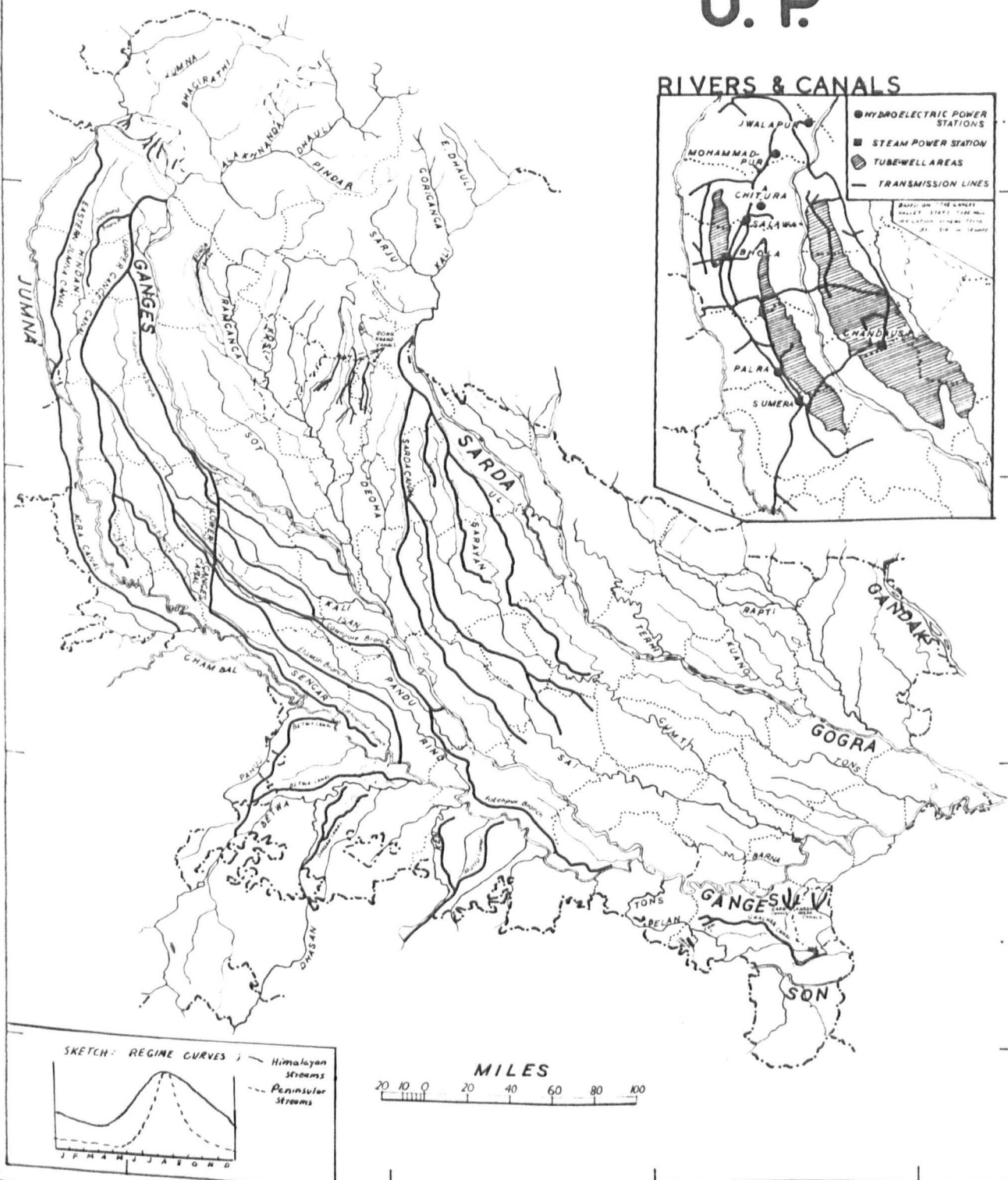
* (A) The small outliers of the Vindhyan tableland proper and often scoured by the ravines descending the 'ghats'. (B).

Drainage.

The relation between the water features and settlements is great. We can, however, only touch these features briefly at this stage. The entire province lies in the basin of the Ganges and its tributaries. ^(fig. 4) The headwaters of the Jumna, Ganges and Serda rise beyond the Great Himalayan Range near the Tibetan border. The extra-provincial watersheds influencing the drainage of the area are the Aravalli Range in the west and the Vindhyan and Kaimur Ranges in the south, the triangular area so enclosed being drained through the U.P. The regime of the rivers depends on the nature of water supply in and the extent of catchment areas above the plains. The Karnali (upper stream of the Gogra) has the largest catchment area in the mountains (about 20,600 square miles) while its annual discharge¹ as compared to the Ravi is eightfold. Next in order of magnitude, among the rivers coming from the north are the Ganges, Kali (upper course of the Serda), Jumna, Rapti and Ramganga with catchment areas of 8,900, 6,300, 4,500, 3,000 and 2,600 square miles respectively, the annual discharge of the former three being 5.5, 4 and 2 times of that of the Ravi. Thus the discharge of water, through these perennial streams fed by snow and monsoon, is greater in the north-eastern than in the south-western part of the plain. The minor streams rising within the plains dwindle into shallow channels during the hot season. The streams rising on the central Indian tableland derive their water supply only from the monsoon and are characterised by sudden freshets after the burst of the monsoon, dwindling in winter and summer often to dry channels of disconnected pools. The regime curves of the Himalayan

1. Burrard, Hayden and Heron, A Sketch of the Geography and Geology of the Himalayan Mountains and Tibet. (op.cit.) p. 175.

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and Peninsular streams are dissimilar (fig. 4). The riverain tracts, otherwise known as Khadar, are usually liable to be submerged during the rains while owing to the greater discharge of the Gogra and its affluents the north-eastern area is often subject to heavy floods. Floods are also frequent in the Gumti valley which occupies a relatively low-lying tract in the centre of the Ganges-Gogra Doab. Apart from the streams the other water-forms of the area are the Jhils (lakes) and marshes ^{usually} lining the low-lying central tracts of the interfluves.

Watertable¹ is variable (Fig. 5). It is generally low in the Dung and the Bhabar. In the Tarai it varies from 5 to 10 feet below the ground. In the Trans-Gogra districts the depth of watertable ranges from about 10 to 15 feet. It increases in the Ganges-Gogra Doab ranging generally from 10 to 30 feet though it approaches 50 feet near the high bank of the Ganges in the south of this Doab. The watertable is deeper in the Doab. It ranges from 20-30 feet in the northern and central districts to some 60-80 feet near the confluence of the Ganges and Jumna. Conditions in the Trans-Ganges Plain are akin to those in the Ganges-Gogra interfluve, while the watertable is, as a whole, the deepest in the Trans-Jumna Plain. The watertable rises on the Bundelkhand plateau while on the South-Eastern Uplands it is very variable. Apart from this regional variation the watertable in each tract follows the general rule of being high in the lowlying riverain tract, getting deepest on the

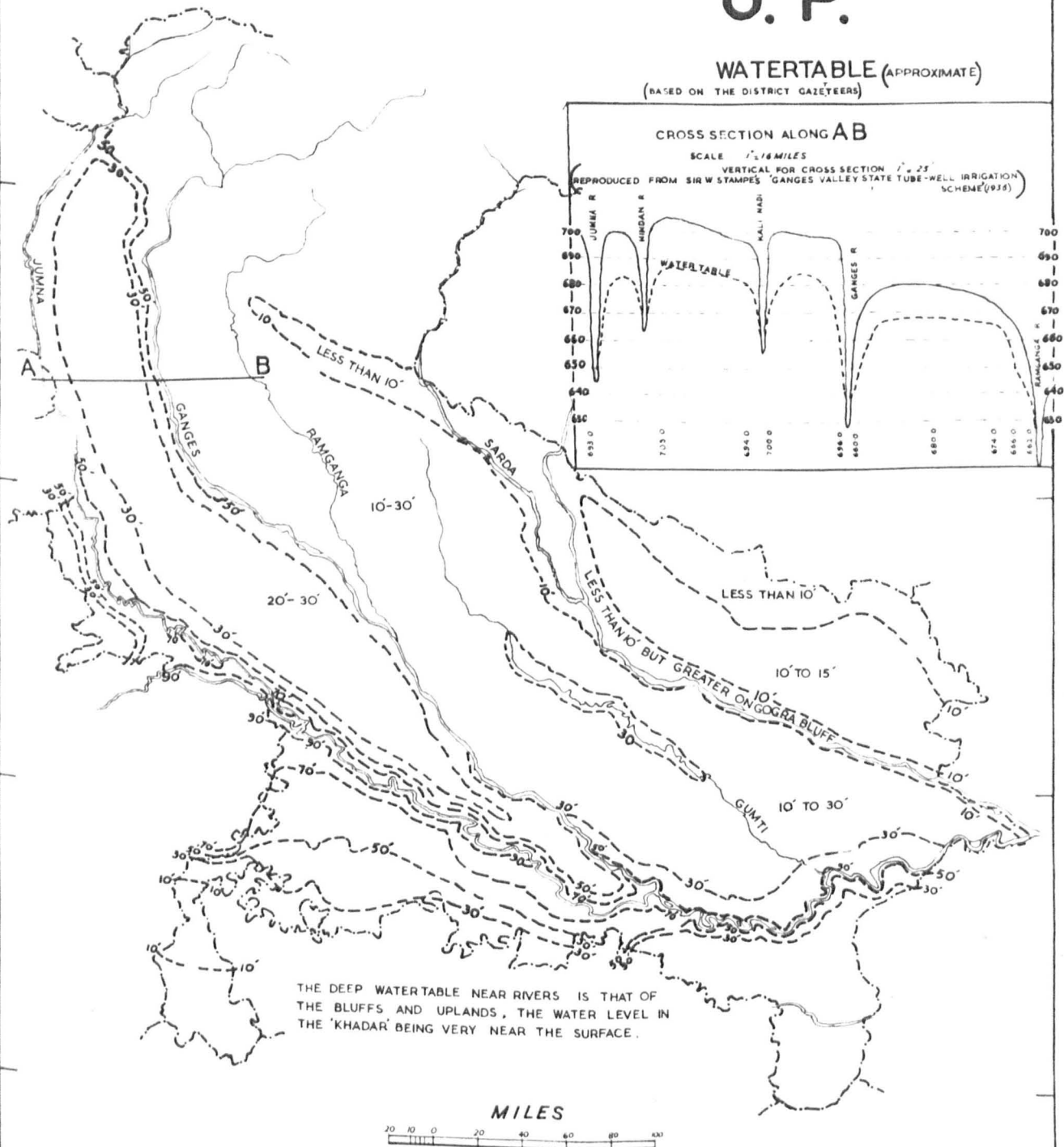
1

The watertable map, only approximate, is based on the District Gazetteers. Recent figures are not available. Settlement Reports of some of the districts are quite recent (of about 1940) but they give, if at all, the average figure for the whole district. We know that there has been a rise in watertable in the canal areas but there is no information on the basis of which we may show the 'rise'. Our object is to show the regional contrasts in watertable. Moreover, the District Gazetteers which were written in the first decade of the present century must have incorporated part of the change in watertable brought about by the Doab Canals, constructed before 1879.

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WATERTABLE (APPROXIMATE)

(BASED ON THE DISTRICT GAZETTEERS)



high banks of the streams and again rising towards the centre of the inter-fluves. (Fig. 5: inset)

Climatic Features.

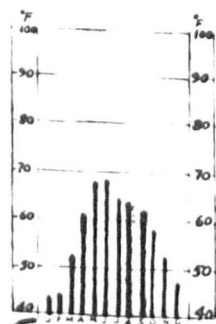
The year is popularly divided into three seasons though their limits are not well-defined and depend on the nature of weather. The cold season usually commences after the full retreat of the south-west monsoon towards the end of October and lasts till the middle of March. This is a cool and bright period with only slight showers from 'western disturbances' particularly in January and February. After that the hot season lasts till the burst of monsoons. It is the hottest and driest period characterised by hot and strong winds from west known as 'loo' often developing into 'andhi' (dust storms) towards the afternoon. The rainy season begins with the burst of monsoon in June and ends with its retreat in ~~March~~ September or October.

From the viewpoint of human geography temperature, and rainfall are the most important climatic factors in the area. Temperature is highest in May (Fig. 6). ^{except in the Himalayan area} The Bundelkhand plateau has a temperature (actual) of over 95°F while the rest of the area has 90° to 95°F ; the temperature decreases to 85°F near the Himalayan foothills north of which it rapidly falls to 65°F on the Outer Himalayas. The snow line lies high up at an elevation of 20,000 feet. In January (Fig. 6) which is the coldest month the actual temperature ranges from about 63°F on the Central Indian Foreland to 60°F in the middle of the plain. Thence it falls northwards to 55°F near the foothills and rapidly decreases to c. 45°F on the Lower Himalayas. But snow falls in the mountains as low as 5,000 feet. Temperature in

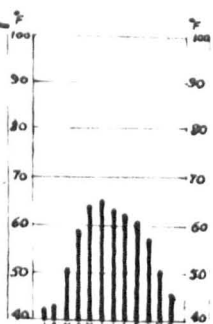
U. P.

NORMAL MONTHLY TEMPERATURES (SELECTED STATIONS)

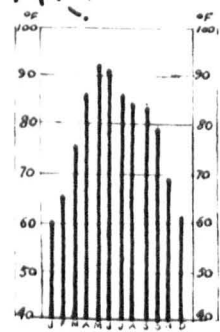
(Based on 'India Weather Review, 1944')



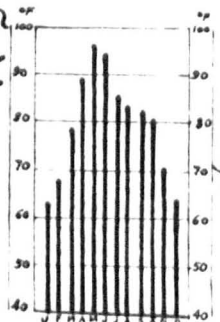
MUSSOORIE



MUKTESAR



LUCKNOW

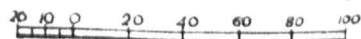


JHANSI

JUMNA

GANGES

MILES



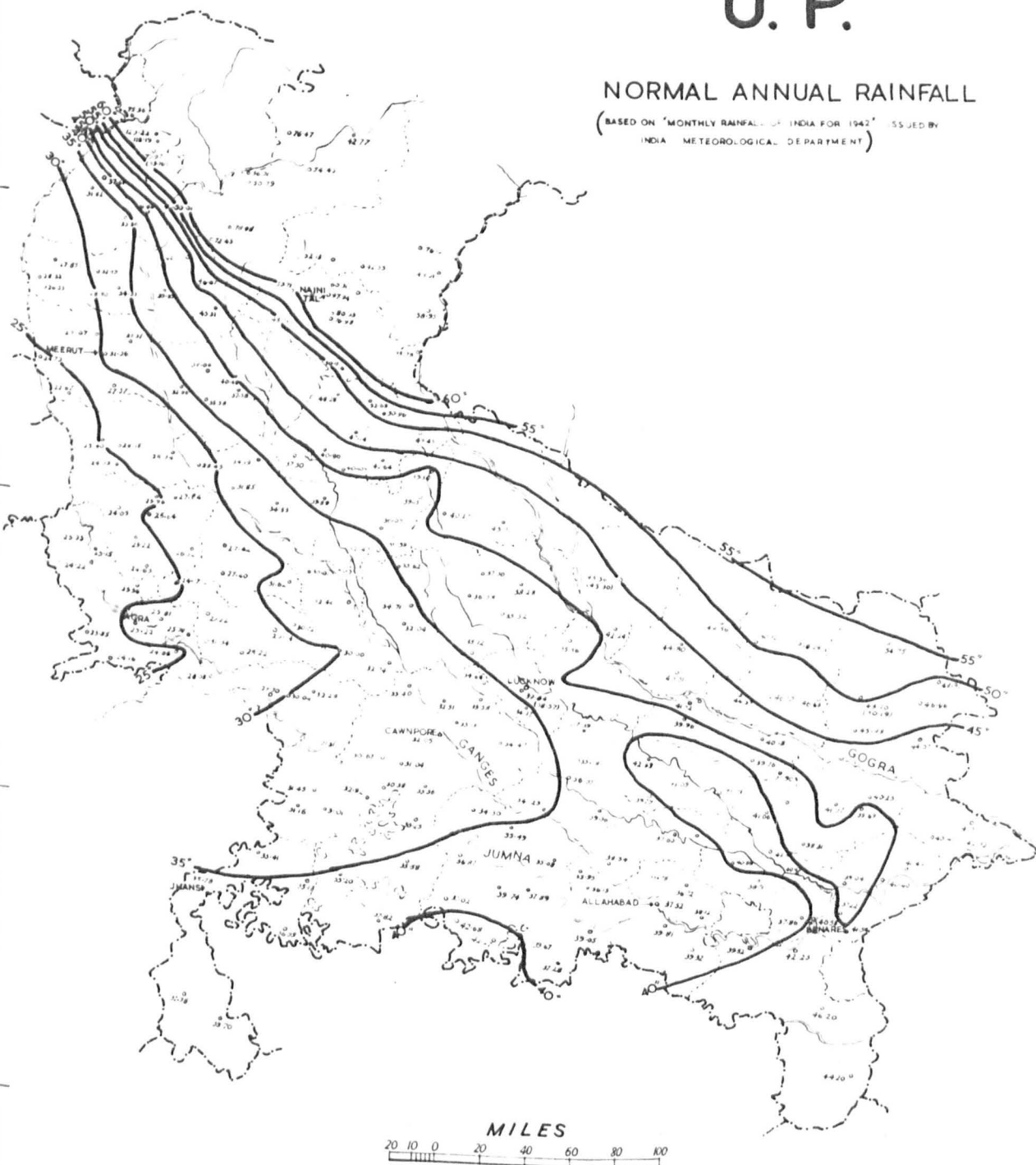
in other months ranges between that of May and January.

The distribution of annual rainfall (Fig. 7) is uneven. On the high Himalayas it is far less than on the southern face of the Lower Himalayan Range which stands as a bulwark against both the Bay of Bengal and the Arabian Sea branches of South-West monsoon. Yet the areas which directly face the winds that have crossed the lower Himalayan Range receive a large amount as 76 inches while those lying leeward in valleys receive as low as 36 inches. On the lower Himalayan Range which forms the breastwork of the Lesser Himalayan Zone certain stations receive as much as 118 inches while most of the stations receive above 80 inches. In the Dun and Sivalik areas the annual rainfall ranges from 60 to 80 inches. Bhabar receives between 55 and 60 inches while in the Tarai the rainfall is below 50 to 55 inches. South of the Tarai rainfall rapidly decreases in the west and gradually in the east so that most of the Trans-Gogra Tract, a small area of the Ganges-Gogra Interfluvium and a narrow strip in the north of the Doab receive over 45 inches. The critical isohyet of 40 inches which roughly delimits the rice area to the east runs close to the sub-montane tracts in the west and like all the isohyets follows the general trend of the Himalayas running south-east, and recurves westward to leave out to the east the central moist tract drained by the Ganges in the lower Ganges-Gogra Doab, again trends east and finally turns south-west. Rainfall in the Central Indian Foreland is higher than in the southern half of the plain decreasing in the former area from 45 - 40 inches in the east to 40 - 30 inches in the west. The decrease in the west of the plains is due to the proximity of the deserts and the lesser frequency of the Bay depressions ^{in the coast}. The driest area of the province receiving less than 25 inches

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NORMAL ANNUAL RAINFALL

(BASED ON "MONTHLY RAINFALL OF INDIA FOR 1942" ISSUED BY
INDIA METEOROLOGICAL DEPARTMENT)



of annual rainfall is the western portion of the central districts of the Doab and the county lying further west. Thence the rainfall rapidly increases towards ^{the} north-east but very imperceptibly towards south-east so that almost one third of the Ganges plain in the west and south-west receives less than 35 inches. All ^{the} isokets ^{extend} a tongue towards ^{the} east in the southern half of the plain in sympathy with the trough of low pressure which extends from N.W. India towards the Bay during the period of South-West monsoon. The axis of this trough which also is the line of lowest precipitation is mostly the line of convergence of the Bay and Arabian Sea branches of the monsoon. Thus it is that all the districts lying on a line drawn from Muttra to Benares are drier than those on their north or south.

Over 90 per cent of the total annual rainfall is due to the South-West monsoon from ^{mid} June to October. During the period of 'western disturbances' (November to March) rainfall does not exceed 5 inches anywhere in the plains and is less than 15 inches on the Outer Himalayas. April is the driest month of the year though the Lesser Himalayas receive about one inch. In May and early June the plains and the Peninsular tracts remain dry till the burst of monsoons towards the middle or the end of the latter month while some stations in the Lower Himalayas receive as much as 3 inches and the Tarni area receives about one inch. ^{in May} The South-West monsoon recedes towards the end of September though the retreating phenomenon may often be delayed as late as the middle of October in the eastern districts.

Among the freaks of the monsoonal rain are its late or too early beginning, long dry breaks, early cessation, or prolongation towards October, intervals of heavy rainfall alternated with those of meagre precipitation, deluging downpours over short periods often as much as 10 to 15 inches

within 24 hours and a continued cycle of 2 or 3 years of deficient rainfall.

Soils.

The soils¹ of the province can be broadly classified into the following types:- (fig. 8)

(1) In the Himalayan area the soils are of heterogeneous nature, varying with parent rocks, climate and local conditions e.g. prevailing wind, rain, snow, ground configuration, cultivation, etc. They do not form a compact soil group.² The depth of the soil varies according to the slope of the ground. Owing to considerable vegetable cover humus is generally present except on steep and bare rocky slopes where the soil cover is also very thin or even absent.

(2) The soils of the Sub-Himalayan zone consisting of Bhabar, Siwaliks and Duna, are mainly sandy and gravelly. The soil cover on the Siwalik Range is thin and often evanescent. The soil of the Bhabar and Duna consists of a porous sandy loam overlying a bed of boulders.








(3) The Gangetic Alluvium contains sand and clay in varying proportions. The subsoil consists of layers of sand, loam or heavy clay which vary in their thickness and extent from place to place. The Tarai soil is a heavy clay but south of this tract the soils vary according to

¹ Information available on the soils of the province is very scanty. An attempt, however, is here made to give a generalised picture based mainly on the District Gazetteers and Settlement Reports.

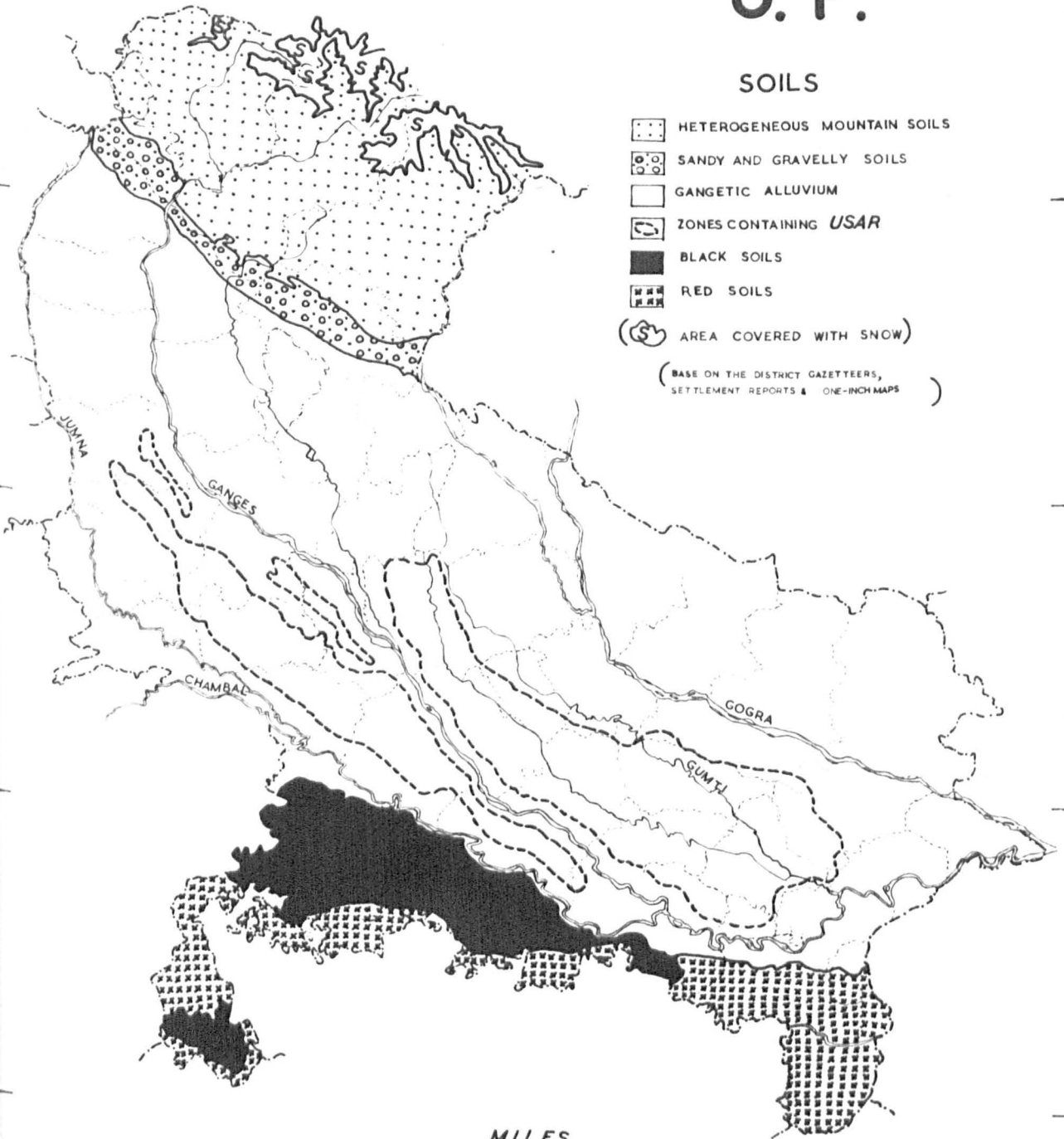
2. Wadia, D.N., 'Soils of India', Journal of Scientific and Industrial Research, Vol. III, No. 8, February, 1945, pp. 359 - 367.

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SOILS

-  HETEROGENEOUS MOUNTAIN SOILS
-  SANDY AND GRAVELLY SOILS
-  GANGETIC ALLUVIUM
-  ZONES CONTAINING *USAR*
-  BLACK SOILS
-  RED SOILS
-  AREA COVERED WITH SNOW

(BASE ON THE DISTRICT GAZETTEERS,
SETTLEMENT REPORTS & ONE-INCH MAPS)



MILES
20 10 0 20 40 60 80 100

the distance from the main streams. As we go away from the bank of some major stream we find a general succession from "drift sand, through loams and fine silts to clays so stiff that drainage is entirely prevented and injurious salts of soda and magnesia accumulate, reducing the soil to the sterile condition so well known under the name of usar, reh or kallar"¹. This generalisation, however, as will be seen from the distribution of the usar, applies (particularly with reference to usar) only to parts of the province. Fluvial action, one of the main factors determining the texture, often leads to the variation of soils within the confines of the same village.

The Gangetic alluvium can broadly be divided into Khadar (Newer Alluvium) and Bangar (Older Alluvium). The former is confined to the flood plains of the rivers ^{and adjoining narrow belts,} and is different from the latter in texture, drainage capacity, fertility and in respect of the crops cultivated on it. The Khadar is generally a friable loam with a higher admixture of sand and silt. In the riparian tracts subject to inundation during the rains there is a regular deposit of sand and silt while the higher bank of loamy composition remains above flood. ^{and} Where not covered with tamarisk the Khadar produces ^{monsoon fails & derives moisture by} autumn and rabi crops. Even when the capillary action from the river and irrigation is not needed, Khadar is, generally highly leached. The Bangar occupies the land above Khadar. The clay proportion is relatively high except in the Bhur tracts. Loamy tracts, however, account for the major proportion of the Bangar. In the more clayey central tracts of the doaba the drainage is often poor. The Bangar is richer in salts and Kankar (nodular concretions of impure calcareous matter) than Khadar.

¹ Report of the Royal Commission on Agriculture in India (1928), p. 73.

Apart from these two main sub-types there is a chemical variant of the alluvium known as 'usar', a saline soil. The salts present in more or less excess in the soil are sodium salts - chlorides, sulphates and carbonates. 'Reh' is the word applied to these salts when they appear on the surface in the form of a whitish efflorescence. 'Usar' refers to the barren lands affected by these salts (visible or invisible) whose presence is deleterious to plant growth. Even where the salts do not show themselves free on the surface, 'the soil is hard and unkind in appearance',¹

The main zones² containing patches of usar cover parts of the Middle and Lower Doab and the central districts of the Ganges-Cogra Doab. (Fig. 8). The actual area affected as respects cultivation is known to be two to three million acres.³ One of the main characteristics of the usar is that it occurs interspersed with highly cultivated land. Usar rarely occurs in sandy soils and is confined to loam and retentive clays. Most of the usar is confined to Bangar.

As to the origin of Usar and reh salts Auden says: "Salts are present in solution in all ground waters, but it is only under certain conditions that the concentration of these solutions is sufficient to produce toxic conditions and efflorescences. During periods of monsoon rainfall

1. Clibborn, J., Irrigation Work in India, (Roorkee, 1901), p. 277.
3. Ibid., and Imperial Gazetteer of India, Frontiers Series, U.P.I., (1908), p. 11.
2. The zone of usar shown on the map is based on the Settlement Reports, District Gazetteers, and Survey Sheets where the uncultivated patches indirectly show the extent of usar.

solutions are washed down towards the watertable. During the intervening dry-weather periods, extensive evaporation may take place, which exerts a strong capillary pull, upwards against gravity, on the water in the pore spaces of the soil. On reaching the surface these solutions evaporate and the salts crystallise out as a white incrustation."¹

Among the factors obtaining in the province which appear to have contributed to the formation of usar lands are (i) the regular alternation of a monsoon season with a prolonged dry period, (ii) a low gradient (one foot per mile) resulting in poor surface and ground drainage, (iii) and a high watertable 'bringing the capillary fringe of the ground water within the influence of surface evaporation'. Canals contributing to water logging and a rise of water-table ^{have} only partly contributed to the growth of usar. Usar existed before the advent of canals and much of the usar zone of the Ganges-Gogra Doab has no canals.

(iv) The Black Soils of Bundelkhand is akin to the 'regur' or the Black Cotton Soil of the Deccan Trap. It is highly argillaceous, sticky when wet, retentive of moisture but develops cracks when dry. The ~~black~~ typical black soil of Bundelkhand is known as 'mar'. It is usually very fertile and cultivated without irrigation. It is, known however, liable to be infested with Kang (*saccharum spontaneum*)^a, weed whose roots grow to great depth and size in this soil. Mar is locally differentiated from 'Kabar' a variant of the former with usually a lighter colour and lesser capacity for retaining moisture. The question of the origin of the Bundelkhand soils is debatable.

1

Auden, J.B., Gupta, B.C. etc., Report on the Sodium Salts in Red Soils in the United Provinces, with Notes on Occurrences in Other Parts of India, Rees, G.S.I. Vol. LXXVII, Professional Paper, No. 1. (1942), pp. 3-4.

The zone probably forms one of the "tracts of transported black soil"¹ derived from the Deccan Trap. The zone of the black soil (Fig. 8) in Bundelkhand does not entirely consist of mar and kahar. There are considerable tracts of lighter soils. Usually the black soils occupy the central parts of the several 'doabs' formed by streams coming from south. On either side of this belt will be found the 'parua' a yellowish, sandy loam which passes into 'rakar' or the gravelly soil along the banks of the streams.

(v) The Red Soils of the Foreland. The soil of the Foreland is usually stony and red in colour. In the western parts where it is regarded as "an immediate product of the decomposition of gneiss"² it is usually gritty and sandy with a low fertility. The soil of the Vindhyan Upland in the south-east is generally a stiff, shallow red clay, highly ferruginous³ and very fertile. In the Belan Valley the soil resembles the black soil of Bundelkhand. In the rugged country of Sonpar (south of the Son) the soils are very variable.

1. For details of the distribution of the black soil of the provinces see Wadia, D.N. Soils of India, op. cit., p. 362.

2. D.G. Jhansi (1909) p. 6. Some grasses and shrubs growing on neglected

3. near some villages. The country is a ground of shales, sandstone and D.G. Mirzapur (1911), p. 9. The country is a ground of shales, sandstone and some of the chief sources of building material to the average district villages.

1. Report on the Forests of the United Provinces for the Year 1914-15 (1914, pp. 8-9. (These figures exclude the state). The percentages of the 'Forest' cover for the various districts is based on this publication.

2. Annual Report of Forest Administration in the United Provinces for the Year 1914-15 (1915), p. 1.

Natural Vegetation.

13,556 square miles or about 12 per cent of the area of the province is under some sort of forest cover.¹ Of this 6,197 square² miles are managed by the Forest Department and the remainder, which is mostly unprotected, is generally a poorer growth.

WOODED AREAS

The scrubby open forests of the Foreland consist chiefly of the trees of fig family, mahua, salai, bahera, katar, khair, and bamboos.

Besides yielding some trade timber and minor products they are grazing reserves and supply of fuel and building material. Forests cover 5.1, 4, and 4% of the total area of Jhansi, Banda and Mirzapur respectively.

The natural vegetation of the Ganges Plain south of the Bhabar and Tarai zones consist of very tiny patches of dhak along with the more common trees such as babul and karaunda occurring usually on fertile patches of soils in the doabs. The growth on the khadar tracts consists usually of babul, tamarisk and thatching grass. The wooded areas of this vast tract which hardly account for even 2% of the wooded area of the province are shown on the map (Fig. 9). Elsewhere there is hardly any remains of the natural vegetation except some grasses and shrubs growing on neglected wastes near villages. The orchards and groves of mangoes, mahua and tamarind etc. form one of the chief sources of building material to the average farukhi villager.

1 Season and Crop Report of the United Provinces for the Year 1944 - 45. (1946), pp. 8 - 9. (These figures exclude the states). The percentage of the 'forest' cover for the various districts is based on this publication.

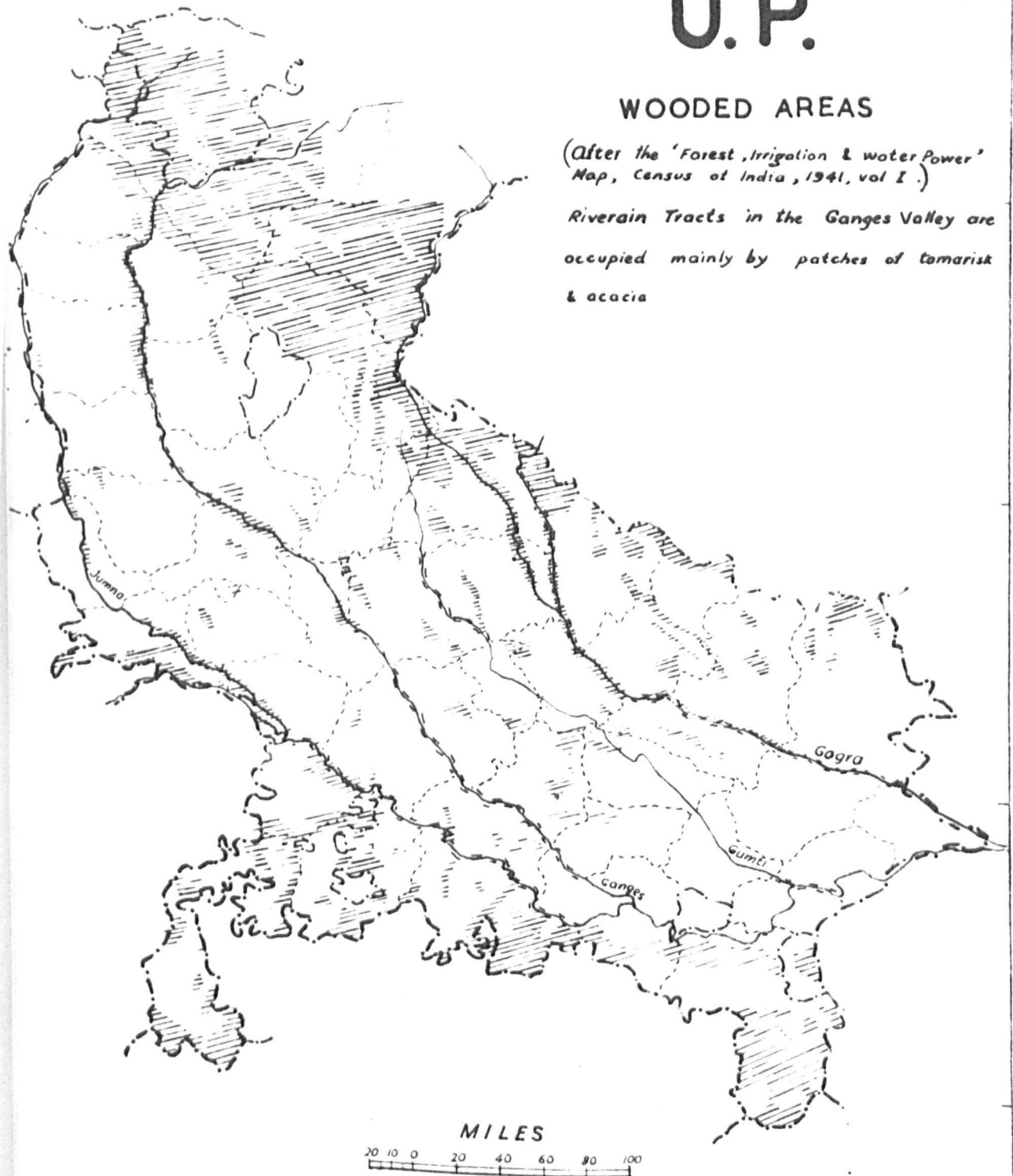
2 Annual Progress Report of Forest Administration in the United Provinces for the Year 1945 - 46. (1946), p. 1.

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WOODED AREAS

(After the 'Forest, Irrigation & Water Power' Map, Census of India, 1941, vol I.)

Riverain Tracts in the Ganges Valley are occupied mainly by patches of tamarisk & acacia



The forests of Tarai, Bhabar, Siwalik and Dun tracts which receive a greater rainfall than the above-mentioned areas, are fairly dense and include much of the State-managed forests. They consist of a predominantly 'Sal' type and a miscellaneous type.¹ Owing to the presence of these forests the percentage of wooded to the total area of the sub-montane districts is considerable. Thus this percentage is 14, 5, 11, 16, 12, 6 and 4 for Saharanpur, Bijnor, Pilibhit, Kheri, Bahraich, Gonda and Gorakhpur districts respectively. The Sal (which is the most important timber species of the province) occurs gregariously over higher ground in the Tarai and Bhabar, ascending hills to a height of about 4,000 feet. The miscellaneous forests of these zones known as 'kokat' occupy lower levels.

The Siwalik and Dun forests are succeeded by those of the main Himalayan region. The lowest belt is occupied by chir pine which usually occurs between the altitudes of 3,000 and 6,500 feet. It yields both timber and resin. Above the chir come the oaks: bani and tilong, extending to a height of 8,000 to 8,500 feet. Though of not much commercial value they provide fuel and charcoal, and their leaves are an important source of fodder to the cattle. In the belt of these oaks occur the conifers - deodar and kail (blue pine). Deodar, so prized for its timber, however, is confined mainly to the Chakrata tahsil. Above these appears kharsu, an oak, and along with this are found the lofty conifers - spruce and silver fir which ascend to a height of about 11,000 to 12,000 feet. Towards the limit of tree-growth² (13,000-14,000) rhododendrons

¹ Ford Robertson, F.C. Our Forests, (1936). p. 7

² Ford Robertson, (op.cit.), p. 10.

predominate and higher *still* lie the grassy slopes known as bugial. They are buried under snow during the winter months but towards the end of March the snow melts and the slopes are covered with succulent grasses which afford pasturage to the sheep and goats of the Bhotias. The bugial is succeeded by the eternal snows. The proportion of tree cover in the Himalayan districts is fairly large and this is apparent from the map (Fig. 9). The percentage of the total area of Dehra Dun and Naini Tal under 'forests' is 48 and 44 respectively. But one would not believe that about 90 per cent (Season and Crop Reports, 1940 - 41 to 1944 - 45) of Garhwal and Almora districts is under 'forests'. Evidently these figures include the area under 'glacier and snow', which has not been mentioned in the agricultural statistics (and which roughly account for one fourth of the area¹ of the district in the case of Garhwal.).

Forests are characterised by two important facts; they attract habitations to their fringes (unless there is a danger of wild animals and the climate is very unhealthy) owing to their utility but the area actually covered by them is negative to human settlement.

Irrigation.

The percentage of the total cropped area irrigated² (Fig. 10a) is relatively low in the Himalayan area. In Dehra Dun and Naini Tal irrigation from canals is ^{more} important. In the moist districts of *more*, Kheri and

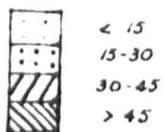
¹ Ibbotson, A.W., Report on the Settlement of the Garhwal District (1933). p.4.

² Based on the average for the three years ending 1944-45 (Season and Crop Reports.).

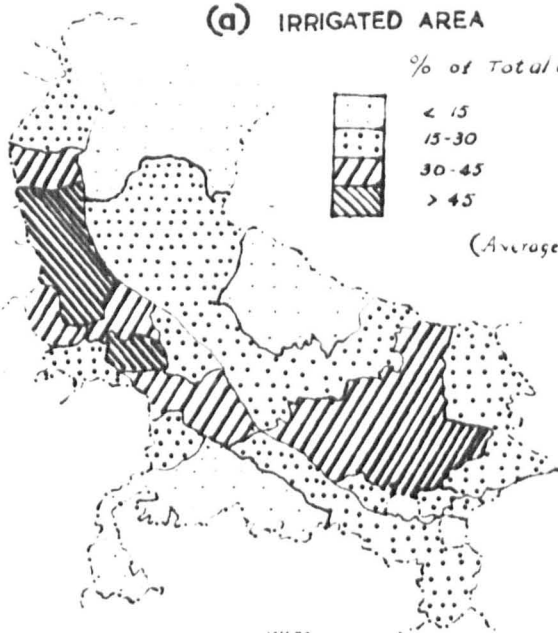
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(a) IRRIGATED AREA

% of Total Cropped Area



(Average for 1942-43 to 1944-45)

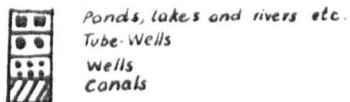


MILES
20 0 20 40 60 80 100

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(b) SOURCES OF IRRIGATION

Districts where the largest proportion of land is irrigated by:



(Average for 1942-43 to 1944-45)



MILES
20 0 20 40 60 80 100

Bahraich the percentage is again low. Elsewhere in the Ganges Plain the intensity of irrigation depends on the abundance of sources. In the Trans-Jumna tract (Jhansi, Hamirpur and Banda districts) the percentage of cropped area irrigated is below 15.

An examination of statistics (Season and Crop Reports 1942-43 to 1944-45) brings out the relative importance of the sources of irrigation in various tracts (Fig. 106). In the Sarjapur as well as the eastern Ganges-Gogra Doab wells form the most important source. Other areas where this is the chief source are Jhansi and Central Doab. There are only three districts where tube wells are most important viz. Moradabad, Budaun and Bijnor, while they form the most important source next to canals and wells in Bulandshahr, Meerut, Muzaffarnagar, Aligarh and one of considerable importance in Bareilly and Etah. Tanks or 'jhils' and 'tals' - ^{lakes, and} depressions filled during rains, are the principal source of irrigation only in the Trans-Gogra districts of Bahraich and Basti, though as a source secondary to wells they occupy a larger tract including the districts of Fyzabad, Gonda, Gorakhpur, Azamgarh, and Sultanpur. Elsewhere canals taken direct from rivers or fed by storage reservoirs are the chief source of irrigation.

The canals are shown on the map (Fig. 4). The Agra Canal serves the relatively dry districts of Muttra and Agra. The Dehra Dun Valley is ^{the three systems of canals taken from the Jumna, Tons and the tributaries of the Ganges, and the Doab by the} served by Eastern Jumna Canal, the Upper and Lower Ganges Canals. Bijnor and Moradabad districts are served by Bijnor Canals while the rest of the Ganges-Gogra Doab excepting the eastern districts by Rohilkhand, Ramnagar and Sarda Canals. A small canal taken from the Gogra irrigates parts of Fyzabad. In the Foreland and adjoining plain the Betwa, Pahu, Dhasan and Ken Canals irrigate Jhansi, Jalaun, Hamirpur and Banda districts.

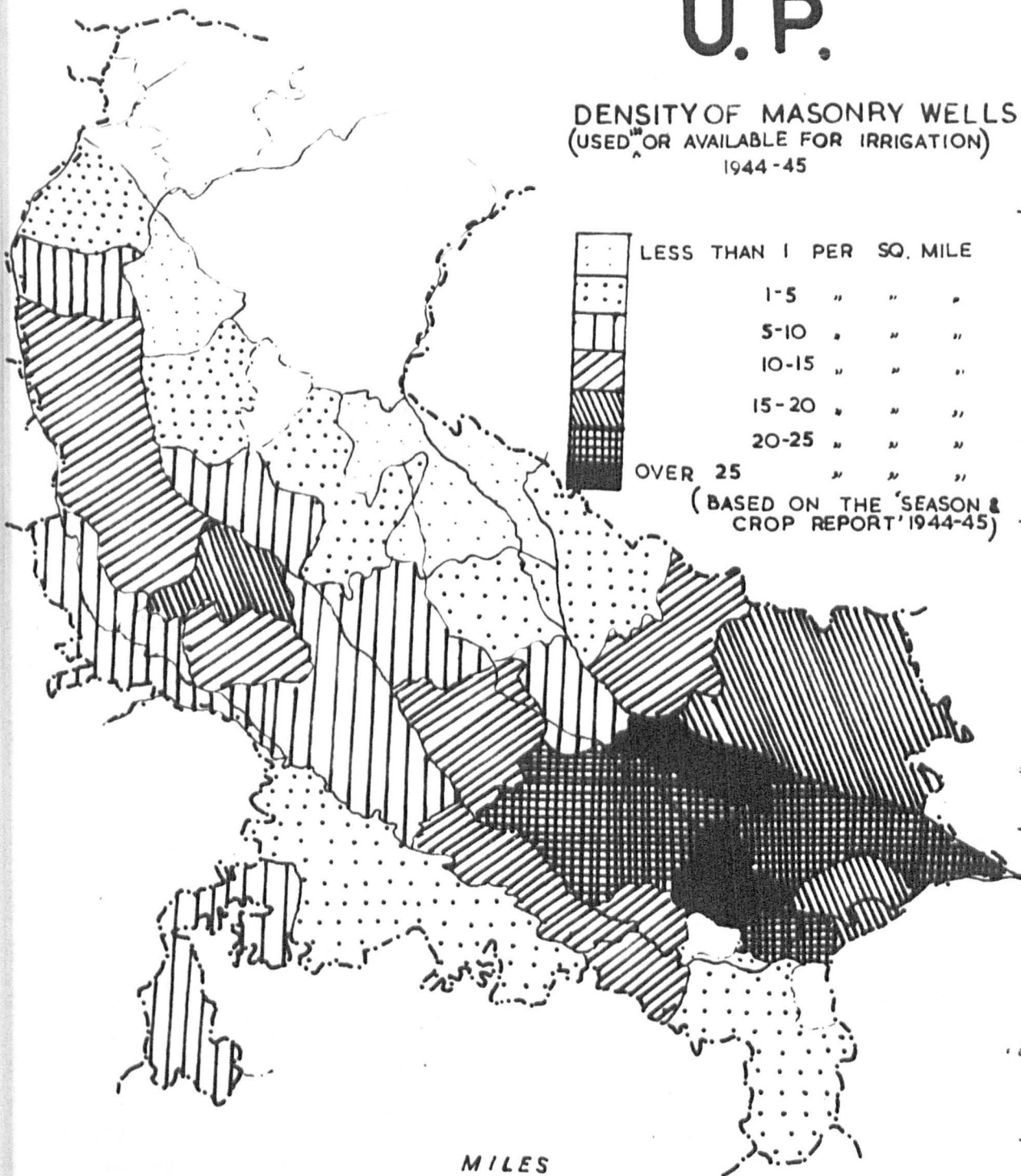
The Ghagar, Corai, Cori and Sukhra Canals irrigate the Vindhyan Upland and adjoining plain in Mirzapur and Benares State. Apart from these there are several reservoirs covering a total of about 30 square¹ miles. They are most numerous in Jhansi district. The tube-wells are a new feature in the environment, developed in the last two decades. Some 1,260 square miles are irrigable² from them in the districts of Bijnor, Moradabad, Budaun, Bareilly, Muzaffarnagar, Meerut, Bulandshahr, Aligarh and Etah. 1,649 tube-wells³ were in operation at the end of the year^{ending March,} 1944. Originally the number of tube-wells to be completed⁴ by 1938 was 1,462 of which 429 were to be constructed in Moradabad, 396 in Budaun, 137 in Bijnor, 220 in Meerut, 62 in Muzaffarnagar, 154 in Bulandshahr and 20 in Aligarh districts. The number has been gradually increasing and recent constructions appear to be chiefly in Bareilly and Gonda.

⁵ The distribution of masonry wells (used in or available for irrigation) deserves some attention (Fig. II). The maximum number of wells occurs in the east; hence decreases gradually in the north-west and south. The Himalayan area has practically no wells. There is roughly a succeeding belt with 1 to 5 wells followed by an almost continuous zone from Muzaffarnagar to Allahabad with 5 to 15 wells per square mile. The area east of

¹ Irrigation Administration Report of the United Provinces for the Year Ending March 31, 1944, (1946), p. 26.
² Irrigation Administration Report, (op.cit.), p. 25.
³ Ibid, p. 15.
⁴ Stampe, Sir William, The Ganges Valley State Tube-Well Irrigation Scheme, 1934-35 - 1937-38, (1936), p. 12.
⁵ Season and Crop Report of the United Provinces for the Year 1944 -45 (1946), p. 23.

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DENSITY OF MASONRY WELLS (USED^W OR AVAILABLE FOR IRRIGATION) 1944-45



Lucknow bordered on the south by the Ganges and on the north by Nepal has 15 to 30 wells per square mile, the greatest density being in Jaunpur and Fyzabad.

An important use of the water resources is in the form of the Ganges Canal Hydro-Electric Grid. Out of the 13 falls on the Upper Ganges Canal 7 have been used for generating power supplied to the districts of the Upper and Middle Doab and Ramganga-Ganges interfluvium^(fig. 4). Power is supplied to about 88 towns and is used in pumping tube-wells and in industries.¹

Land and Crops.

We have already noted that according to the statistics of 1944-45 about 12% of the area of the province (excluding the states) is covered with some sort of forests and scrub jungle. According to the average for the years 1942-43 to 1944-45, however, this percentage² is 13.4%. Some 54.8%³ of the entire area is under cultivation (net area sown) and 3.4% is under 'current fallows'. The area not available for cultivation amounts to 14.1% and consists of barren lands, land under water, and built-up area. The remaining 14.3% is termed as 'other uncultivated land excluding current fallows'. It includes land under groves and undefined waste. The distribution of the cultivated area (Fig. 12a) reflects the influence

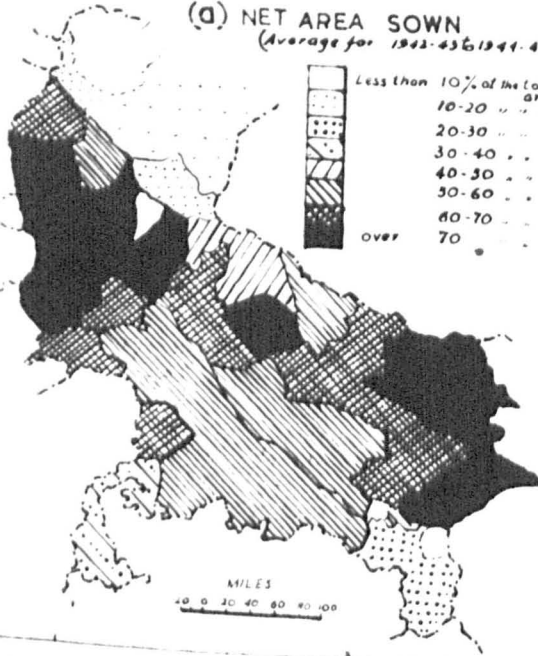
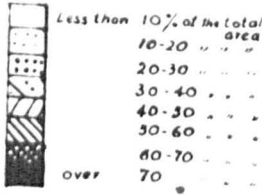
¹ Stampé, Sir William, "The Ganges Canal Hydro-Electric Scheme. Ultimate Development 1935 - 1938." (1935).

² The notable difference is due to a decrease in forest area in 1944-45, as a result of the checking by the government of the conventional figures on the basis "of fresh enquiries made from the districts". (Season and Crop Report, U.P., 1944-45, (1946), p. 3.

³ These figures are based on the averages for the triennium 1942-43 to 1944-5. Based on the Season and Crop Reports. The figures exclude the States.

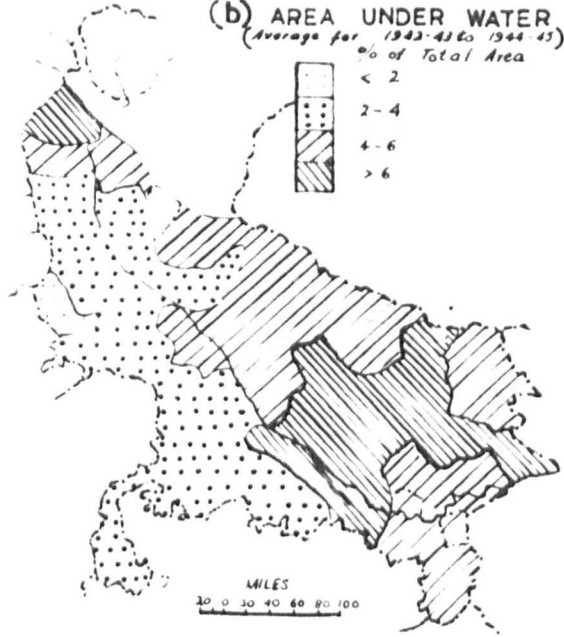
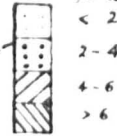
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(a) NET AREA SOWN
(Average for 1942-43 to 1944-45)



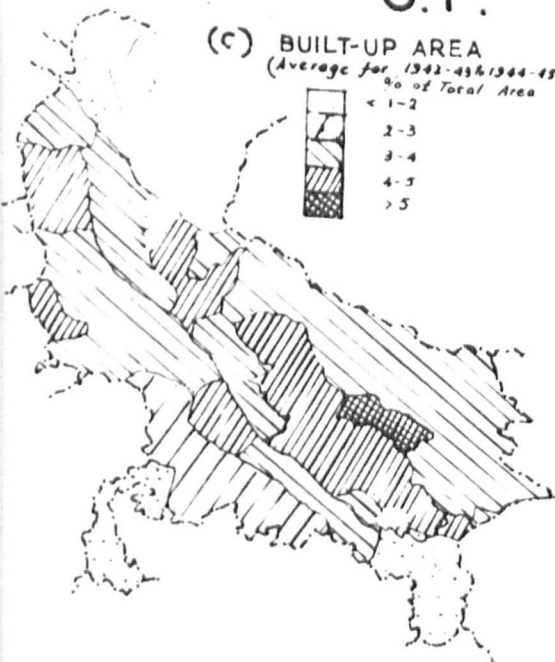
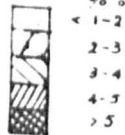
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(b) AREA UNDER WATER
(Average for 1942-43 to 1944-45)



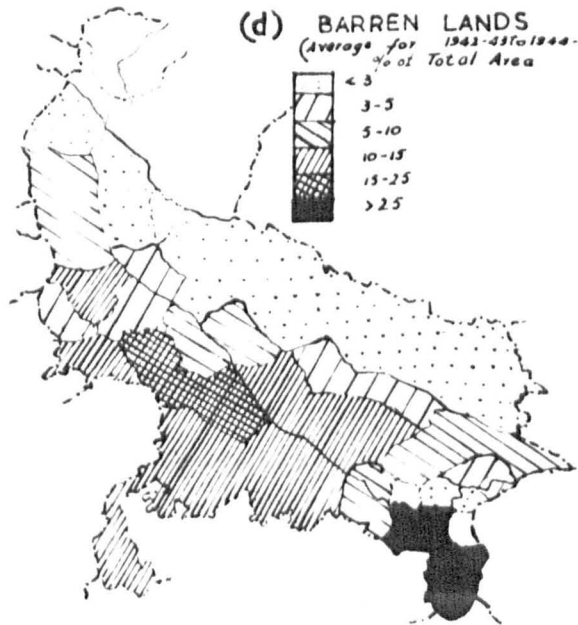
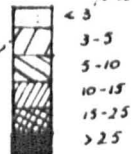
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(c) BUILT-UP AREA
(Average for 1942-43 to 1944-45)



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(d) BARREN LANDS
(Average for 1942-43 to 1944-45)



of the relief, soils and water supply. The proportion is least in the Himalayas, Bhabar and the Foreland. In the plains which are cultivated to almost every arable acre there are two tracts with over 70% net area sown. One of them includes ^{the} ~~five~~ eastern districts and the other covers a roughly triangular area between the Jumna and Deoha. There is not a single district in the plains except ~~where~~ the forested districts of Pilibhit and Keri where the cultivated area does not exceed 50% of the total area. The proportion of water-covered area is the maximum in the central and eastern districts between the Ganges and Gogra. ^(fig. 12b) Apart from the rivers which converge in this area there are numerous depressions, parts of which are permanently covered as Jhila. The proportion of water-surface decreases in the west and south-west but north of the Ganges as far as Bhabar it is between 4 and 6 per cent of the total area of the districts. The proportion of the built-up area is greater in the Ganges-Gogra Doab than elsewhere. ^(fig. 12c) Next in this respect comes the Doab. If a line coincident with the lower course of the Gogra (where it borders Gonda, Basti and Gorakhpur districts) were drawn across the province, north of this line (which roughly coincides with the isohyet of 40 inches) the percentage of barren lands to the total area is less than three; while to the south it rapidly increases till it becomes 25 in the ~~near~~ tracts of the Doab, while this percentage is still higher in the South-Eastern Uplands. ^(fig. 12d) Double-cropping, an index of plenty of water, soil fertility, and density of population is more marked in the Eastern Ganges-Gogra Doab, Trans-Gogra Plain and the Upper Doab than elsewhere. ^(fig. 14a) It is least in the Himalayan area and Bundelkhand.

The distribution of crops varies greatly according to the distribution of rainfall. There are four distinct crop

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FOOD-CROP REGIONS (APPROXIMATE)

(Based on the average for 1942-43 - 1944-45)

1. RICE AS THE MOST IMPORTANT CROP

- 1a. WHEAT AS THE NEXT MOST IMP. CROP
 1b. GRAM " " " " "
 1c. BARLEY " " " " "
 1d. GRAM " " " " "

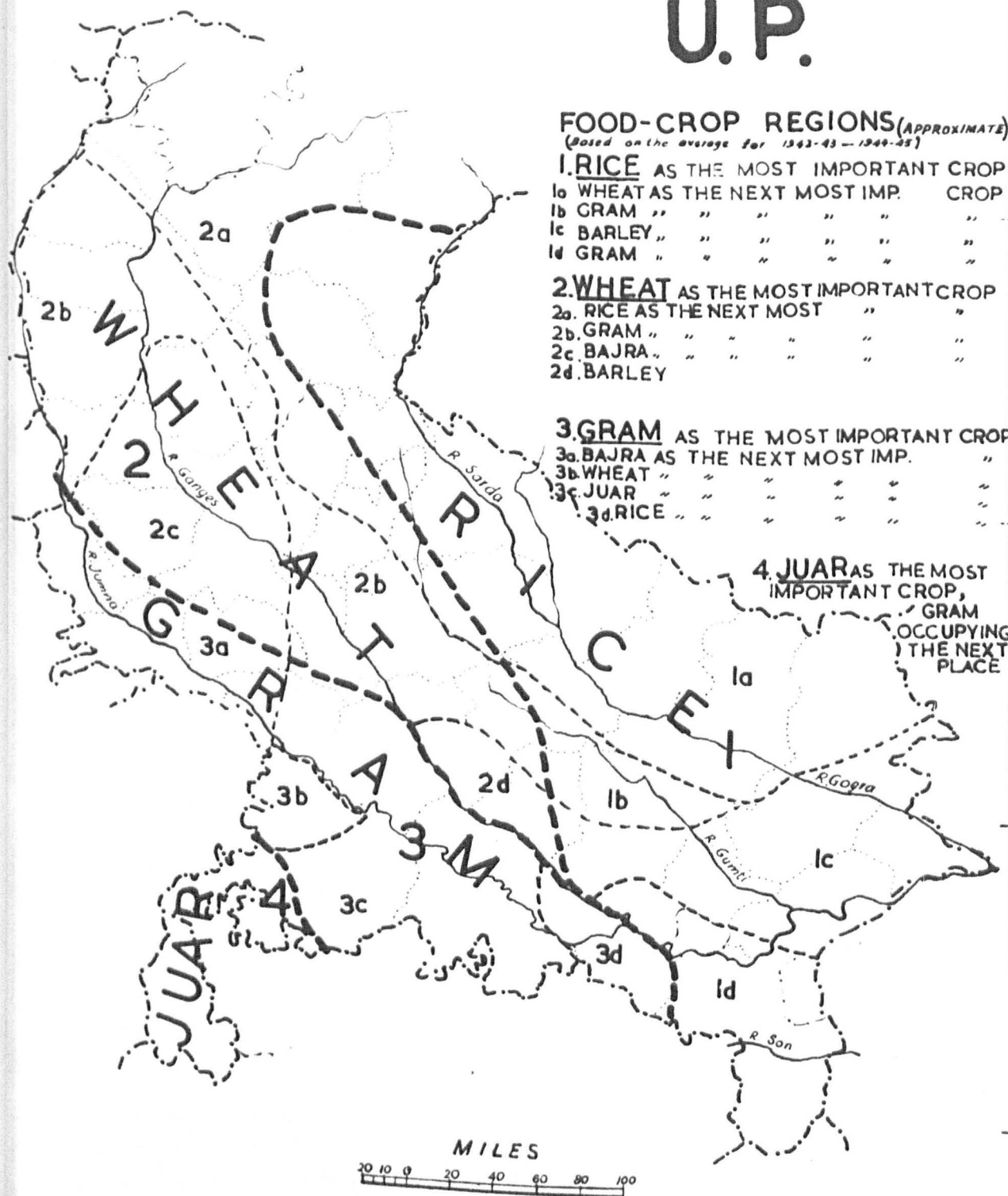
2. WHEAT AS THE MOST IMPORTANT CROP

- 2a. RICE AS THE NEXT MOST " "
 2b. GRAM " " " " "
 2c. BAJRA " " " " "
 2d. BARLEY " " " " "

3. GRAM AS THE MOST IMPORTANT CROP

- 3a. BAJRA AS THE NEXT MOST IMP. "
 3b. WHEAT " " " " "
 3c. JUAR " " " " "
 3d. RICE " " " " "

4. JUAR AS THE MOST
 IMPORTANT CROP,
 GRAM
 OCCUPYING
 THE NEXT
 PLACE



1 regions (Fig. 13). East of a line passing through Allahabad and western borders of Maini Tal and Almora districts Rice is the most important ~~crop~~ crop according to acreage. This region can be subdivided into four sub-tracts according to the next most important crops. They are in order from north, the areas with wheat, gram, barley and gram respectively. The second crop region with Wheat as the predominant crop lies to the west of the Rice region and is bordered on the south by the Ganges from Allahabad to Unao and thence westwards by a line passing through Middle Doab towards Delhi. This region too is divisible into four sub-areas. In the Himalayan² and sub-Himalayan^{area} in the west area as far as Sitapur, rice is the second most important crop. The succeeding southern area has gram as the crop next to wheat. The tract roughly included by the isohyet of 30 inches has Juar as the next most important crop while in the south-eastern districts of the Wheat region barley stands second to the former crop. The third main region with gram as the predominant crop lies north of Jhansi district bounded on the north by the Ganges and the wheat region ⁽⁶⁾ ~~rainland~~ and on the east by the Vindhyan Uplands. In the sub-areas of this region Bajra, Juar and rice take the place next to gram according as the rainfall increases from west to east. The Betwa Canal area in Jalaun district with wheat as the second most important crop is a sort of outlier in this poor-crop region. In the fifth region (Jhansi district) Juar is the most important crop, gram occupying the second place.

1 The map is based on the average for the triennium (1942-43 - 1944-45). Only district-wise figures are available. In order, however, to get a tangible picture strict accuracy has been sacrificed in the drawing of the crop boundaries.

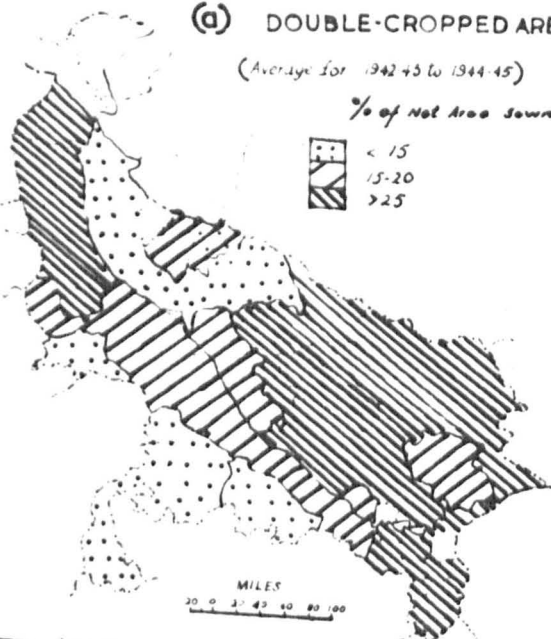
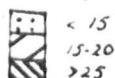
2 Of almost equal importance in the Himalayan districts is the millet known Mandua.

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(a) DOUBLE-CROPPED AREA

(Average for 1942-43 to 1944-45)

% of Net Area Sown

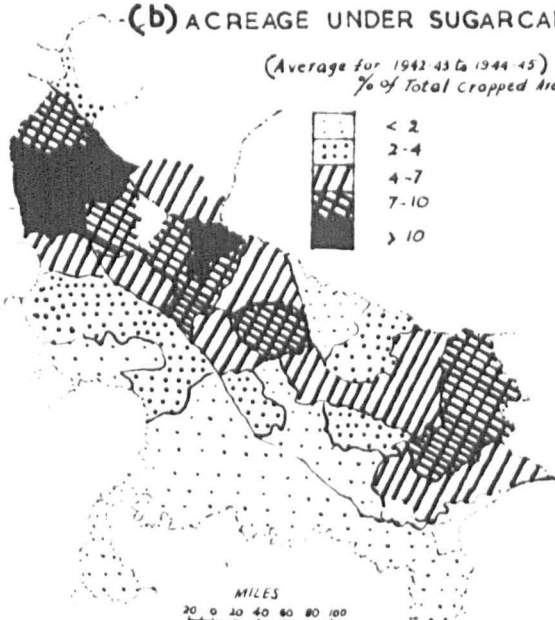
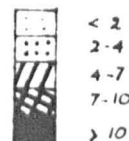


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(b) ACREAGE UNDER SUGARCANE

(Average for 1942-43 to 1944-45)

% of Total Cropped Area

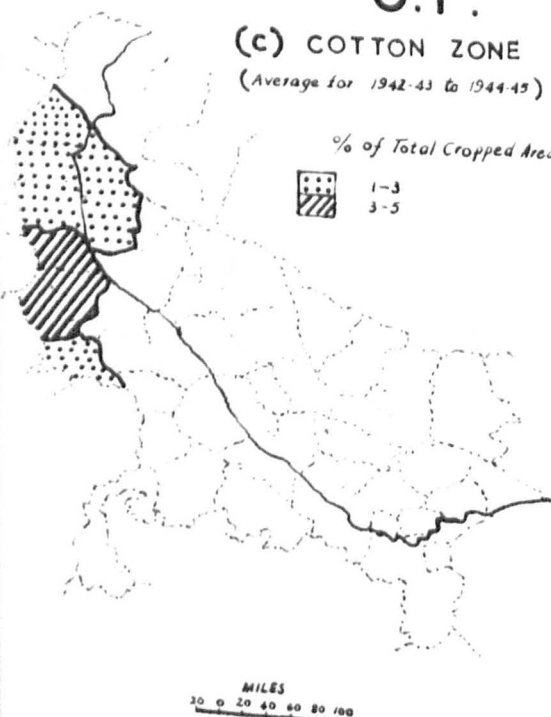


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(c) COTTON ZONE

(Average for 1942-43 to 1944-45)

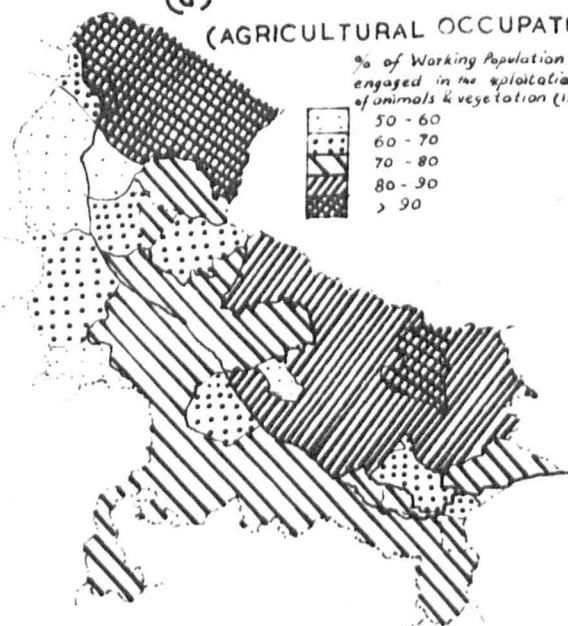
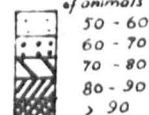
% of Total Cropped Area



U.P.

(d) (AGRICULTURAL OCCUPATION)

% of Working Population engaged in the exploitation of animals & vegetation (1931)



Of the cash crops sugar-cane is the most important (Fig. 14b).

It is chiefly grown in the plain area roughly north of a line passing through Benares, Lucknow and Aligarh but vies in acreage with food crops in the northern districts between the Saran and Jhansi and in the eastern districts of Basti, Gorakhpur, Azamgarh and Ballia. Cotton is grown mainly in the nine months western districts as shown on the map (Fig. 14c). The crop, however, has been losing its importance so that while the annual acreage under cotton during the three years ending 1944-45 was 295,000, the normal area (average of 1901-02 to 1930-31) had been 1,075,000 acres. Oilseeds occupy an acreage roughly half of that under sugar-cane and are grown mainly on the 'Foreland' and in the eastern districts of the province.

Means of Communication.

(figures 15 and 16)

Lines of communication reflect to a great extent the physical nature of the various parts of the province. In the rugged Himalayas rivers are full of rapids, and too narrow and swift for navigation. Notable roads are few in number reaching only the towns on the Outer Himalayas. Tracks follow the valleys or the ridge-tops but avoid steep slopes. In the inhabited Dun roads lie mainly along the length of the valleys and cross the Siwalik Range at a few gaps. In the Bhabar and Tarai zone the network of roads and railways is relatively thin. In the rest of the Ganges Plain the net is relatively thick in the Doab and Ganges-Cogra Doab. The main lines of communication, running parallel to the rivers reflect the slope of the country. To avoid the difficulties of bridging and the low khadar liable to floods railways avoid crossing the main arteries of drainage except at favourable and unavoidable points. Where the Khadar is wide we find belts on the side of rivers relatively vacant of lines of

Fig. 15

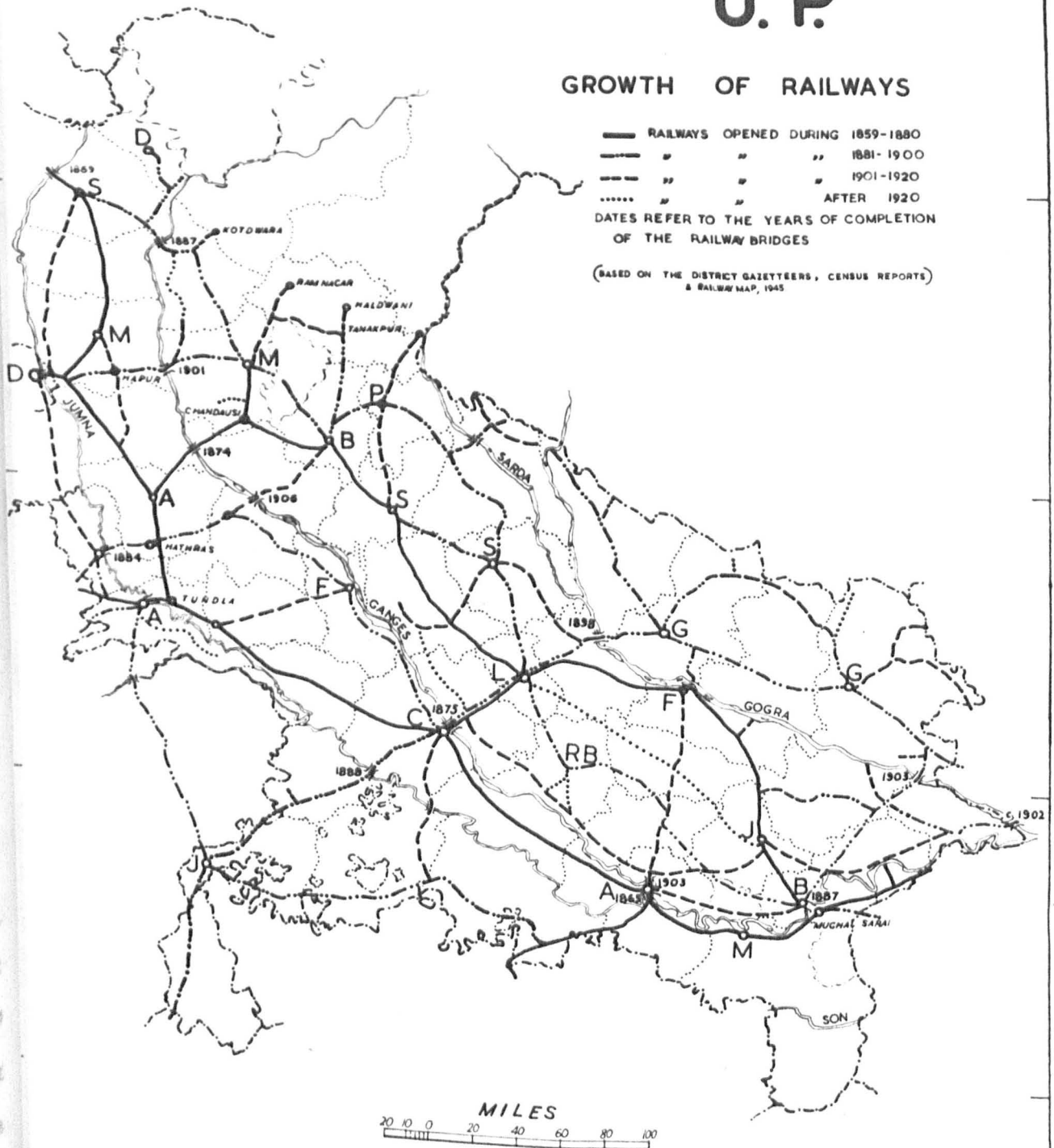
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GROWTH OF RAILWAYS

— RAILWAYS OPENED DURING 1859-1880
 - - - " " " 1881-1900
 - - - " " " 1901-1920
 " " " AFTER 1920

DATES REFER TO THE YEARS OF COMPLETION OF THE RAILWAY BRIDGES

(BASED ON THE DISTRICT GAZETTEERS, CENSUS REPORTS & RAILWAY MAP, 1945)



communication. On the hilly and wooded tracts of the Foreland the communication net is relatively thin. The progressive growth of railways is shown on the map. (Fig. 15).

Among the most important metalled roads (Fig. 16) of the province are the Grand Trunk Road and its Agra branch, the Saugor-Jhansi-Cawnpore road continued in the east via Lucknow and Fyzabad to the Trans-Gogra Plain, the Rohilkhand-Muttra trunk road, Bareilly - Moradabad-Hapur - Delhi road, and its continuation in the east via Sitapur and Lucknow to Rae Bareilly and Jaunpur, Allahabad - Fyzabad and Allahabad - Lohrighat roads and the Great Deccan Road.

The main rivers of the plain and the main canals are navigable by country boats. Navigability of the Jumna and Ganges particularly in their upper courses has been reduced owing to the diversion of water into the canals. Steamer service is confined to the lower course of the Gogra (east of Barhaj). The plateau streams, owing to their greatly variable regime and greater gradient are almost unfit for river traffic.

Industries.

Owing to the importance of industries in relation to settlements, particularly towns, it is necessary to consider, here, briefly, the industries of the province. The industries are divisible into two main categories viz. (1) 'factory' industries and (2) small-scale and cottage industries.

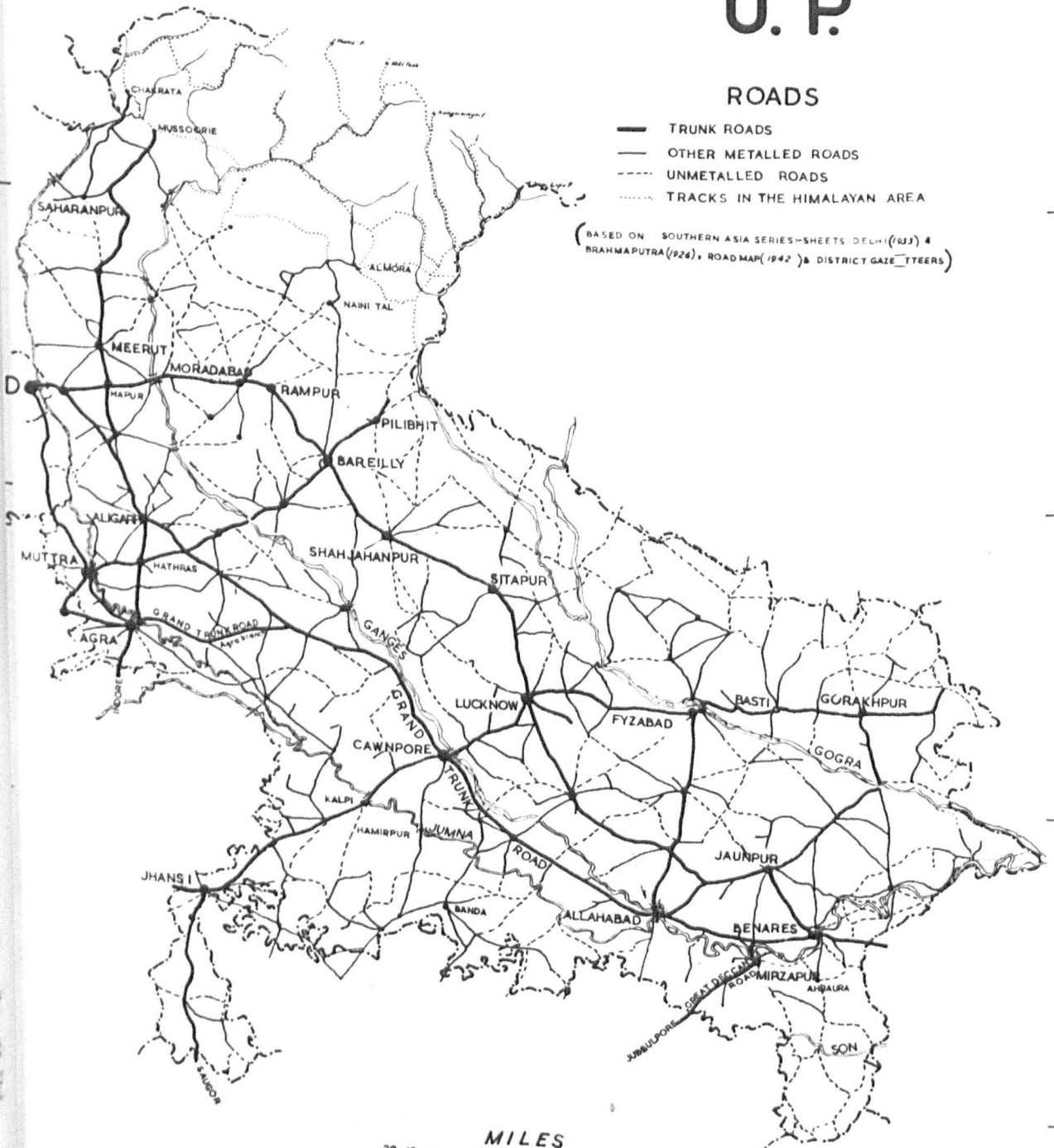
¹According to the Factories Act, 1934, any premises employing 20 or more workers daily and using some sort of power is called a factory. The Factories Act, 1934, as modified up to the 1st August, 1946, (Delhi, 1946) Section 2;

U. P.

ROADS

- TRUNK ROADS
- OTHER METALLED ROADS
- - - UNMETALLED ROADS
- TRACKS IN THE HIMALAYAN AREA

(BASED ON SOUTHERN ASIA SERIES—SHEETS DELHI (823) 4
BRAHMAPUTRA (826), ROAD MAP (1942) & DISTRICT GAZETTEERS)



In 1941 there were 670 factories¹ in the province employing an average of 230,859 daily workers. The distribution of the workers is shown on the map (Fig. 17). The most important areas in respect of 'factory' industries are the Doab, Rohilkhand, the districts of Agra and Muttra and a small zone along the Ganges between Allahabad and Benares. While the sugar industry is one of the main causes of the concentration of the industrial workers in the Upper Doab and Rohilkhand, it is almost the only factory industry in Kheri and Sitapur districts and the Trans-Gogra Plain. The areas where factory industries are practically non-existent are the Himalayan region, the districts of Ganges-Gogra Doab east of Lucknow (save Benares and a few other small towns) and Bundelkhand (except the city of Jhansi). The factory industries of the province, except sugar manufacture, are mostly concentrated in towns, mainly large towns, so that about 68% of the workers were concentrated, in 1941, in 16 (Fig. 17) towns (with factory workers numbering 2,000 and over) all of which except three viz. Hathras, Firzabad, and Bhadoi in Benares State, had a population of over 50,000 at the last census.

According to the statistics of 1941 the textile industries employing 86,789 persons or 37.6% of the total number of factory workers were the most important. Of the workers engaged in textile industries 61.6% were located in Cawnpore alone and another 28% were distributed among the cities of Agra, Benares, Lucknow, Shahjahanpur, Rampur and Hathras. Food industries with 56,809 employees or 24.6% of the total factory workers occupied the next place, and 86% of the persons engaged in food industries were employed

¹ Large Industrial Establishments in India, 1942 (Delhi, 1946).

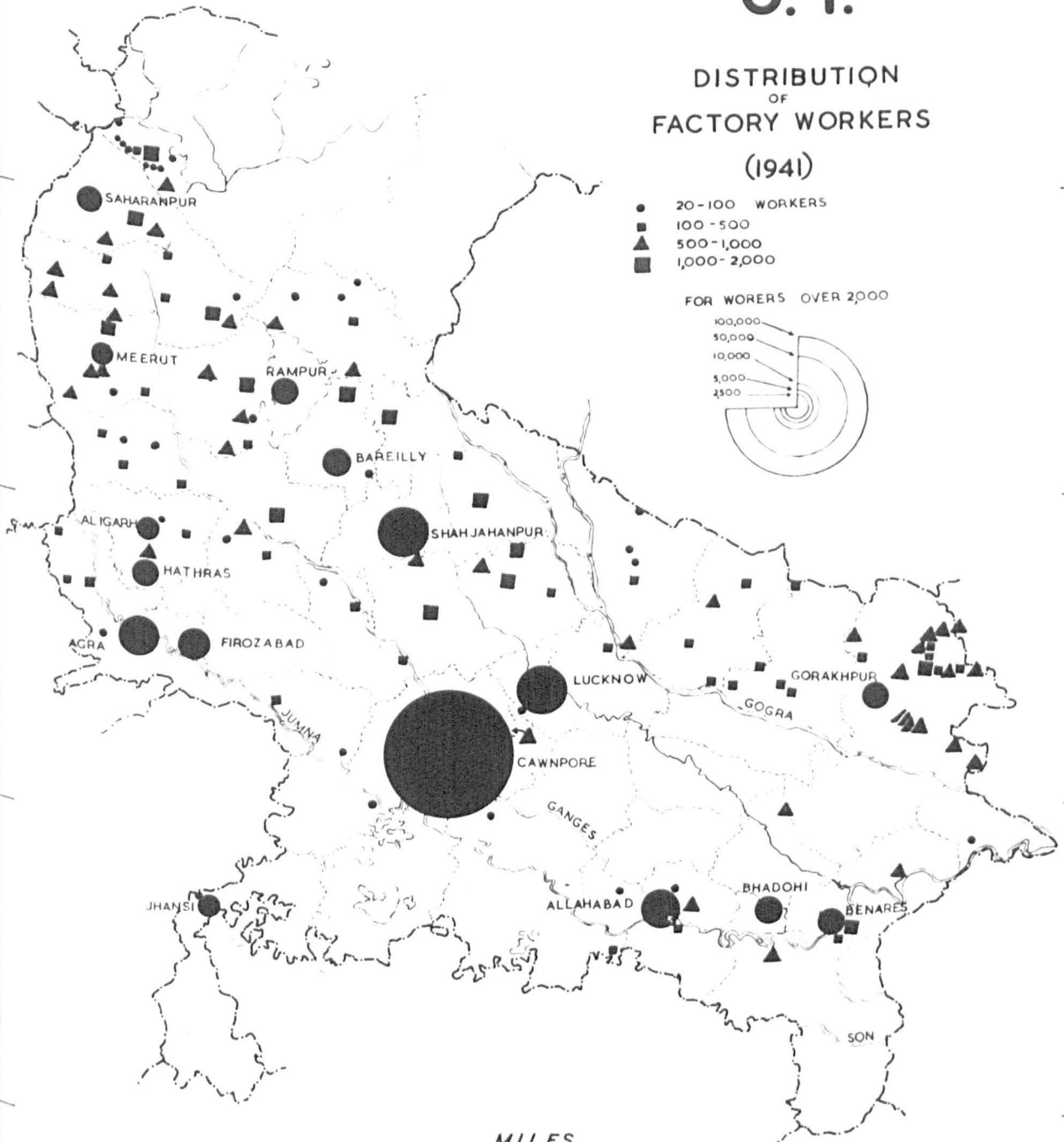
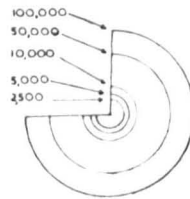
Fig.17

U. P.

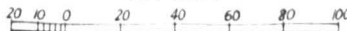
DISTRIBUTION OF FACTORY WORKERS (1941)

- 20-100 WORKERS
- 100-500
- ▲ 500-1,000
- 1,000-2,000

FOR WORKERS OVER 2,000



MILES



in sugar factories. There were 93 sugar factories, seven of them perennial and the remaining seasonal. 15 of the sugar works were small, mostly open-pan, engaging except in two cases less than 50 workers. Of the remaining 78 factories each engaged an average of 622 workers. The sugar factories are mostly located in the main cane zone which lies north of a line coincident with the lower course of the Gogra. Within this tract there are two areas where the factories are relatively concentrated: (a) The Trans-Gogra area east of Bahraich district with 36 factories and (b) The Upper Doab, and western Rohilkhand (Bijnor, Moradabad and Bareilly districts and Rampur State) with 27 factories. Gorakhpur with 27 factories is the most important district in respect of sugar industry.

Engineering along with the working of 'minerals and metals' employed some 27,000 persons or 11.7% of the total factory workers of the province, and the majority (54%) of them were employed in railway workshops. The other broad groups of industries employing 5.7, 4.1, 3, 2.9, 2.3, and 8.1% respectively of the factory workers of the province respectively were (i) 'processes relating to wood, stone and glass' (ii) skins and hides, (iii) paper, printing and bookbinding industries, (iv) chemical industries, (v) ginning and pressing and (vi) 'miscellaneous' industries. About 60% of those engaged in 'processes relating to wood, stone and glass' were occupied in glass industry and about 60% of the glass workers were located at Pirozabad, the other notable but much less important centres being Naini, Sasni (in Aligarh), Bahjoi (in Moradabad) and Balawali (in Bijnor). In the case of the leather industry 88% of the workers were concentrated in the cities of Cawnpore and Agra. About 76% of the workers engaged in the paper mills, printing and bookbinding establishments were confined to

the four cities of Allahabad, Lucknow, Meerut and Saharanpur. While the latter three contained paper mills the large number of such workers in Allahabad (1958 persons) was mainly due to printing presses. Among the chemical industries the most important was oil milling employing 60% of the persons engaged in these ~~indust~~ industries. The majority of the oil mills were located in the ^{Ganges Canal Hydro-electric grid zone of the} Doab, and the districts of Agra and Muttra. Most of the gins and presses were located in 'western U.P. in and near the cotton and the 'Grid' area zone of the province. Among the 'miscellaneous' industries, employing 18,823 persons, the most important were the ordnance factories (accounting for 76% of the workers in this group) and of the latter the largest was the Harness and Saddlery factory (10,388 workers) at Cawnpore.

"Perhaps in no other province in India do cottage industries still occupy such a relatively important position in the total industrial system as they do in the United Provinces. The number of cottage workers is about 25 times the number of factory workers".¹ The 'hand textile' (cotton, silk and wool handloom weaving, and calico-printing) is the most important of the cottage industries.² According to the census of 1935 the industry employed 735,185 workers and there were about 214,000 handlooms in the province.³

The handloom industry is scattered all over the province (except in the Himalayan districts where the number of looms⁴ is small) but there are two important zones (Fig. 18) viz. (i) a western zone consisting of the

¹ Commercial Directory of the United Provinces, 1941-42 (1941), p. 19.

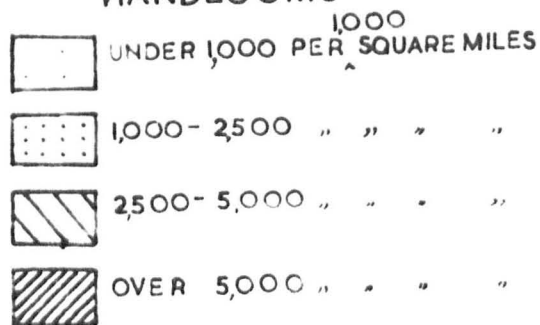
² Ibid, p. 20.

³ Ibid.

⁴ Report of the Fact-Finding Committee (Handloom and Mills, Calcutta (1942), pp. 312-314.

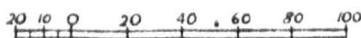
U.P.

HANDLOOMS



(BASED ON THE 'REPORT OF THE
FACT-FINDING COMMITTEE -
HANDLOOMS & MILLS', 1942)

MILES



Doab districts of Muzaffarnagar, Meerut, Bulandshahr, Aligarh, the districts of Agra, Bijnor and Moradabad; (ii) an eastern zone formed by the districts lying immediately south of the Ganges and Gogra viz. Sitapur, Bara Banki, Fyzabad, Azamgarh and the districts of Benares and Mirzapur. Though the industry is partly carried on in villages it shows a relatively great concentration in towns,* both large and small and it is probably owing to the occurrence of important handweaving towns that the proportion of handlooms is relatively high in the zones mentioned above. In towns the weaver found the patronage of courts and upper classes, the financier and marketing facilities in the past. Again, after the growth of communications and extension of the market, and the change from handspun to mill yarn in the nineteenth century it has been profitable to the weaving communities to pursue their profession in towns.

About 66%, 13% and 21% of the handlooms are devoted respectively to cotton, wool and silk weaving.¹ Among the main centres of handloom industry are Benares, Mirzapur, Mau and Mubarakpur in Azamgarh district, Tanda in Fyzabad, Amroha, Najibabad and Nagina in Bijnor, Deoband, Sikandrabad in Bulandshahr, Aligarh, Agra, Etawah and Ranipur in Jhansi.²

Metal working industries viz. making of brass and copper utensils, artistic brasswares, locks and cutlery etc. employ some 150,000 workers³ who are confined mainly to cities and towns. Woodworking gives employment to some 250,000 persons. Leather industry employs about 125,000 persons.

¹ 'Report, Fact-Finding Committee' (op.cit.). p. 30.

² ^{1911 H. 65-67} Commercial Directory, (op.cit.), p. 20. United Provinces, Vol. VIII, Part II.

³ Figures for workers in cottage industries, given in this paragraph are from the Commercial Directory, pp. 19 - 25.

Pottery engages some 250,000 persons.

The manufacture of glass bangles on a cottage basis occupies several thousand persons at Firozabad and some smaller towns in Aligarh and Bijnor districts. The making of 'gur' is an important subsidiary occupation of the agriculturists. The importance of this industry can be realized from the fact that the province consumed 55.5% of its cane crop in gur making and supplied 78.2% of the gur produced in India during the four years ending 1938-39.¹ The manufacture of 'khand' (^{refined} indigenous sugar) is an important industry in Rohilkhand, Benares, and Meerut Divisions.² There are several other cottage industries e.g. making of ornaments, oil-pressing, manufacture of smoking and chewing tobacco distributed in the towns and villages of the province.

Occupations of the People.

From the Census³ of 1931, when the total population of the province was 49.6 millions the following facts about occupations can be derived. Of the total population of the province the working population (earners and working dependents) was 49%, the remaining 51% being non-working dependents. The most important occupation was agriculture (exploitation of the population engaged in ordinary cultivation of crops and rearing of animals and vegetation) engaging about 76.2 % of the working

1. Report on the Marketing of Sugar in India and Burma. (Dehli, 1943), p.

2. Ibid., p. 32-33.

3. Turner, A.C., Census of India, 1931, United Provinces. Vol. XVIII. Pt. II. Tables, pp. 217-281. Occupations and other important items have been omitted in the Census Tables of 1941: only one percent of the population

population. Within this were included those (2.6%) engaged in market-gardening, stockraising and forestry etc. Thus ordinary cultivation engaged 73.6% of the working population. Industry, trade and transport engaged 11.1, 4.7 and .8% while the remainder of the working population was employed in public administration, domestic service etc. (~~exploitation of animals and vegetation~~).

Though agriculture (exploitation of animals and vegetation) is by far the most important occupation in every district the percentage of working population engaged in it varied (Fig. 14a) from ⁹⁰60 in the somewhat industrial districts of the west to over 90 in the almost purely agricultural districts of the Himalayan region. In the north-east of the ^{U.P. east} Sarda and north of the Ganges agriculture engaged 80 to 90 per cent of the working population. In the north-western districts of Saharanpur, Muzaffarnagar, Meerut, Bijnor and in the districts of Agra and Lucknow agriculture engaged only 50 to 60 per cent of the working population while in the remaining districts of the ^{Northern} Doab (Bulandshahr and Aligarh), as well as the adjoining ones of Dehra Dun, Muttra, Moradabad and Bareilly and the somewhat industrial districts of Cawnpore and Benares the percentage was 60 to 70. In the remaining area it was 70 to 80.

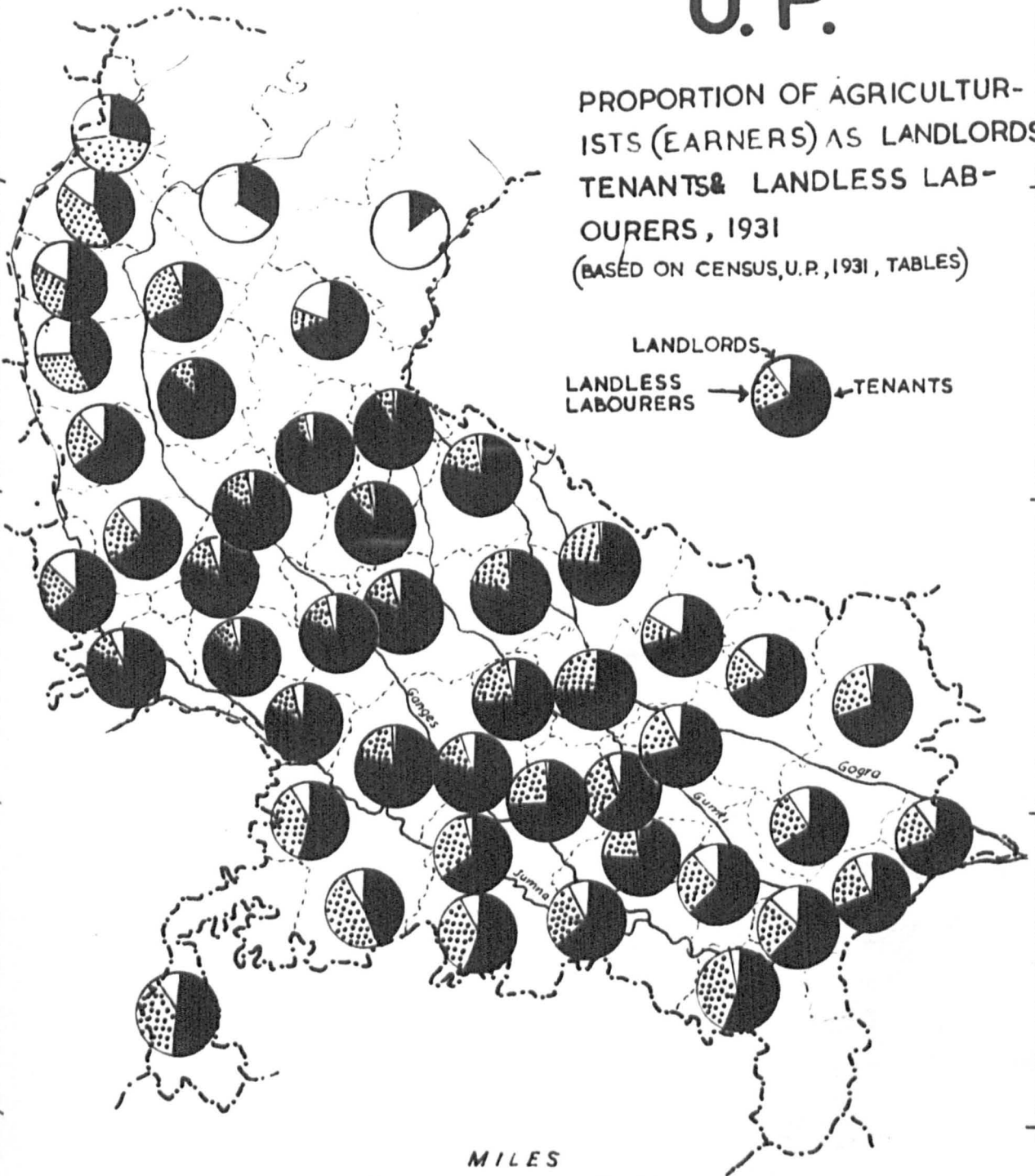
Of the population engaged in ordinary cultivation (earners only) 22% were landless agricultural labourers and ploughmen. They were more numerous in the districts of ^{the} Upper Doab, ^{the} eastern districts of the province, Mirzapur and Bundelkhand than in the rest of the Doab, Muttra and Agra districts and northern Ganges-Gogra Doab. Tenants were 67% and their distribution (Fig. 19) varies roughly inversely with that of the agricultural labourers. Non-cultivating tenants were only one percent while landlords formed about ten per cent of the agricultural earners. Of these, cultivating

U.P.

PROPORTION OF AGRICULTURISTS (EARNERS) AS LANDLORDS, TENANTS & LANDLESS LABOURERS, 1931

(BASED ON CENSUS, U.P., 1931, TABLES)

LANDLORDS
LANDLESS LABOURERS → TENANTS



landlords formed about 9% and the remainder consisted of non-cultivating landlords. The cultivating 'zaminders' (landlords or preferably landowners) were predominant in the Himalayan districts forming 37 and 65% in Almora, and Garhwal respectively while in Naini Tal, Meerut, Muzaffarnagar, and Saharanpur they formed 22, 28, 18 and 15% of the agricultural earners.

Historical conditions and the present and regional differences in respect of the various social and cultural aspects. In this chapter, we have the distribution and changes of population in relation to these social conditions of habitats. But before we start the study of the distribution and changes of population let us mention, in a relative manner, the position of the U.P. in comparison with other areas in India in regard of the total population.

In 1931 the population of U.P. (including Districts) was 54,68,236 which was 14.1% of the total Indian population. The province, therefore, constituted about one seventh (14.5%) of the total Indian population and one fourth (25%) of the area of the country. In respect of population the U.P. was second only to Bengal which had 67 million persons. Among the major political divisions the province ranked third in order of population (14%), Bengal (17%) and Bihar (12%) respectively occupying the

positions. The figures of population are taken from the Census of India, 1931 and the Census of India, 1921. The figures of area are taken from the Census of India, 1931. Statistics in this book have mainly been taken from these two sources. Older census returns wherever used have been given.

Almora, Garhwal, and Dehra Dun, with small areas, have been divided up into 1,000, 1,000 and 1,000 persons per square mile.

The 'average' persons per square mile, relating the figures of population to the area of the province, have been taken from the Census of India, 1931.

CHAPTER II.

POPULATION.

(Distribution and Changes).

In the foregoing chapter we have given a brief picture of the geographical environment and have noticed the regional differences in respect of the various natural and cultural aspects. In this chapter we study the distribution and changes of population in relation to these varying conditions of habitat. But before we describe and discuss the distribution and changes of population let us examine, for a relative picture, the position of the U.P. in comparison with other areas in India in respect of some broad facts about population.

In 1941 the population¹ of U.P. (including States) was 56,46,456 while that of India was 388,997,955. The province, therefore, contained about one seventh (14.5%) of the total Indian population over one fourteenth (7.1%) of the area of the country. In respect of population the U.P. was second only to Bengal which had 62 million persons. Taking the major² political divisions the province ranked third in order of mean density³ (518), Bengal (779) and Bihar (521) respectively occupying the

¹ The survey and settlement villages which is a parcel of the ground with Yeatts, M.E.M., Census of India, 1941, Vol. I, (Delhi, 1943) and B. Shrivastava, Census of India, 1941, Vol. V, U.P., (Delhi, 1942). Statistics in this have mainly been taken from these two sources. Older census volumes wherever used have been quoted.

² The Municipalities (U.P. Census under C.S. Act of 1944), Districts, Delhi, Cochin, and Travancore, with small areas, have mean densities of 1599.953 and 792 persons per square mile.

³ The 'words' persons per square mile, following the figures of density are to be understood here and henceforth. These facts refer to India before partition. The relative density of the dwellings, the importance of the place as a centre of trade, and its historical associations, the population and a Census Intendant decided to treat as census 1941 - B. Shrivastava, Census of India, 1941, Vol. V, U.P., (Delhi, 1942).

the U.P. is relatively low.

The bulk (49%) of the urban population lives in cities.¹ The next largest percentage of town dwellers (21.9)² live in small towns (with less than 10,000 persons). Towns with over 20,000 but not more than 50,000 and over 10,000 to under 20,000 persons have respectively 16.2 and 12.9 per cent of the urban population.

The rural population is very unevenly distributed among villages (mauzas) of various sizes in respect of population. Those with a population under 500 form more than two-thirds (67.1%) of the villages of the province containing 32.1% of the rural population and are the characteristic settlements of the Himalayan region, the Ganges-Cogra Doab and the Trans-Gogra Tract. Medium-sized villages contain a similar proportion (33.8) of the rural population. These, too, are predominant in the plain east of the Ganges, and in the Foreland region. The remaining rural population (34.1%) resides in larger villages which are relatively numerous in the Doab, the Trans-Jumna tract up to the Chambal confluence and the Upper Ganges-Gomti Doab.

The Distribution of Population.

There is considerable correlation between the major distributional patterns of population and the geographical features of the province. This becomes apparent when we compare the *foregoing* maps

¹ "A city is:-

(A) Any town whose population is not less than 100,000 and

(B) any other town which the Provincial Census Superintendent with the sanction of the Provincial Government has decided to treat as a city for census purposes A city includes the municipality and any adjacent cantonment, notified area and railway colony". Sahay, op. cit., p. 25.

² These percentages have been calculated after including the population of cantonments, railway colonies etc. in the towns to which they actually belong. They have not been treated as separate towns.

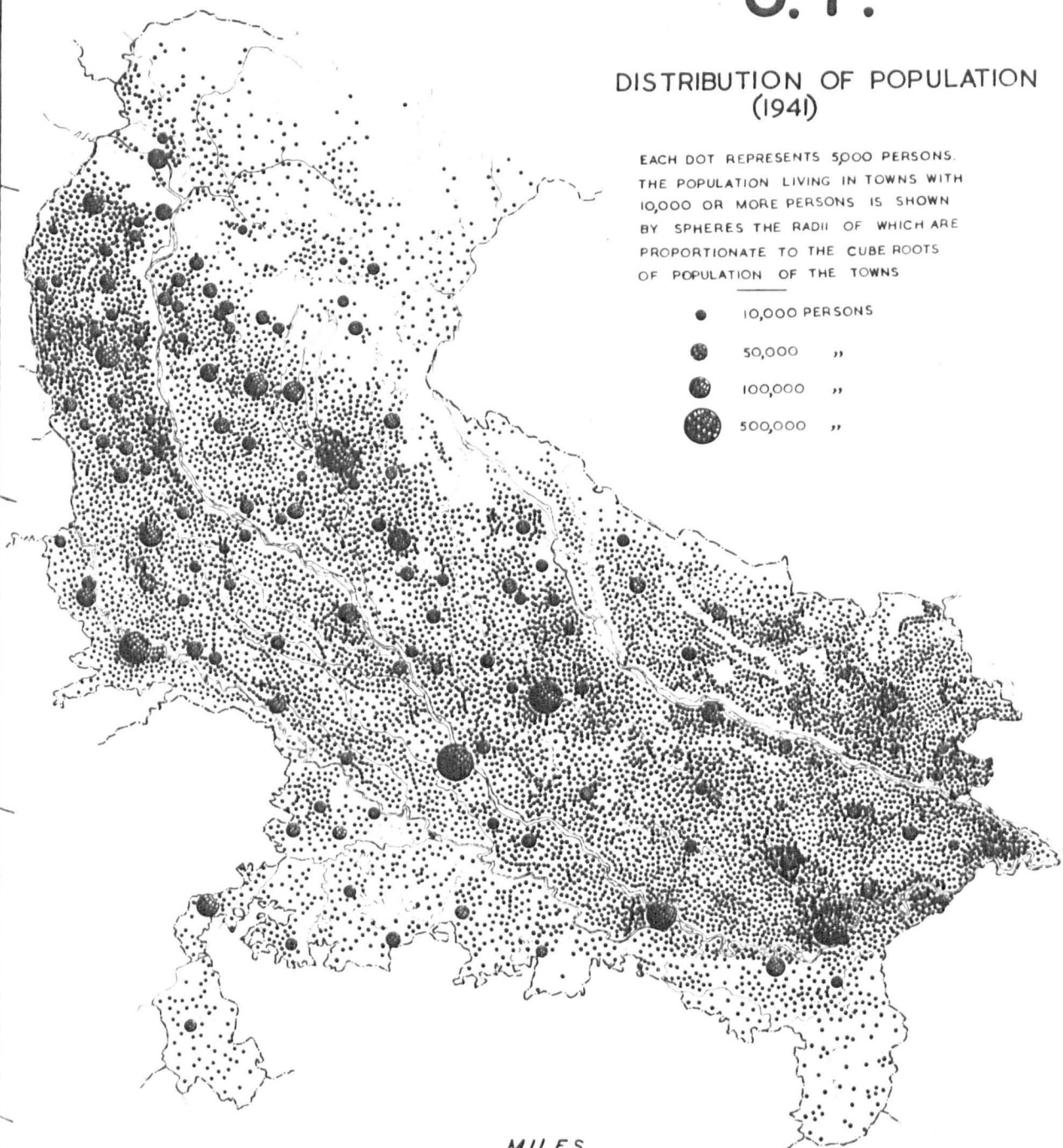
U. P.

DISTRIBUTION OF POPULATION
(1941)

EACH DOT REPRESENTS 5000 PERSONS.
THE POPULATION LIVING IN TOWNS WITH
10,000 OR MORE PERSONS IS SHOWN
BY SPHERES THE RADII OF WHICH ARE
PROPORTIONATE TO THE CUBE ROOTS
OF POPULATION OF THE TOWNS

- 10,000 PERSONS
- 50,000 "
- 100,000 "
- 500,000 "

MILES



with those¹ of density and distribution yet, in what follows,

we have in the first instance avoided discussing the distribution according to the physical divisions which might mean a forcing of the environment on the distributional pattern. Various grades of densities have, on the other hand, been taken as the basis of description. Thus the distribution itself has been left to suggest the conditions of the habitat. The urban population, living in towns whose population is not less than 10,000, has been shown side by side with the rural population. Both in the map of distribution and change use have excluded the towns with less than 10,000 persons because of convenience in mapping.

The Outline of Distribution.

(fig. 21)

The density map brings into prominence all the 'tahsils' (subdivisions of a district) with the largest cities of the province (viz. Cawnpore, Lucknow, Agra, Benares, Allahabad, Bareilly, Meerut, Moradabad, Aligarh, Shahjahanpur, Hathras and Jaunpur). The density in these 'tahsils' outside the cities may be taken as that of the surrounding areas. The most amazing agglomeration of rural population (density

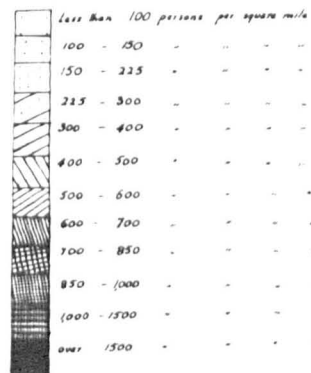
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The density map has been prepared by checking the boundaries of the 'Tahsils' according to the latest survey maps. The 'distribution' map has been prepared, being superimposed upon a base map in which wooded areas, most of the rivers, canals and large 'jhils' and glacial areas were shown. Other physical features e.g. relief, khadar, terai, bhabar, ravines, patches of widely disseminated usar lands, sand hills -

were taken into consideration while placing the dots. Both the density and distribution maps are complementary to each other. While the former affords a quantitative idea the dot map emphasizes the actual placing of population.

U. P.

DENSITY OF POPULATION
1941
according to Tahsil



1,000 - 1,500) is in the central 'tahsils' of Gorakhpur district. Even if we exclude the towns the density remains near about 1,000. This is the area of extreme overcrowding. The largest area of very high density (700-1,000) lies roughly east of a line drawn through the cities of Allahabad and Fyzabad. This eastern tract of the province has a density equalled or excelled in the Ganges Plain only by that of the plain of North Bihar west of the Kosi or the Delta districts of Bengal. Other areas of this grade of density are the central portion of the Doab and some 'tahsils' in Rohilkhand. Elsewhere the density in the Gangetic Plain is above 500 except in the following tracts:-

- (a) The Jumna Khadar and ravines.
- (b) The Aravalli area of Muttra and the Vindhyan Tahsils of Agra.
- (c) The area in the Doab with a considerable proportion of ugar lands extending over parts of Etah, Mainpuri, Cawnpore and Etawah.
- (d) The Ganges Khadar especially along the upper course of the river.
- (e) The Gunti-Gogra Doab in its northern portion and the adjoining Tarai tract.
- (f) The Trans-Jumna Plain of Bundelkhand.

Most of these 'excepted' tracts have a medium density (300 - 500). Areas of low density (225 - 300) are formed by most of Bundelkhand (between the Betwa in the west and Mirzapur tableland in the east).

The Himalayan and the Trans-Kaimur tract support a sparse population, while the area of the lowest density is the region of the 'Great Himalayas'.

The tahsils of Ramson Bhabar and Tarai have the lowest density in the non-Himalayan part of the province.

The Area of Extreme Overcrowding (Density over 1,000).

As noted above the central 'tahsils' of Gorakhpur lying along the Oudh and Tirhut Railway as well as the 'tahsils' of Jaunpur and Benares show an overcrowding of rural population. Apart from being a fertile agricultural tract the Gorakhpur zone has a large number of sugar factories in

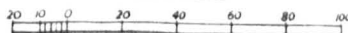
U. P.

MAP SHOWING *TAHSILS*

— — — DISTRICT BOUNDARY
TAHSIL "



MILES



villages and small towns. Other tahsils with this grade of density, ⁱⁿ U.P., are not an index of a rural overcrowding, the high density being due to the large towns.

Tracts of a Very High Density (700 - 1,000).

The major part of the eastern tract, mentioned above, with a density of over 700 and mostly ranging between 700 and 850 lies outside the ugar zone (Fig. 8). It is roughly delimited in the north-west by the partly wooded 'tahsils' of Central 'Sarju Par' where the Tarai is broader than it is in the east. Uncultivated wastes ^{except} in the ugar zone scarcely exist in this tract. It is the wettest part of the Ganges Plain most of it receiving an annual rainfall of between 40 and 45 inches. The soil is mostly loam or light clay suited both to Autumn and Spring crops. The proportion of wooded areas is negligible. ^(fig. 9) The percentage of the area under water being considerable (6% of the total area) the water-table is high resulting in a high density of wells used in or available for irrigation. The proportion of the area which is irrigated is, therefore fairly high. The area is characterised by a heavy doublecropping (Fig. 14a) the chief device to offset the growing pressure of population. This is pre-eminently a region of rice cultivation with wheat and barley (both being heavy yielding crops) as the next most important crops. ^(fig. 13) A dense population suits a rice region as the cultivation of this crop requires a large labour force in the preparation of nursery beds, ploughing and embanking of fields, transplantation of the seedlings and regulation of water at frequent intervals. While rice

flourishes on the lowlands the uplands are cultivated with barley in rotation with maize which again is chiefly a crop (with heavy yield) of this tract. So the nature of the crops too appear to have contributed to the great density of the area. The Trans-Gogra portion of this tract is one of the most important cane-sugar areas in India (in 1941) containing 31 factories within a triangular area, almost equilateral, with an 80 miles side.

As the 'distribution' map indicates the only relatively uninhabited areas in the Trans-Gogra portion of this zone are the wooded parts of the Tarai and the valley flats of the rivers especially the Gogra and the Rapti which are either sandy and liable to frequent alluvial and diluvial action or covered with tamarisk and thatching grass. They are temporarily populated during winter when huts are erected in the fields. Usar zone occupies the western part of this tract in the Ganges-Gogra Doab but the proportion of land actually covered by usar wastes is comparatively low.

Two other tracts of the same grades of density are located in (1) the central districts of the Northern Doab extending from southern Muzaffarnagar to Aligarh and (2) the Ramganga Valley (Moradabad and Bareilly districts). A close correlation exists between the shape of the first zone, and the 'Bhar' tracts of the area. (Figs. 2 & 21). In the north the zone is pushed to the west by the Bhar tract of Muzaffarnagar and Meerut while towards the south it lies east of the sandy areas of Bulandshahr and Aligarh. The second zone is aligned along the the and tubewell tract of the Ramganga Valley. There are four most important factors which appear to have contributed to the high density:- (a) the canal and tube-well irrigation

rendering agriculture secure (b) the Hydroelectric Grid, (c) the consequent industrial and (d) urban growth . . . The deficiency of rainfall (25 - 40 inches) is compensated for by the canal and tube well irrigation. Much of the bhur within the tube-well area has been reclaimed. The proportion of cultivated area is, therefore, as high as in the eastern districts. ^(49.12a) Double cropping, at least in the Doab zone is a little higher than in the eastern districts. ^(49.14a) The security afforded by irrigation and the high yield of wheat which is the main crop of the area renders the zone capable of supporting a dense population. While the northern half of the Doab zone and the whole of the Ramganga Valley belt lies in the area of the heaviest sugar-cane cultivation (Fig. 14b) in the province, the southern half of the former zone is by far the most important cotton area (Fig. 14c). Thus cash crops too contribute to high density. A glance at figure (4) will show that four out of the seven power stations and about three fourths of the Grid transmission lines are located in these zones. The Power is supplied to both the rural and urban industries. The importance of this tract in respect of industries is indicated by the map. (Fig. 17). These zones contain a relatively large number of towns which has considerably contributed to the high density. ^(49.20)

Within these zones, however, the distribution of population is not uniform. The Khadar along the Hindan and Kali rivers (where the percentage¹ of cultivated area varies from less than 20 to approximately 40) supports a somewhat sparse population. The bhur tract towards the south

¹ Cooke, G.H., Final Settlement Report of the Meerut District, (1940), p. 3, and S. Ahmad, Ali, Final Settlement Report of the Aligarh District, (1943), p.3.

west and north east of the Doab zone and along the inner streams has a density a little above 600. The relatively low tracts in the centre of the interfluvium east of the Upper Ganges Canal comes next having a density over 850 while the upland loamy tract forming the largest population proportion of the zone has 80% of the area under cultivation and supports a density as high as over 1,000.

Areas of High Density (500 - 700)

The succeeding grades of density (500 - 700) cover the largest area of the Ganges Plain extending west of Benares and Gorakhpur divisions to the Jumna in the south-west and the Tarai and Bhabar in north-west. The continuity of this density is broken mainly by the belt of the Ganges Khadar and the Doab usar tracts.

In the north of the Doab these grades of density cover a large part of Muzaffarnagar and ^{almost} the whole of Saharanpur. In the latter district one third¹ of the area is covered by Bhabar and Khadar. The Bhabar is partly wooded. The density of the Khadar tract is low owing to the small proportion of cultivable ground. In Muzaffarnagar too, about one fourth of the area is under Khadar and usar tracts. While the Bhabar tract in Muzaffarnagar has a density of about 700, the same tract in Saharanpur has a density of nearing 600 on account of this area falling beyond the reach of canals in its northern section.

Taking the zone of the density 500 - 700, in the *middle* Doab and the Trans-Jumna Plain we see that it is roughly limited on the east by the Ganges Khadar and usar tract, on the west by the Aravalli and Vindhyan

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Drake-Brockman, D.L.. ~~The Final Report on the Settlement Operations of the Saharanpur District, 1917 - 1920, (1921), p. 1.~~
The Final Report on the Settlement Operations of the Saharanpur District, 1917 - 1920, (1921), p. 1.

ridges and on the south by the ravines of the Jumna-Chambal interfluvium. The positive factors contributing to the high density of population are more or less similar to those in the northern part of the Doab. The negative or the limiting factors, however, that appear to have kept the density lower than in the Upper Doab zone are (a) the frequency of bare or scrubcovered ravines which are mostly composed either of Kankar (calcareous concretions) or sand, (b) a low and variable rainfall (25 - 35 inches), (c) occurrence of usar soils and (d) a deep water-table except in the central portion of the zone in the Doab where the high water level is associated with poorly drained, stiff clayey tracts, (e) and the consequent lower proportion of the area cultivated (50-70%).^(19.12a) Unlike the Upper Doab this tract is comparatively^a poor crop region with a larger acreage under gram and 'bajra' than wheat.^(19.13) If a section across this portion of the Doab were taken the population would be found sparse near the Jumna ravines, dense in the canal zones, less dense in the central depressions interspersed with usar and sparse towards the Ganges Khadar.

East and north of the Ganges, the zone of 500-700 density consists of three distinct areas:- (a) A central zone with a density below 600^{extending} from the borders of the Naini Tal Tarai to Sultanpur on the one hand and from the Ganges to the Nepal border in Gonda and Bahraich on the other, (b) A zone in the Ramganga-Ganges Doab and (c) a zone occupying central Oudh from Southern Gonda to Allahabad. In both of the latter zones the density is above 600.

The main cause of the lower density in the (a) zone is the presence in the districts of this area of considerable tracts of relatively low fertility where necessarily the density is lower than in the fertile loam tracts of the districts. Such tracts consist of areas infested with usar and Jhil, or soils with a great proportion of sand (bhur) or lower Khadar liable to inundation. The presence of these tracts makes the percentage of cultivated area in the zone lower than in the other parts of the Ganges-Gogra Doab except in its Sub-Himalayan portion. The following table¹ for selected districts shows the proportion of the different tracts and the extent to which they are cultivated:-

District	Tract	Percentage of the Total Area Under the Tract.	Percentage of the Tract Cultivated.
Budaun	1. 'Katehr' (Loam)	43	86
	2. 'Bankati' (Jhil and Usar)	10	70
	3. 'Bhur'	13	63
	4. 'Khadar' (non-alluvial)	26	60
	5. 'Khadar' (alluvial)	8	19
Hardoi	1. Loam	31	70
	2. 'Jhil and 'Usar'	25	53
	3. 'Bhur'	16	68
	4. 'Khadar'	28	64
Unao	1. Loam (upland) and <u>usar</u>	81	55
	2. 'Khadar' (lowland)	19	48
Sitapur	1. Loam	45	71
	2. 'Khadar'	34	68
	3. 'Bhur' and light soil	21	65
Gonda	1. 'Tarai'	30	76
	2. Loam ('Uparhar')	41	73
	3. 'Khadar' ('Tarhar')	29	64

¹ The figures in the table were calculated from the following sources:-
 (a) Waugh, A.A., Final Settlement Report on the Budaun District, (1929), p.4.
 (b) Sharma, B. " " " " " Hardoi " (1932) p.5.
 (c) Himmat Singh, " " " " " Unao " (1926-29) (1931) p. 3 and 7.
 (d) Abdual Hasan, S. " " " " " Sitapur " (1939) p.2.
 (e) Singh, J.K. " " " " " Gonda " (1944) p.2.

Conditions in the district of Lucknow are intermediate between those of Unao and Sitapur, while those in western Soltanpur are akin to those of the former district. The table ^{and figure 8} shows that a fairly high proportion of Bhur and Khadar tracts in the north-western districts of this zone and usar and Jhil tracts in south eastern districts account for the comparative fall in density. The proportion of the 'dhak' and tamarisk jungle is higher in this zone than in the rest of the Ganges Plain except the Tarai area.

The Ganges-Ramganga Doab zone occupying Dhampur tahsil (Bijnor), the central tahsils ^{of} Moradabad district east of the Khadar area, Bisauli and Budaun tahsils (Budaun) and the non-Tarai and non-Bhur tracts of Shahjahanpur has a density over 600 (while in the Tarai tahsils of Bareilly district and Rampur Saate the average density is lower by a hundred). The proportion of loam tract is greater in the area of higher density than in the remainder. Though a part of the tract falls under canal irrigation the presence of tube wells in the higher density area is probably the chief differentiating factor.

The other tract in this grade of density (over 600), as noted above, occupies an area extending from Bara Banki and South Gonda to the Ganges in Allahabad and Rae Bareilly. In South Gonda usar is unknown. Owing to the fertility of the silt the lowlying khadar tract of this district ^{as of Bara} is more densely peopled than the upland. In Bara Banki, too, usar is inconsiderable. The 'Bangar' consists of homogeneous loam while the Khadar except that close to the Gogra is densely populated.

In the remaining portion of this zone the factors for a high density of population are apparently less favourable. Figures¹ for Sultanpur, a typical district of this tract illustrates this point.

District.	Tract.	Percentage of the Total Area.	Percentage of the Tract Cultivated.
Sultanpur	1. Gumti (Khadar)	17	59.4
	2. <u>Dumat</u> (Loam)	33	62.7
	3. <u>User and Jhil</u>	50	56.6

Though the Khadar and phur occupy a very small area the proportion of user tracts is greater in the districts of Partabgarh, Rae Bareilly and Northern Allahabad. The high density (above 600) of this zone, however, as compared with the western tract presents an apparent anomaly. The rainfall and crop-region maps, ^(figures 7 & 13) however, explain this. The zone lies about the critical isohyet of 40 inches and falls almost entirely within the rice region. The factors that contribute (p. 42) to the high density of population in a rice tract are to a great extent responsible for the high density of this zone also.

Areas of Medium Density (300-500)

The areas with these grades of density are the Juma Khadar and ravines; the Aravalli and Vindhyan 'tahsils' of the Trans-Juma tract, the Betwa canal tract in Jalaun, the Ganges Khadar, the Doab user tracts, the Bhabar in the Ganges-Ramganga Doab, the northern part of the Gumti-Gogra interfluvium and the Trans-Ganges area comprising the plain and central irrigated tableland. The density map reflects regional conditions much more accurately where, by accident, a tahsil happens to fall wholly or even

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Calculated from the Final Settlement Report of District Sultanpur, Forham, J.A., (1940), p. 5.

partially in a natural tract. Thus the density of Nakur, (Saharanpur) lying parallel to the Jumna and only one-third of which is in the Jumna Khadar, ~~tracts of its~~ 499 whereas in the Deoband tahsil to the east, which is without Khadar the density is 617. One striking fact characteristic of the Khadar tracts of the whole province is a general absence of towns from them. This fact alone brings down considerably the density of the Khadar tracts. This tract (Nakur tahsil) may be taken as representative of the whole of the Jumna Khadar. The Ganges Khadar is similar to the Jumna Khadar in respect of population. Hasanpur tahsil (Moreabad) with a density of 379, almost half of which lies in the riverain tract is fairly representative of the whole Khadar. Both the Jumna Khadar (which is negligible south of Aligarh owing to the preponderance of ravines in the riverain tract) and the Ganges Khadar are more precarious in the north than in the south. Saturation, sandy soil, tamarisk scrub, and flood (e.g. 1924) are the usual drawbacks. While the percentage¹ of cultivated area in Meerut Khadar of both the rivers is only 17.6, that in Aligarh is 39.

The medium density of the Jumna ravines is obscured on the map by the presence of urban centres but Bah tahsil (Agra) almost half of which is under ravines has a density of 402 and is typical of the Jumna ravines up to the Chambal confluence.

Apart from being interspersed with usar the Doab (usar) tahsils are influenced by the Jumna ravines. They have a density between 400 and 500 and are thus more densely populated than the Khadar tract.

The low density in north Bijnor and the Terai tahsil of

Moradabad is in the main the result of the large proportion under forests, ^{see} the Ramganga Khadar and endemic malaria (i.e. Malaria Map of India facing p.33 in 'Census of India 1941, I').

The northern part of the Gunti-Gogra interfluvium and the adjoining tahsil in Bahraich (excepting the Sarda-Gogra Doab and Purnapur tahsil in Filibhit) have a medium density (300-500). The proportion of the Khadar which is usually subject to floods is large. The percentage of the forest ^(14.9) area in the districts of Filibhit, Kheri and Bahraich is 11, 16 and 12 respectively. Forests are almost totally uninhabited and the wet lowlying tracts make this zone a haunt of endemic malaria. Over 20,000 persons die¹ in Kheri district alone from malaria every year.

In the Trans-Jumna tract lying in this grade of density the population but for the Agra Canal would have been sparser because of the hills, a low rainfall, poor sandy soil and ravined topography. In western Jalaun the density is markedly above the rest of the plain of Bundelkhand owing to the presence of the Betwa Canal and growth of towns.

In the Trans-Ganges plain the density is almost as high as north of the river but above the 'ghats' (the northern scarps of the Vindhyan plateau) it varies according to relief and facilities for irrigation. The central canal tract of the Vindhyan tableland in Mirzapur supports a denser population than the rugged and wooded northern fringe. The only other area with this density (300-500) is the Jhansi tahsil owing mainly to the presence of the city.

¹ Viswanathan, V. Settlement Report of the Kheri District, 1942, p. 3.

Areas of Low Density (225-300).

The tracts within this grade of density are the wooded Tarai of the Sarda-Cogra Doab, the 'Tarai' tahsil of Kashipur (Naini Tal) and the Dehra tahsil (Dehra Dun). In the south such tracts lie on the precarious Vindhyan Uplands and ⁱⁿ Bundelkhand, a considerable portion of which is occupied by wooded or bare hills. The Sarda-Cogra Doab has only 46% of its area under cultivation ¹ and the density is 251. Conditions in Kashipur (Naini Tal) are similar. The Dehra tahsil requires especial mention as it contains the 'Dehra Dun' which is more densely populated owing to government canal irrigation than the other duns. The following table ² illustrates the conditions here:-

Name of the Pargana	Percentage of the Total area under the tract.	Percentage of the Tract Cultivated.	Remarks.
Eastern Dun	23	39	East of the watershed on the Dehra plateau.
Western Dun	47	43	West of the watershed in the Dehra plateau.
Hill Tract	30	9	North of the 'Dun' Valley.

The table shows that the cultivated tract lies mainly in the valley (between the Himalayas and the Siwalik Range). There are three relatively densely peopled zones (a) a belt from the Dehra Dun up to Mussoorie, (b)

¹ Settlement Report, Kheri, p. 2, op.cit.

² Gill, E.H.N., Final Report of Settlement and Record Operations in Tahsil Dehra, Dehra Dun District, (1941), p. 1.

the Asan Valley (W.Dun) containing almost double the population of (c) the Suswa Valley (an affluent of the Ganges in the eastern Dun)

In the precarious foreland tracts the wooded areas are predominantly unpeopled. Population is denser in the canal zones. In the hilly areas population is particularly located on the sides of small ridges and hillocks which have helped to impound drainage water into tanks. The density of ^(used in or available for irrigation) masonry wells is as low as 1 to 5 per square mile. Soil infested with 'Kans' (*saccharum spontaneum*), scarcity of water, ravines and rugged relief are here the limiting factors of density.

Areas of Sparse Population (density below 225).

Sparsely populated areas are (1) The Himalayan region, (2) The Tarai between the Ramganga and the Sarda and (3) the more precarious and remote tracts of the Central Indian Foreland.

The Purnapur tahsil (Pilibhit), only two-thirds of which lies in the Tarai, has a density as low as 72 while Kichla tahsil (Naini Tal) incidentally falls wholly in the Tarai Belt and is par excellence typical of the distribution of population in this natural tract west of the Sarda. It has density of 90, lower than that of Tehri State as a whole and is one of the most sparsely peopled tracts of the province. A high proportion of forests and swamps makes this area a haunt of 'hyperendemic' malaria and a considerable number of the once-inhabited sites have been abandoned. Haldwani (Naini Tal) tahsil which wholly lies in the Bhabar represents the condition of this natural tract. Here the density is still lower (73) owing, inter alia, to the great proportion of forest land. The inhabited tracts consist of small patches of cultivated areas irrigated by canals. Excepting the Great Himalayan Region this is probably the most thinly

populated area of the province. In the Himalayan area, where the climate varies from the Tundra type near the snow-line to the tropical monsoon type in the Duns, the density increases from west to east and north to south with the increase of rainfall. In the Great Himalayan region the density is lower¹ than 5 as most of the area is under snow. The only inhabited sites (containing some of the highest habitations of the world) are usually located between an elevation of 9,000 and 12,000 feet in the upper valleys of the Bhagirathi, ^{and} Alakhnanda rivers and more particularly in the Johar (Goriganga-), Dharma (Eastern Dhaul) and Byans (Upper Kali) valleys. In this montane desert "it is precisely along these rivers that the Bhotiya village lies"² In these narrow valleys (flanked on either side by snow-capped ridges) there is great fear of landslips and avalanches which not only destroy the terraced sides of the valleys but only often engulf the villages; and conditions of settlement are very hard. The tracts remains buried under snow from October to March during which period the inhabitants migrate to the Lesser Himalayan and Bhabar regions. A few poor crops like buckwheat and barley are grown on the glacial boulder and -mud soil, chiefly to supplement the income from trade with Tibet.

In the Lesser Himalayan Region the density increases from 5 or so in the north to over 200 in the south. The population is mainly

¹

Pant, S.D., The Social Economy of the Himalayans. (1935), p. 42.

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Atkinson, E.T., Gazetteer, North-Western Provinces of India, Vol. XII, Himalayan Districts, Vol. III, (1886), p. 89.

*These three rivers viz. Goriganga, Eastern Dhaul and Upper Kali, in order from west are tributaries of the Sarda river.

are concentrated along the valleys particularly on the slopes of ridges between an elevation of 3,000 and 7,000 feet. Here the habitability of a locality is determined by the gentleness of slope, the incidence of sun light and the possibilities of irrigation. The gentle slopes are fairly populated. The density of population is at its maximum on the middle and lower levels of the ridges (between 3,000 and 5,000 feet) which site is neither too damp and hot (as are the river beds) nor too cold (as are the hill tops).

The density is higher in eastern Almora owing to a higher proportion of level ground.

In the Foreland region the Kalpi tahsil (Jalaun) about ^{half} of which is included in the Jumna and Betwa ravine area has a density below ^{more or less} 225, and is typical of the Bundelkhand ravines. The presence of the wooded or bare hills in Karwi tahsil (Banda) and Chakasia (Benares State) and Gariaurtha 'tahsil' (Jhansi) brings the density of these areas still lower. The density of these areas still lower. The wooded tahsil of Lalitpur (Jhansi) has an equally sparse population (density being 169). The most thinly inhabited tracts of the region with a density below 150 are the Vindhyan tahsil of Mahroni (Jhansi) and the Trans-Kaimur tract of Mirzapur. About two-thirds of these areas are under totally uninhabited forests or scrubs. The population is confined to certain valleys and basins. In the ^{tract} south of Kaimur Range there are only five areas of considerable population viz. (1) the Son valley, (2) the Agori Basin, (3) the Kon Valley, (4) the Dudhi Valley and (5) the Singrauli Basin.

The Changes of Population

We have taken the last two decades (1921-41) for a study of the changes in the population and have very briefly commented at the end on the changes since 1881 when the first of the decennial censuses was taken for the whole province.* This choice has been guided by the following facts:

- (1) The period (1921-41) covers approximately the gap between the two Great World Wars.
- (2) The period is marked in the area by remarkable changes in the cultural environment - the most outstanding among these being:-
 - (a) The construction of the Sarda Canals (1928), one of the largest canal systems in the world.
 - (b) The completion of the Ganges Canal Hydro-electric Grid.
 - (c) The construction of about 1,600 tubewells in the Bhur tracts.
 - (d) The growth of northern U.P. as one of the largest and most productive sugar belts of the world (the number¹ of sugar factories rising from 11 in 1921 to 84 in 1941).
 - (e) A remarkable growth in large scale industry, the number of factories rising from 218² in 1921 to 670 in 1941.
- (3) The period has to a great extent been free from scarcities and famines. Owing to the frequency of epidemics and scarcities in the period between 1881 and 1921 the net increase of population in these four decades

¹ Annual Report on the Working of the Indian Factories Act in the United Provinces, for the Year 1923, (1924), pp. 8-9.

and Large Industrial Establishments in India, 1942, Delhi, (1946).

² Turner, A.C., Census of India, 1931, U.P., Vol. XVIII, Pt. I, Report (1933), p.52.

and Large Industrial Establishments in India, 1942. (1946).

* In 1872 only the Agra Province was enumerated, while the census in Oudh had been taken in 1869 (see Turner, A.C., Census of India, 1931, U.P.

was only 1.6 million or 3.6 per cent. The increase of population between 1881 and 1941 was 11.5 million or 25.6%. Thus the growth of population during the last sixty years (1881-1941) has been largely concentrated in the last two decades

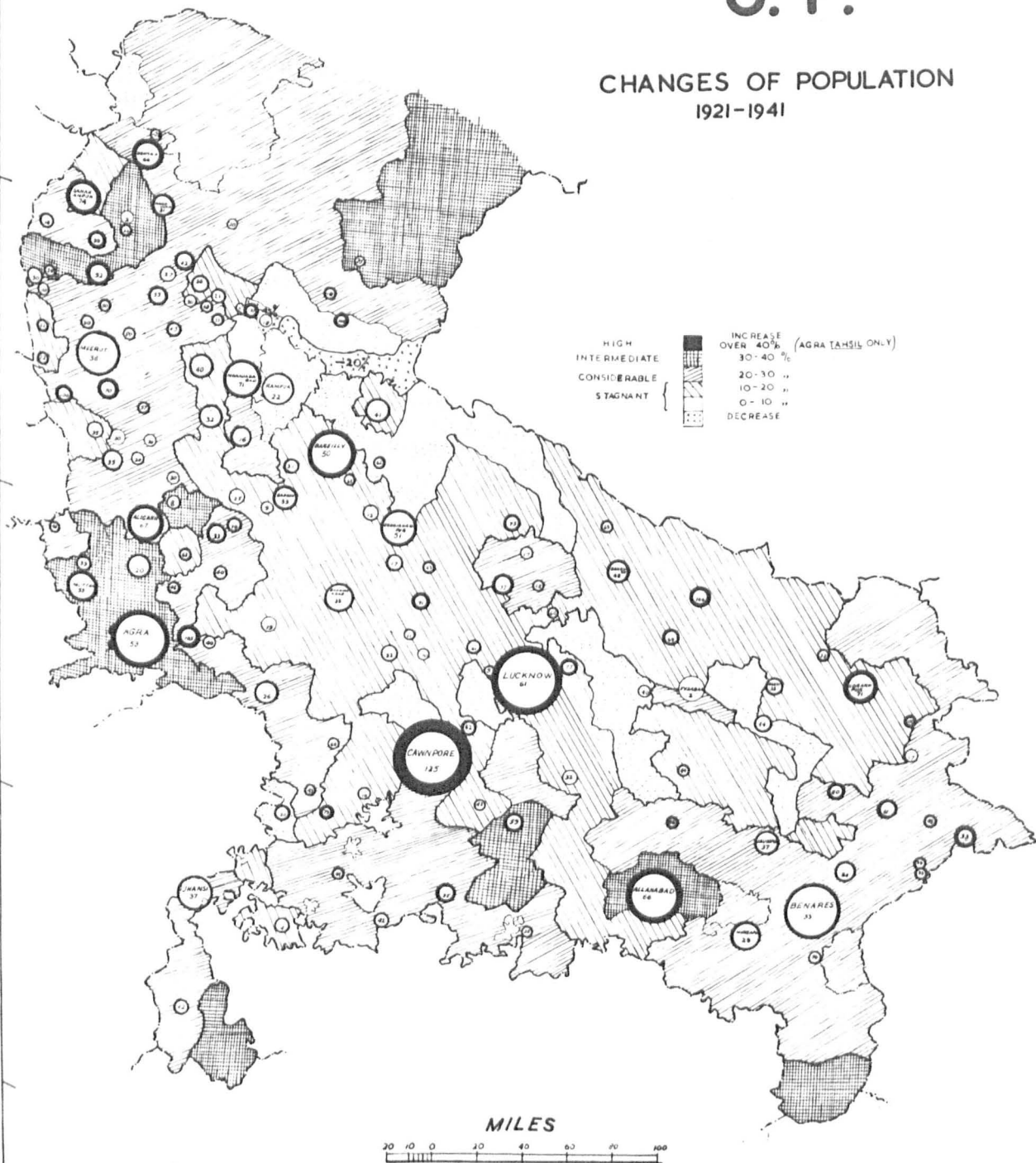
Though the population of the province as a whole has grown by 21.1% during the twenty years 1921-41, the distribution of this growth is very uneven not only among various tracts but also between the rural and urban population. This growth has meant, apart from the expansion of the already existing settlements, an addition of ten towns and 2,343 villages and a far larger number of hamlets within the boundaries of a large number of villages.

We may now examine the map showing the change (Fig. 23). An attempt has been made to depict the rural and urban change side by side¹ (The words 'rural' and 'urban' are used here in a restricted sense. ^{see} (footnote)

¹ In order to get a more or less complete picture of change the following method was adopted in the construction of the map. As in the density map the 'tahsil' was taken as the unit for statistics. The figure for larger towns (i.e. with a population not less than 10,000 persons) was subtracted from that of the total population of both the years (i.e. 1921 and 1941). Percentages of variation (which is to a great extent the variation of rural population) during the period was calculated. In order to get a generalised idea of the change only six grades of changes which largely correspond with regional conditions, have been taken and named in descending order as: high (over 40%), notable (30-40%), moderate (20-30%), low (10-20%), relatively stagnant (0-10%) and 'decrease' (the percentage of decrease having been noted in such tahsils). Percentage of variation for the towns was calculated separately and has been placed in the circles representing them. The radius of the circles is proportionate to the square roots of the population and the outer rims of circles indicate the extent of change.

U. P.

CHANGES OF POPULATION 1921-1941



Outline of Rural Change.

Taking the changes in rural population into consideration we note the following facts:-

- (a) High increase (over 40%) only in Agra tahsil. (This does not, however, indicate a rural increase. It is connected with the growth of the suburbs of Agra in the form of its radial extensions along the various roads conveying on the city).
- (b) Notable increase (30-40%) in almost one tenth of the province over scattered areas from the eastern Himalayas to the Central Indian Foreland.
- (c) A moderate increase (20-30%) over the rest of the Himalayan area, the whole of the Doab except the usar tracts, most of the Foreland and in a fairly extensive horseshoe-shaped tract extending over the eastern districts from Partabgarh to the Tarai in Gorakhpur.
- (d) Low increase (10 - 20%) in a tract covering the greatest proportion of the Ganges Plain extending roughly from the Jumna in the south to the Tarai in the North and the Ganges in the west to the Rapti in the east.
- (e) Relative stagnation (0-10% increase) in the Naini Tal Bhabar, the western Tahai and the adjacent 'sub-Tarai' tracts between the Ramganga and Gogra.
- (f) In the typical forested and malarious Tarai of Naini Tal there has been considerable decrease; 20% in Nihha and 45% in Kashipur tahsils.

While considering the areas of different proportions of changes in population we have to bear in mind the density of the different tracts, for a high percentage of increase in the Upper Doab means a far

larger increase in the actual number of persons than the same high percentage of increase in the Himalayan or Foreland regions. Yet if there were no variations in the conditions obtaining in the different parts of the province probably a more or less similar proportion of increase would be expected in every tract. The varying proportion of increase serves, therefore, as a regional index and it seems reasonable to discuss the change according to the percentage of variation.

Areas of Notable Increase (30-40%).

We have already referred to the small area of high increase. In the Eastern Himalayas (the valley of the Kali and its tributaries) the notable increase is due to the natural growth of population in the least glacial and relatively broad and wet valleys of the Kali and its tributaries. The notable increase in Northern Mazaffarnagar and Eastern Saharanpur is related partly to the growth of the sugar industry and partly to the new hydro-electric power stations feeding other industries.

Another tract of notable increase extends from the Ganges in Aligarh to the Vindhyan hills in Agra. Though liable to epidemic malaria the tract enjoys a relatively healthy climate being the area of the lowest rainfall in the province.

The increase round Allahabad is probably associated with the nature of rainfall during the two decades. Rainfall statistics of twenty

years¹ (1921 - 40) show that this tract has suffered from only one year of considerably deficient rainfall (26" in 1928) in contrast to the surrounding districts where there have been two to three successive years of poor rain. The nature of rainfall in the adjoining tracts of Banda and Fatehpur has been similar but the continuity of these two zones is broken probably owing to the considerable emigration which followed the decline of the jute industry² in khaga tahsil (Fatehpur) in the decade 1921-31. The increase in the wooded tahsils of Mahroni (Jhansi) and Dudhi (Mirzapur) is striking. These areas have remained isolated and out of the way in the past but recent road connections have drawn people from the plains.

Areas of Moderate Increase (20 - 30%).

We have already indicated the areas where this proportion of increase has taken place. In the Himalayan area above the Bhabar the temperate healthy climate has helped the growth of population. It is interesting to note that the proportion of increase has been as much in the high and remote areas of Tehri and Garhwal as in the districts of Dehra Dun and Naini Tal where 21 and 39 per cent of the population respectively were immigrants³ in 1931. In the case of Tehri State and Garhwal district the immigrants formed only one to two percent of the population. Connected with this area of increase is the whole of the Doab up to Etawah and parts of the adjoining Ramganga - Ganges Doab. The area enjoys a climate healthier

¹ Monthly Rainfall of India issued by the India Meteorological Department.

² Turner, A.C., (loc. cit.) p. 85.

³ Ibid., p. 196.

than the tract east of the Ganges and is economically the most advanced region of the province. Construction of tube-wells in the second decade (1931-41) has made agriculture secure in the districts containing bhur tracts. The agricultural security of the Doab resulting from the net-work of canals is a notable feature. A year of abnormal or subnormal rainfall can damage only the autumn crops which are far less important in these districts than wheat which is protected by canal irrigation. Another important factor has been the Hydro-electric Grid which has favoured the development of minor industries e.g. flour-milling, sugar-refining, cotton-ginning and oil-milling located both in the towns and villages of the area.

The increase in the population of Bundelkhand except in the much ravined tract of Jalaun district, is related to an increase in the cultivated and double-cropped area. The percentage of the net cultivated area to the total area of Bundelkhand division rose from an average of 44.1 for the years 1920-22 to 49.5 for the years 1940-42, the corresponding figures for the province (excluding the States, Garhwal, Almora and hill portion of Maini Tal) showing less increase, were 57.3 and 59.3¹. In Mirzapur the increase is related to the opening of four canal systems during the years 1914-16, which has resulted in agricultural security. Reference has already been made to the area of moderate increase from Partabgarh to the Gorakhpur 'Tarai'. There are several causes for this considerable increase in the area of the densest population which is rather surprising. The natural growth of population has been favoured by the comparative immunity² of the tract during the period from epidemics. The

¹ Season and Crop Reports of the U.P. for the years 1920-21 to 1922-23 and 1941-41 to 1942-43.

² Annual Report of the Director of Public Health of the United Provinces (for the years 1932-1940, Statements II) and Turner, A.C., Census Report

tendency among labourers to migrate has decreased. The increasing pressure on the soil has to some extent been offset by a corresponding increase in the net cultivated ^{area} as shown by the following table:-

Percentage of the Net Cultivated Area to the Total Area.		
Dis-	Average for ¹ 1920-21 to 1922-23	Average for 1940-41 to 1942-43.
trict.		
Benares	73.9	76.2
Jaunpur	64.7	67.4
Ghazipur	68.0	71.9
Ballia	67.0	71.5
Azamgarh	63.6	67.9
Gorakhpur	72.8	73.9

The increase of population in Gorakhpur, where the extension of cultivation has not been considerable and which experienced cholera and plague epidemics in the first decade (1921-31), has been related to a considerable extent to the growth of the sugar industry, to settlements in the forest clearings of the Tarai and to influx of traders on the Nautanwan branch of the Oudh and Tirhut Railway (opened in 1925). Owing to the recurrence of

1 Season and Crop Reports of the U.P. for the years 1920-21 to 1922-23 and 1940-41 to 1942-43.

This correlation raises a controversial point: whether an increase in the net cultivated area determines the increase of population or vice versa. The two factors are interrelated. U.P. is an area where cultivation has reached its maximum in most of the plain districts. Pressure of population on the soil is extreme. Unless there is an increase in the cultivated acreage either by bringing that little bit of land under the plough which so far has been regarded as waste, or by double-cropping the economic condition of the agriculturist will be less favourable resulting in poor health vulnerable to epidemics, immigration and a high death rate.

epidemics in the Sarda Canal area the tract does not show any remarkable increase except in Sitapur and Unao districts.

Areas of Low Increase (10-20%)

This grade of increase covers a large area as noted above. (The Jumna Khadar in the Upper Doab, the ravine tracts of Jalaun and the Vindhyan tahsils of Allahabad). ^{also show the same grade of increase} It is relatively unhealthy, suffering from autumnal or static endemic malaria (malaria map referred to earlier). Most of the districts have suffered¹ from endemic cholera and plague during the decade 1921-31. The tract experienced² heavy floods during the years 1924, 1936 and 1938. Years of low rainfall (e.g. 1932 and 1940) caused serious damage to the rice crop. This area, consequently, was in a worse condition during the war years when the last census (1941) was taken.

Areas of Relatively Stagnant Population (0-10% increase).

Such tracts are mostly in the Tarai and the Gumti-Gogra Doab. In the latter tract one zone extends from Bara Banki to Sultanpur and another extends from S.W. Basti to Western Azamgarh. The Oudh zone lying in the relatively ill drained valley of the Gumti has been the haunt of endemic malaria, and has also suffered from cholera.³ Moreover, a considerable proportion of the population from Bara Banki has been drained by the city of Lucknow. In the Basti-Azamgarh zone all the tahsils are notorious⁴ for plague, cholera and endemic malaria. Low increase in the areas round the largest cities of the province viz. Cawnpore and Lucknow, has very probably

¹ Turner, A.C., Census of India, 1931, U.P., XVIII, Pt. I, pp. 1-109.

² Ibid and Season and Crop Reports of the U.P. (1936-37 and 1938-39).

³ (See reference 2, p. 61).

⁴ Turner, A.C., (op.cit.), pp. 96-103.

been due to the drift of the rural population to these centres. The negligible increase in Konch tahsil (Jalaun) is due partly to the ravines and in Chakrata (Dehra Dun) it is associated with polyandry.¹

On account of the considerable proportion of jungle and swamps, and the heavy rainfall the Tarai west of the Gogra, and the Bhute suffer from hyperendemicity of malaria. In certain tahsils some villages have been deserted, and a proportion of the population has migrated to industrial centres.²

Area of Decrease.

In the Kumaon 'Tarai' (Naini Tal) the climate has been so malarious that many villages have been deserted and ^{have} relapsed into jungle. The percentage of decrease has been as high as 45 in Kashipur and 20 in Kichha.

Changes in the Urban Population.

There has been appreciable urban growth during the period (1921-41), the percentage of urban population rising from 10.6 in 1921 to 12.4 in 1941. This means an addition of nearly 2.1 million persons to the urban centres. The outstanding factors related to the urban growth may be summarised as follows:-

- (a) A gradual progress in industries and a sudden rise after the start of the war in 1939.
- (b) The presence of large forces in cantonment cities during the war years when the last census was taken.

¹ Ibid., p. 69.

² Ibid., pp. 69-75.

* This refers to the population living in towns of all sizes.

- (d) A growing trend among people to settle in towns for various reasons such as facilities for education, commerce and the amenities of town life.

Among the cities the most phenomenal rise is to be seen in Cawnpore (an increase of 125%). This is primarily due to the growth of industries. While the city had only 47 factories employing nearly 27,000 persons¹ in 1921 it had 129 factories employing 82,732 persons in 1941. The growth in Moradabad has been mainly related to metal industries. Saharanpur (74%)² has to a great extent grown as a town of sugar, paper and tobacco industries. Gorakhpur which stands, (according to the statistics of 1941) eighth among the cities of the province in respect of the number of industrial workers has grown by 71%. Among the cities that have grown by 50 to 70% are Lucknow, Allahabad, Aligarh, Dehre Dun, Agra, Bareilly and Shahjahanpur. All of these except Aligarh are cantonment towns and their population was considerably swelled at the time of the last census by the presence of troops. Lucknow, Allahabad and Agra which are partly cultural and administrative and partly commercial and industrial towns have lagged behind Cawnpore. Aligarh has flourished owing to its lock, textile, oil milling and other industries as well as on account of the University. In Shahjahanpur the number of workers in the clothing mill (12,601 workers in 1941) swelled about six times after 1939. Bareilly has grown as an industrial city.

¹ Annual Report on the Working of Indian Factories Act in the United Provinces for the Year 1921. (1922), pp.4 - 7.

² The figures of percentage in brackets against the name of towns indicate the percentage of increase during the period (1921-41).

The religious city of Benares (33%), and Rampur (22%), till recently a non-industrial town, show a relatively low increase. Meerut (38%) partly both a commercial and administrative centre has partly been eclipsed by the nearness of Delhi. The growth of Jhansi (37%) considering the relatively precarious tract in which it is situated is striking. An important railway junction containing (1941) the third largest railway workshop in the province and a large cantonment, and enjoying a favourable position as a collecting and distributing centre on the margin of the Ganges plain and the Peninsular tableland it has grown rapidly during the period.

Certain smaller towns in the Doab e.g. Firozabad (105%), Ghaziabad (100%), Muzaffarnagar (92%) show remarkable increase. Firozabad has grown mainly because of its glass industry (containing 67 glass factories and employing over 4,700 workers in 1941). The growth in Ghaziabad, an important railway junction has been associated with trade and industry. The growth of Muzaffarnagar is partly due to its commerce.

Most of the small towns in the Ganges-Cogra Doab, ^{except in} Western Rohilkhand do not show any remarkable increase mainly owing to the absence of industries. Fyzabad (2%) is a very striking example of a stagnant town. In the Trans-Cogra tract the towns on the forest fringe have to a great extent grown owing to the exploitation of the forest resources. Such examples are Nanpara^(63%), Balrampur^(106%), and Gonda^(69%). Deoria (150%) in Gorakhpur has grown (largely) owing to the sugar industry and trade commerce. The Bhabar and Tarai have relatively few towns. Haldwani, as a railway terminus and lying on the main route of communication, between the Kumaon Himalaya and the plain has grown by 100%. The hill-stations Mussoorie (-28%) and Naini Tal (-10%) show a marked decrease difficult to account for. The decrease is also

shown by the hot weather census (see Appendix).

The 'Foreland' towns claim no industries to show any remarkable increase. Mirzapur (29%) originally a river trade centre is recovering, owing to its woollen and brass industry, from the setback it received in the last century from the diversion of the riverborne traffic to the railway.

The changes in the towns with a population less than 10,000 have been incorporated in the discussion on rural change.

Changes Since 1881

Before we conclude this section a few words seem necessary about the changes between 1881 and 1941 (Fig. 24). The map gives an idea of a regional growth of population over the 60 years. The very high proportion of increase in the healthy Himalayas is striking. Gorakhpur, the most important district in respect of the sugar industry is also conspicuous. The next most striking increase has taken place in the Upper Doab, which has enjoyed the longest period of canal irrigation and has now received added security from tubewells. This tract is healthier than the eastern districts. The increase in the Trans-Gogra districts of Basti, Bahraich and Gonda has been due to an extension of cultivation and an actual extension of settlements in the northern parts of these districts. We note a moderate increase (20-30%) ^{in parts of the Ganges-Gogra Doab, south-west U.P.} and in the tubewell area of the Ganges-Ramganga Doab. A low increase (10-20%) is noticeable in the eastern Guntur districts, the Sub-'Tarai' districts of Bareilly and ~~Gorakhpur~~ Shahjahanpur, South Eastern Uplands, and the ravine district of Jalaun. But, the districts showing an almost negligible increase (0-10%) considering the long period of 60 years, are the Tarai district of Pilibhit, the ugar districts of Farrukhabad and Mainpuri, the relatively precarious Central Bundelkhand and the over-crowded districts of Ballia and Ghazipur. There has been an actual decrease of

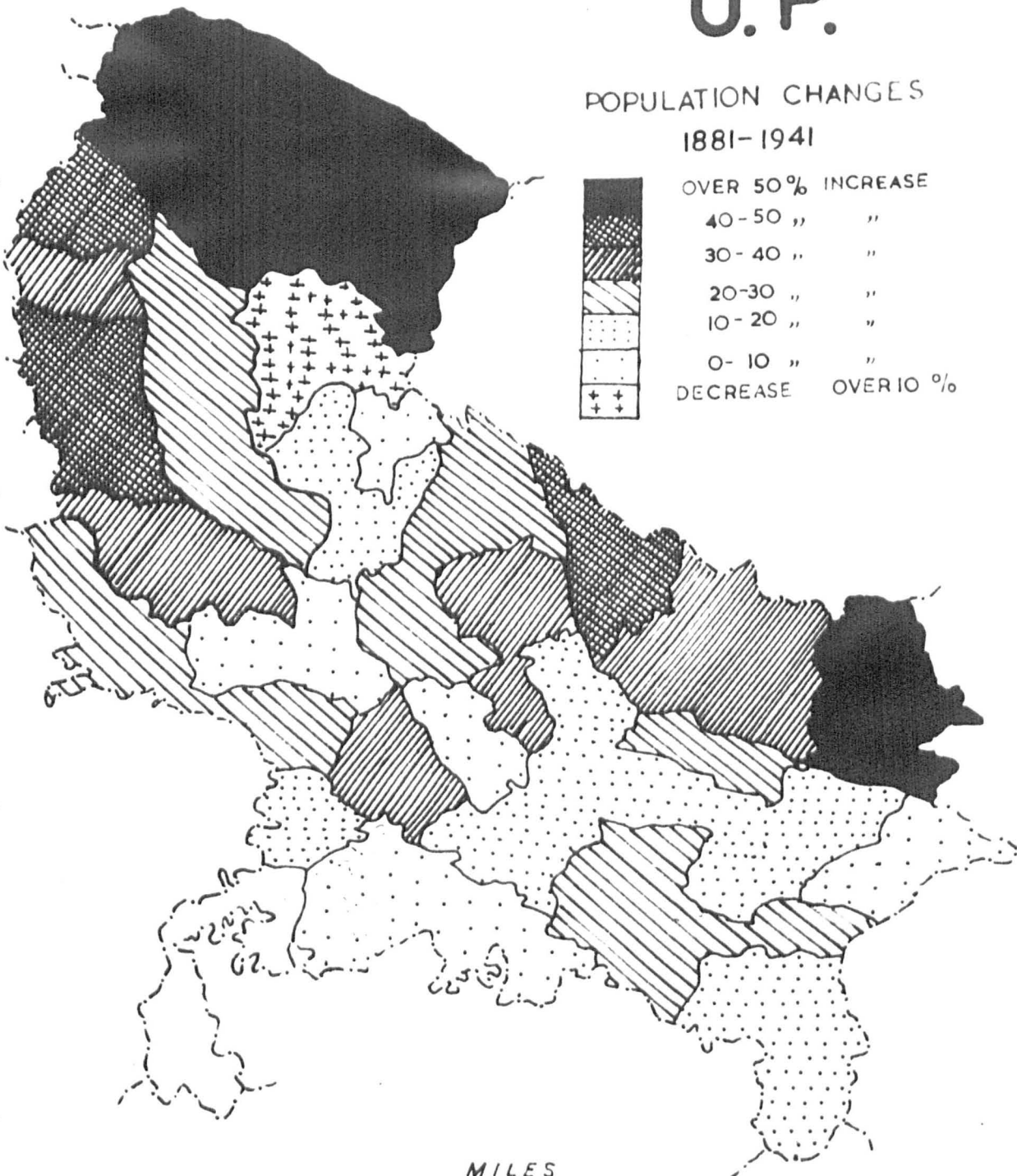
Fig.24

U.P.

POPULATION CHANGES 1881-1941



OVER 50% INCREASE	
40-50 " "	
30-40 " "	
20-30 " "	
10-20 " "	
0-10 " "	
DECREASE	OVER 10 %



MILES

20 10 0 20 40 60 80 100

population in Rampur (-10%) while the drop in Nainital district (-12%) is due to the deterioration of the Terai and Bhabar settlements in the area.

The total population of the province has increased during these six decades by 25.6%. As we have already noted 22% of this increase has taken place

during the last two decades while 3.6% of the increase is spread over the preceding forty years.

of pathologic and clinical processes in the body were based on the basis, and the
primary factor in the study was the diagnosis. In the first place, the study of the

PART II. RURAL SETTLEMENTS.

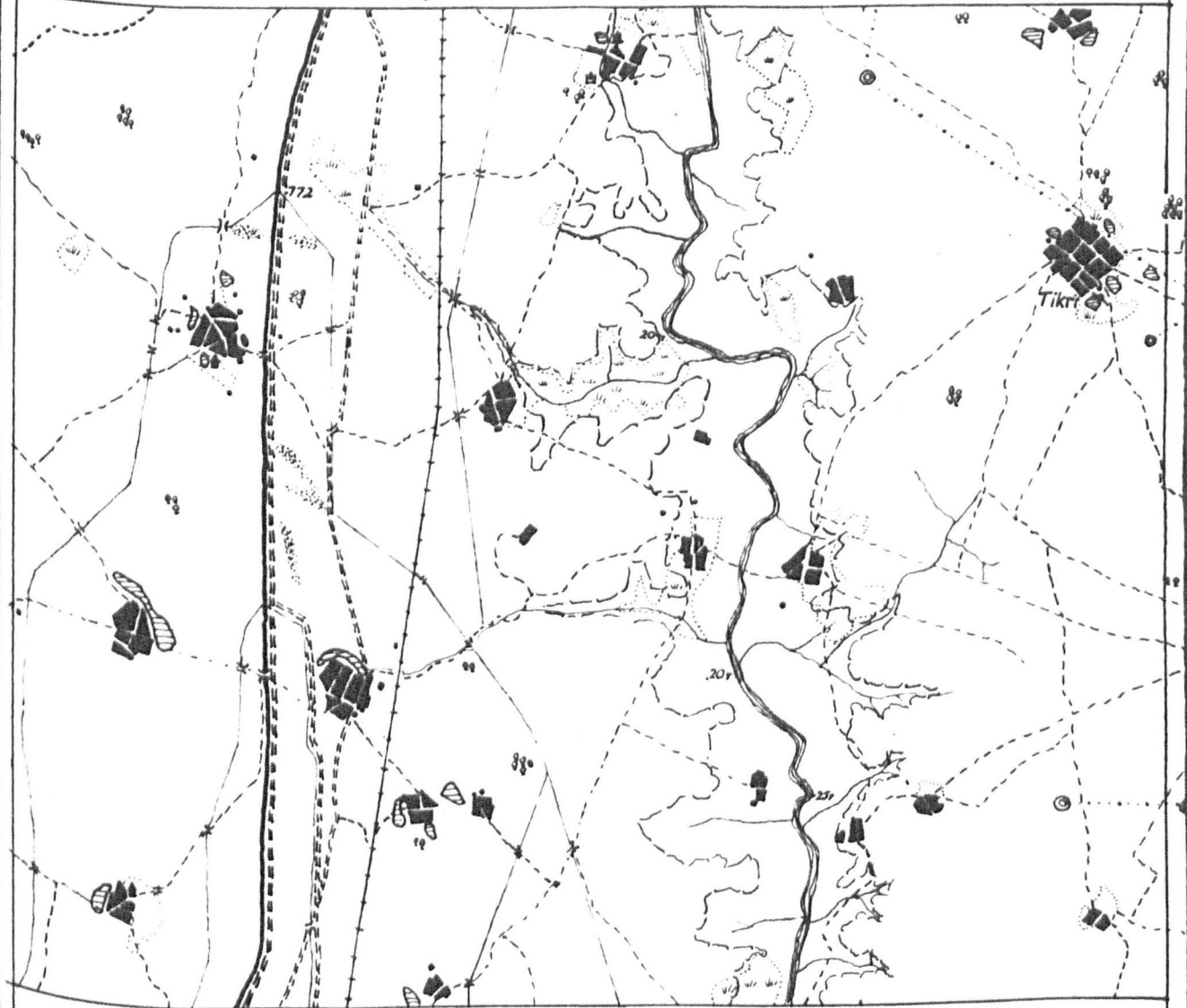
CHAPTER III.

Distribution and Size of Rural Settlements.

The preceding chapter was a discussion mainly of the distribution of population. Various grades of density were taken as the basis, and the causes behind the variety were discussed. While the distribution of population can be visualised in terms of density, the distribution of settlement does not admit of this statistical method. As for instance the Upper Doab and the eastern districts of the Trans-Gogra Plain have almost the same density but the distribution of settlements is entirely different. While in the former area large villages situated at a distance of about $1\frac{1}{2}$ miles from one another are the rule, the latter tract is characterised by small settlements at a distance of 3 or 4 furlongs and about five times the number of settlements over a unit¹ area compared with the former region. Our object is to see whether the settlements are distributed evenly or unevenly. With unevenness of distribution is related the question of siting. Where conditions are homogeneous any spot could have been selected as the site of a settlement; where some portions or spots in an area are more suited to human habitation than others settlements naturally have become localised resulting in an uneven distribution. The size of settlements

¹ The unit area adopted for such comparisons was a rectangle on the one-inch to a mile map, with sides of 5' of longitude and latitude, enclosing an area of 29.48 or approximately 30 square miles.

LARGE COMPACT VILLAGES IN THE UPPER DOAB (MEERUT DISTRICT)



REFERENCE

	Village		Tube-well
	Huts (separate dwellings)		Grove
	Unmetalled Road		Pond
	Metalled Road		Perennial, dry, swamp
	Railway		Boundary of cultivated land
	Canal		Sand hills
	River, with floodplain, ravines		Grass
	Power line		Relative height
			Mosque, Temple

is also intimately related to their distribution. With a given density the longer the intervening distance between two settlements the larger the size and the lesser their number over a unit area. It is from these viewpoints that we try to make a regional survey of the area in this chapter. The discussion is based to a great extent on a sheet-to-sheet study of the one-inch to a mile survey maps supplemented with typical illustrations..

THE GANGES PLAIN.

The Doab.

The Upper Doab is a unique area for its remarkably uniform distribution of rural settlements. (Fig.25). The interfluvial upland is parcelled into roughly quadrangular large mauzas.¹ The soil and availability of water are both uniform. Settlements are located roughly in the centre of the mauza and are connected with one another by cart-roads. Groves are not prominent and the village frequently stands exposed on all sides. Most villages have ponds generally on their outskirts. These perennial sheets of water, a few acres in extent, and the result of a long excavation for building the village, are conspicuous in the whole of the Upper Doab except alongside rivers where the soil is light.

The portion north of the boundary between Bulandshahr and Aligarh districts.

¹ Henceforth we shall confine the term village to the inhabited sites or the the aggregate of dwellings in the 'settlement village'. We shall use the popular as well as the official term mauza (derived from the Arabic 'waza' meaning shape or form) only for the survey and settlement 'village' which is a 'parcel of ground with definite boundaries'.

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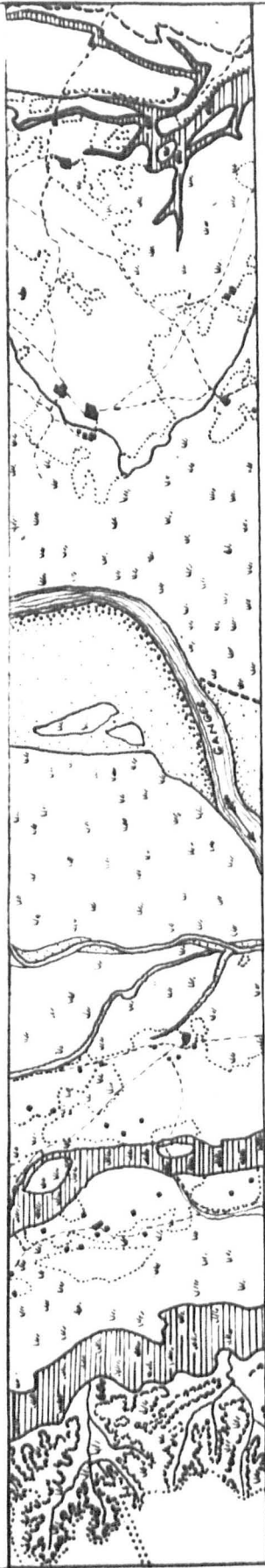
The average distance between settlements is about one and a half miles, this being the longest inter-village distance in the Ganges Valley north of the Jumna. But the large size of the average village which usually covers some 15 acres of ground strikes a balance between the long inter-village distance and the high density of population in the area.

The superimposed features of cultural landscape viz. metalled roads, railways, canals and powerlines are still young compared with the age-long village which has survived the vicissitudes of history. The former, therefore, have not yet affected the location of rural settlements though they may have contributed to their growth. This holds true through-out the province (except those parts which have comparatively recently been settled e.g. the Duns and Ebatar).

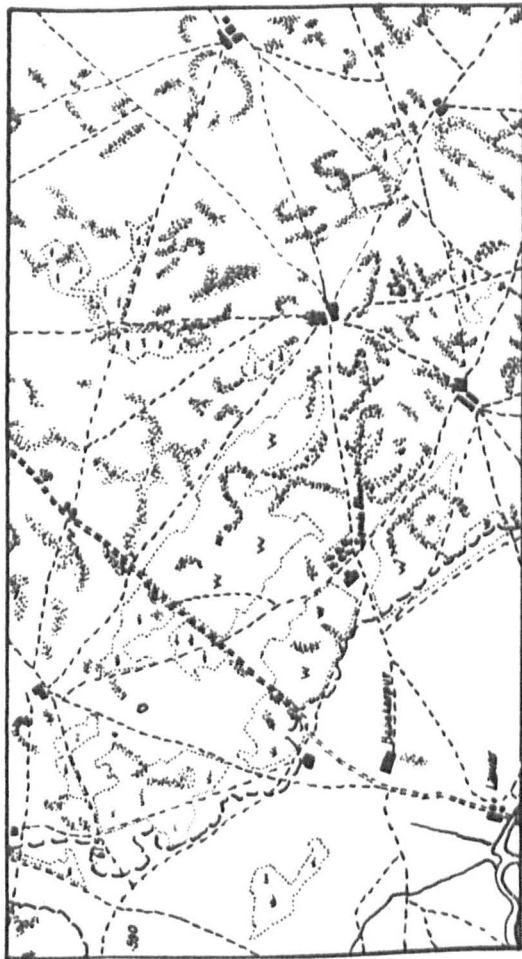
Influences, however, of natural aspects, resulting in minor variations can be seen. The following sequence is observed as we move from the Jumna to the Ganges.

Most of the Jumna khadar is lowlying, covered with tamarisk and thatching grass and subject to annual inundation. Permanent settlements, however, are located where uplands appear. These 'dry-point' settlements are in the midst of cultivated 'rises', (Fig. 28a) which are surrounded by lowlying areas liable to flood. They are in constant danger of losing cultivation by diluvial action and are small in size. In contrast with the small alluvial settlements of the khadar those situated on the old river banks are large and immune from the highest floods. These bluffs on the margin of two different tracts are favourite sites in as much as they afford advantages of unirrigated cultivation and abundant grazing in the khadar below. Usar is almost absent in the Upper Doab: there being only small narrow patches of it. Cultivated uplands with small settlements occur as

(a) DRY POINT SETTLEMENTS IN THE GANGES 'KHADAR'
(MEERUT AND BUDHIN DISTRICTS)



(b) SMALL WIDELY SPACED VILLAGES IN THE
'BHUR' TRACT (BUDHIN DISTRICT)



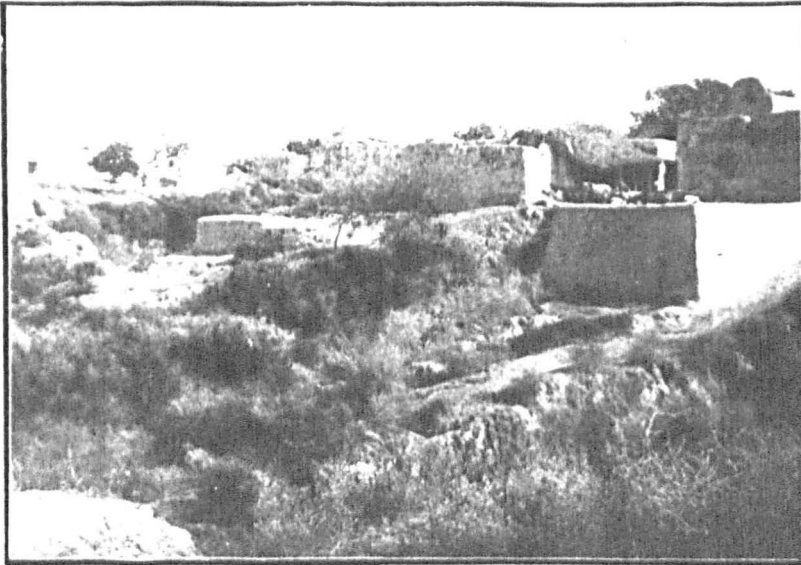
islands in the midst of the lowlying grassy or bare usar.

The streams e.g. the Hindan and the Kali flowing through the inter-fluvial upland have carved out narrow flood-plains below the general level of the ground. These riverain ^{lowlands} are cultivated but settlements stand on the outerbanks of the flood plain. The narrow khadar of these streams afford advantages similar to those noticed in the case of the Jumna.

The sandhills east of the Kali river about 10-20 feet above the general level of the ground are cultivated to their margins but no settlement is located at a distance nearer to them than of half a mile. Villages in the belt of sandy ridges are usually small.

Further east on the old bank of the Ganges we find a conspicuous absence of settlements because of a deep water-table and ravined topography. Below the old bank lies the wide Khadar of the Ganges. Figure (260) shows a typical transect. Viewed from the bank, often as high as 100 feet, the khadar presents a varied sequence of landscape. Immediately below the bluff there is a belt of grassy swamps caused partly by the water of the old channel, and partly by seepage from the Ganges Canal. Beyond this strip is the relatively elevated and wide grassy flat traversed by a number of the side channels of the Ganges. On the grassy flats there are isolated patches of cultivation on silt rises in the centre of which are located tiny dry-point settlements. It is difficult to construct masonry wells in the loose sandy soils. Water, therefore, becomes a very ~~dry~~ important factor in the siting of settlements, which, when without wells, are temporary. The flats grow more sandy towards the Ganges serving as seasonal grazing grounds. In the immediate neighbourhood of the stream there is newly deposited loose and infertile sand. This sequence is more or less repeated on the east of the

Fig.27



A Village in the Jumna Ravines -
Etawah District (From "An Educational
Survey of a District" by S.N. Chaturvedi,
Allahabad, 1935).

river though the level of the khadar on this side is usually higher and settlements more frequently and evenly distributed.

Middle and Lower Doab.

The broadly uniform distribution of settlements in the Upper Doab does not continue south of Bulandshahr district. Fundamental changes take place. The alluvial khadar of the Jumna gives place to extensive ravines (fig. 2). Behind the ravines there is a narrow belt of homogeneous usar-free upland which is widest in Aligarh at one end and Allahabad at the other and narrowest in the central districts of Mainpuri, Etawah, Cawnpore and Fatehpur (fig. 8). Most of the remaining interfluvium is a wide continuous zone frequently infested with patches of usar, and extending from Aligarh to Fatehpur. The Ganges khadar is bordered by a fairly wide and usar-free upland only as far as Farrukhabad district south of which it occupies a very narrow area. A transect through this portion of the Doab will show the following sequence of distribution.

The whole of the Jumna bank is ravined up to a varying extent (Fig. 28c): in some places the process is just beginning and only incipient ravines of a few yards are present, but elsewhere they extend to 2 or 3 miles. Groves or trees are usually absent and only stunted bushes can be seen on the denudation denuded hillsides of the steep-sided ravines. Settlements are perched on small patches of flat ground held by inhabitants against denudation (fig. 17). The settlements antedate the growth of the ravines which began with the removal of dhak woods: they are infrequent and small. The water-table is the deepest in this tract the subsistence agriculture of these villages is carried on either behind the ravines on uplands or on alluvial flats where-ever they occur.

On the upland belt, north of the ravines the distribution of

settlements is quite even, the chief differences compared with the Upper Doab being their frequency and small size. There are almost double the number of settlements of half the size per unit of area. Settlements are much closer to each other lying at a usual interval of three quarters of a mile. Groves and tanks are frequent features of the landscape.

(19.8)
In the wide central belt of usar, extensive patches of comparatively lowlying bare or grassy wastes (Fig. 28b.) often containing large lakes in their centre break the continuity of cultivation. What is most striking here is the usual siting of settlements on the margin of usar and arable land. Though it is rare to see a habitation actually on the usar, which is more or less negative to settlement, the location of villages or hamlets on its margin is enforced by the relative want of fertile land in this zone. Sometimes about half the land inside a 'mauza' is under usar. The villager, by siting his dwellings on the usar margin spares the maximum of fertile land available for cultivation and brings under plough some portion of that waste which enjoys the proximity of the inhabited site. Sometimes a settlement in this lowlying zone is sited on a mound considerably raised above the ground. Lakes of the 'oxbow' type associated with old river banks afford useful 'water-front' sites. The rivers Sengar, Rind, Isan and Kali in order from south to north traversing this portion of the Doab run mainly through the usar belt and are associated with lowlying channels with a ravine belt extending roughly half a mile on either side of the stream. Settlements avoid these strips often liable to flood unless there is an upland with enclaves of cultivation reaching the water front. Both the village groves and ponds are very infrequent. The size of settlements especially in the middle portion extending from Aligarh to Etawah and Farrukhabad, is small, ranging from half to one third of the size of the

Upper Doab settlement. The usual distance between them ranges from six furlongs to a mile. Eastward from Cawnpore up to Allahabad villages are larger.

That portion of Allahabad district which is in the Doab presents a picture (Fig. 28d) different from the rest of the Lower Doab. Usar disappears except in the north-western corner. Large villages ^{sometimes} approximating to the settlements of the Upper Doab in size yet greater in frequency are evenly distributed over a mellow loamy tract. Each village is situated in the centre of the mauza close to a large tank and usually surrounded by extensive groves. While large villages occupy waterfront sites where the Ganges and Jumna flow beneath their high banks, the outer margin of their khadar marked by bluffs is usually also inhabited.

On the Ganges side of the Usar belt the loamy upland up to Farrukhabad may be regarded as an continuation of the interfluvial upland of the Upper Doab with a very even distribution of settlements though at lesser intervals and of smaller size. The Ganges khadar is wide up to Farrukhabad and the sequence of landscape and characteristic dry-point settlements noticed in the Upper Doab transect are seen here with only minor variations. Further east the khadar narrows down and only infrequently a hamlet or some scattered dwellings can be seen on rises in the flood plain. The unrevined bank which is not more than a few furlongs from the stream is usually settled with villages located at a distance of a few furlongs from one another. This notable riverside siting offers an interesting contrast with the Grand Trunk or other metalled roads on the side of which few villages can be seen. The villager has maintained his aloofness from the highways which have been lines of movement of armies in the past and in the present time of the agents of revenue and police whose exacting attitude is a terror to the peasantry.

The absence of roadside settlements is also due to the relative self-sufficiency of the village.

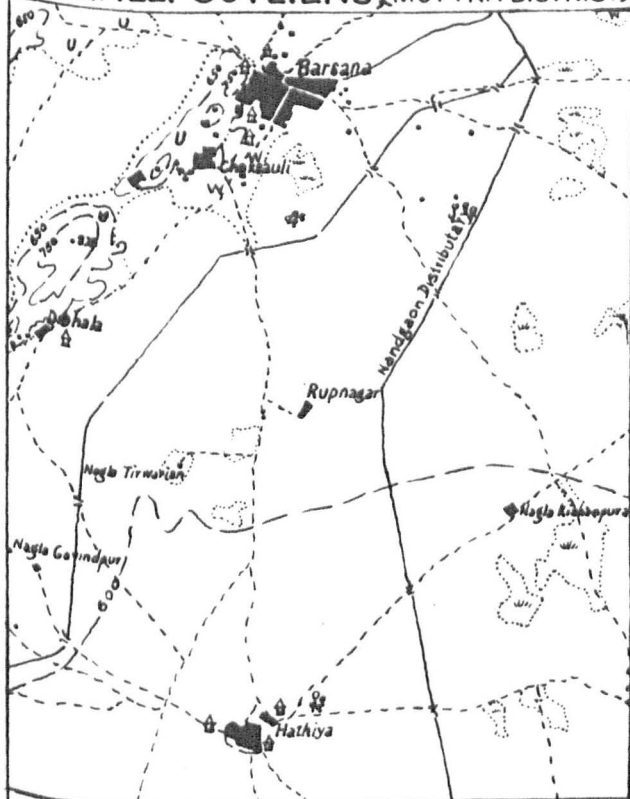
The Trans-Jumna Plain.

The Trans-Jumna Plain West The distribution of settlements in the Trans-Jumna portion of Muttra resembles that in the Upper Doab. The village is large as in Meerut. It is situated in the centre of the mauza showing a very even distribution on a level cultivated plain. Settlements are, however, less frequent the distance between them being greater (about 1½ miles) than in the Upper Doab. The soil is less fertile. The intervillage distance is greatest towards the western border where settlements are at a distance of two to three miles from one another. Here the foot of the quartzite hills - the outliers of the Aravallis - have afforded defensible sites to some villages (Fig. 29a).

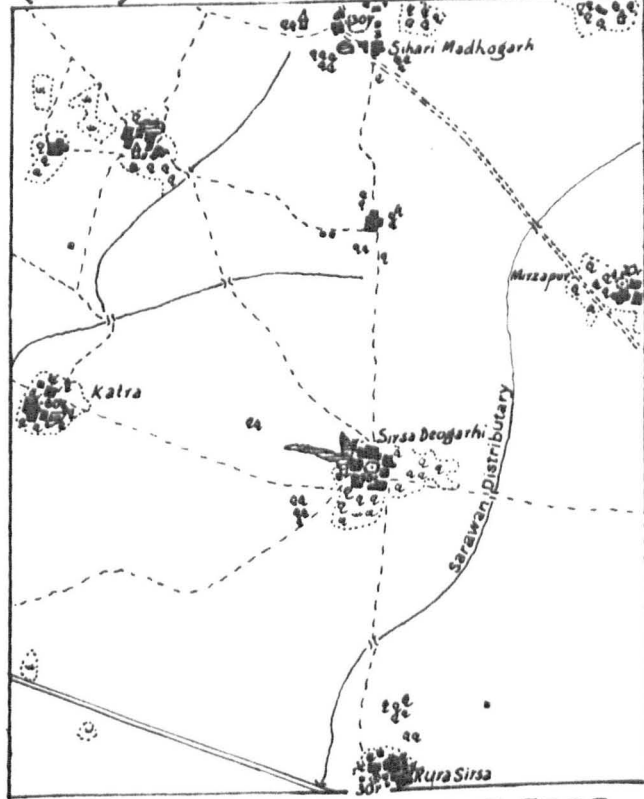
Some variation from the even distribution can also be noticed near the Jumna. In the khadar, conditions are akin to those prevailing east of the river in the case of the Upper Doab. The small dry point hamlets in the flood-plain resent a strong contrast to the closely placed large villages on the bluff. It is interesting to see the frequency of wells, just under the bluffs, utilising a higher water-table.

In the remaining portion of the Trans-Jumna Plain west viz. from south of Muttra district to the Jumna-Chambal confluence the following sequence of topography occurs :- the Vindhyan outliers in Western Agra, the central fertile plain narrowest near the Jumna-Chambal confluence, and the ravined strip bordering the two rivers (Fig. 2)

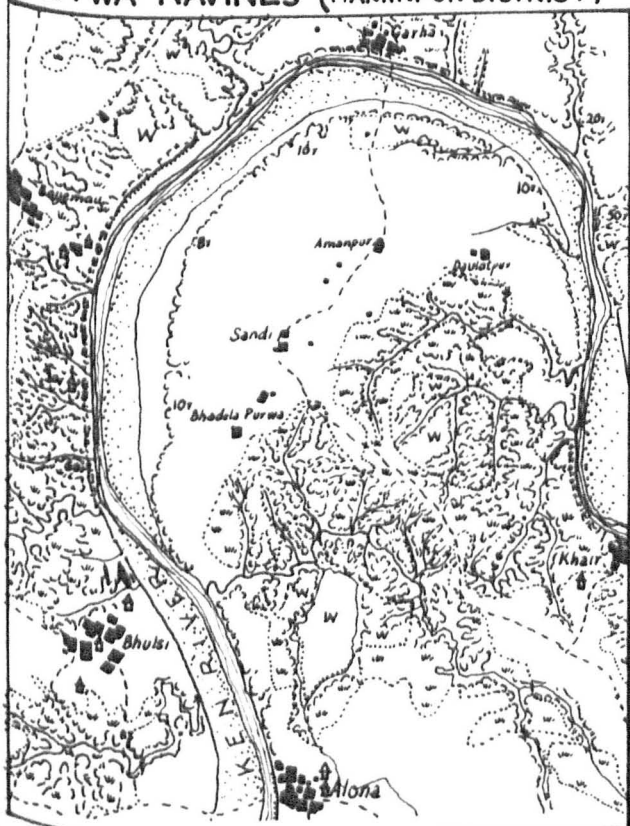
(a) STRONG POINT VILLAGES ON ARAVALLI OUTLIERS (MUTTRA DISTRICT)



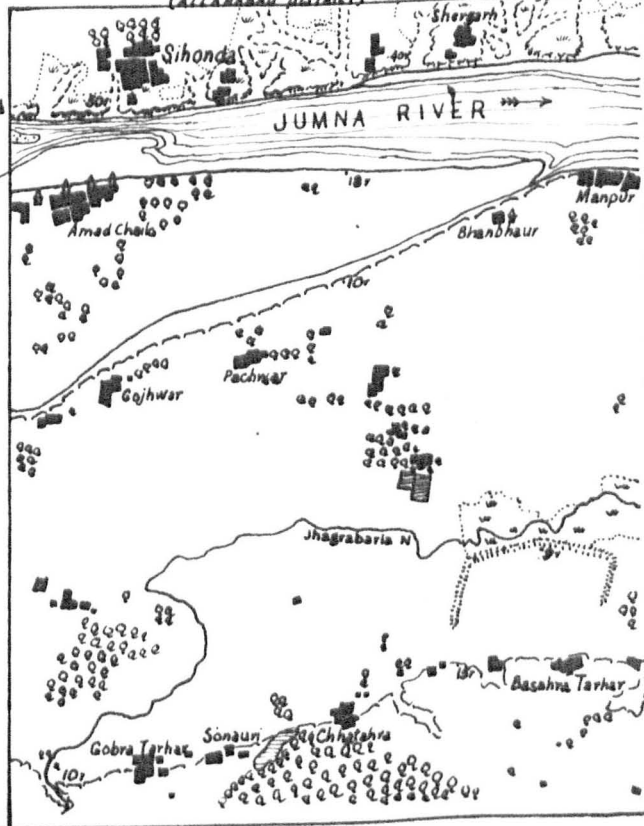
(b) VILLAGES CLUSTERED ROUND (RUINED) FORTS IN JALAUN



(c) SETTLEMENTS IN THE BETWA RAVINES (HAMIRPUR DISTRICT)



(d) SETTLEMENTS ON THE EDGE OF TERRACES ALONG THE JUMNA (ALLAHABAD DISTRICT)



Towards the west the distribution of settlements is rather uneven. Considerable patches of grassy wastes are without settlements. The Vindhyan outliers - ridges of red sandstone rising two to three hundred feet above the plain - extend to some five miles east of Sikri. 'Strongpoint' villages are conspicuously perched on either side of these bare narrow ridges. Further south in the Khairagarh tahsil there are broader wooded ridges. Villages are located on the outer margin of this scrub area especially near a 'nala'. Large villages are situated near smaller knolls which lie further east of the main ridges. As this relatively higher tract lies out of reach of the Jumna Canal some embankments, generally one to two miles in length, have been built across non-perennial streams to impound water during the rains for irrigating the fields lower down. It is below these embankments that a village is frequently situated. In this border zone villages are larger than further east in the level interfluvial of the Jumna and Chambal.

In this interfluvial area the distribution of settlements, which are commonly situated at a distance of a mile from one another, is very even, but they are of more varying size than in Muttra. Riverside villages are conspicuous along the Khari.

In the belt of ravines bordering the Jumna and Chambal the siting of settlements is akin to that noticed north of the Jumna. Roughly there is one settlement per square mile. While about half of these ravine villages are large the remaining are hamlets. The ravines consist of wide stretches of sand or kanker with here and there small patches of loam. The cultivation associated with villages perched in these rugged areas lies away from the sites.

The Trans-Jumna Plain East (Bundelkhand). The hideous Jumna ravines have developed to their maximum on the Bundelkhand side extending two to six miles south of the river. They dwindle, however, rather suddenly and disappear east of longitude 81 E. Settlements in these ravines decrease in frequency as we move from west to east. Thus while in Jalaun there may be one village per square mile in Hamirpur there is only one per three square miles of area.

Roughly east of longitude 81 E the place of the Jumna ravines is taken by khadar often having well marked alluvial terraces.¹ Frequently these terraces are double and have strikingly influenced siting. Figure 29d shows a typical example. The two terraces are clearly shown marked on their south by steep bluffs 10 to 15 feet above the land immediately below. We see lines of villages rather closely situated on these bluffs as well as on the river bank in marked contrast to the relative absence of villages on the flats. This type of siting is due to the peculiar topography. The bank bordering the stream is higher than the first flat, the slope of the land being away from the river. Similarly the bluff south of the first flat is higher than the second flat as indicated by the stream parallel with the bluffs. The floods can invade the centre of the first and second flats through spill channels of the Jumna without reaching the dry-point villages on the bank and bluffs.

South of the Jumna ravines the Bundelkhand Plain shows three types of settlement distribution. In Jalaun and the portion of Jhansi north of

¹ The word 'terrace' is used, here, in its ordinary descriptive sense, not as a technical geomorphological term.

more or less

the Gneiss Upland cultivation is continuous and the distribution of villages (Fig. 296) is very even. Settlements are large, approaching the Upper Doab Village in size, but they occur much less frequently. Near the Jumna there are about 15 settlements per 30 square miles while south of the Betwa this number is reduced to 8 or even as few as 6. In the southern portion of this area almost every village has large perennial tanks. The black soil of this area is fertile and the least cut by streams which are so frequent east of the Betwa. As this soil turns into sticky mud retaining moisture for a longer duration than lighter soils villages are usually perched on elevated sites. Even in the tracts of lighter soils villages frequently occupy elevated and defensible sites. About half the number of settlements in Jalaun are built on eminences round the old forts (now in ruins) of the village landlords or local chieftains.

(D) LARGE PLAIN. East of the Betwa the distribution is rather different from that just described. Hydrological control in the location of settlements is developed here to the maximum extent, the most striking feature being the river-side siting. Between the Betwa and Ken or roughly in the plain portion of Hamirpur district every perennial and non-perennial stream is conspicuously lined with villages (Fig. 300). Villages are also seen in the interfluvial uplands where tanks are in existence but their infrequency is the result of the mar (black soil) lying overgrown with kana (*saccharum spontaneum*) on the relatively high and the central portions of the small 'doabs'. As we go further south riverside sites become even more predominant. A very interesting feature is the building of villages on the concave banks of rivers, where water is nearest to the site, and which occur alternately on either banks of the stream as it swings from side to

side. Roughly ten settlements are seen over an area of 30 square miles. About half of these are very large equalling or excelling the Upper Doab village but the remaining half are mere hamlets.

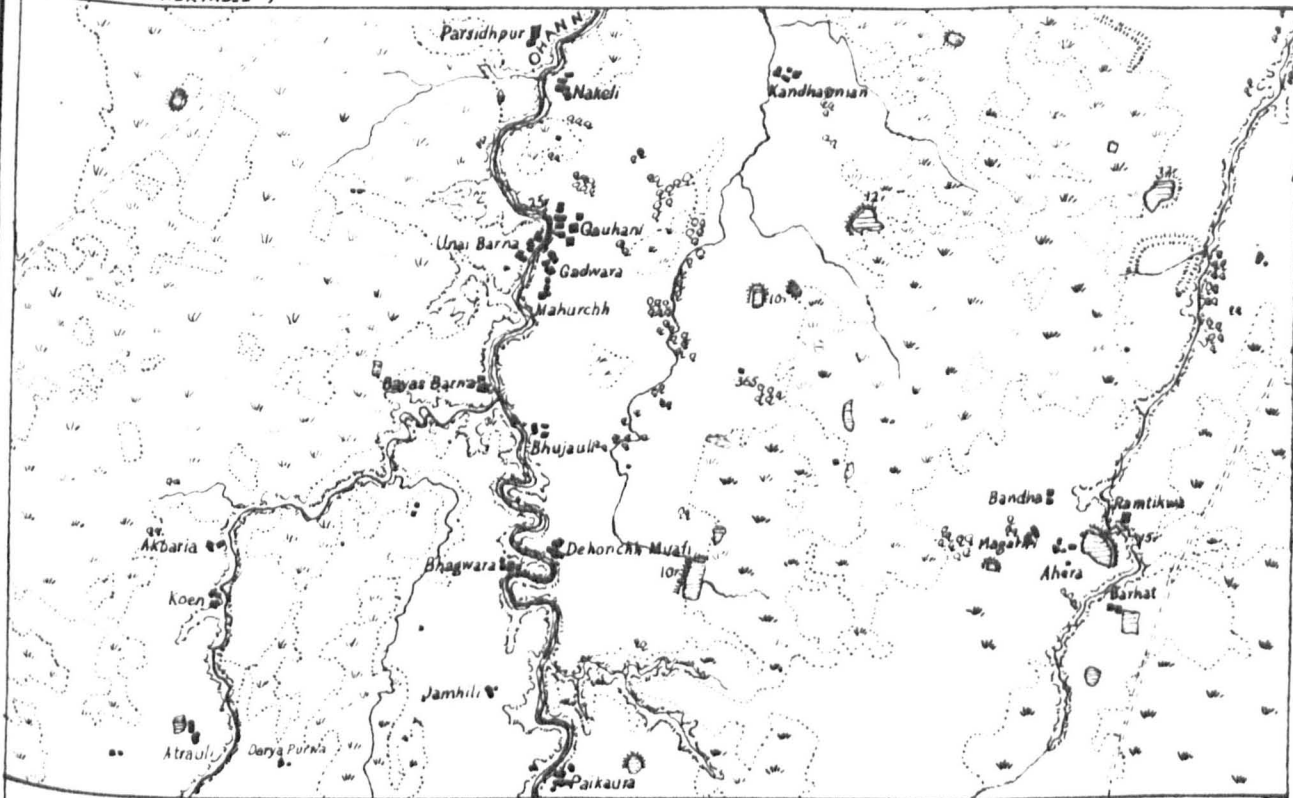
In Banda or roughly east of the Ken river, the distribution of settlements is extremely striking. Interfluvial siting decreases as we go east of the river till in eastern Banda we see ^{almost} all settlements lined along perennial or non-perennial streams. (Fig. 30a). "Each Doab generally contains a complete section of the Bundelkhand soils. Between the streams lies a central plateau of 'mar' or 'kabar' (black soils); as this slopes down on either side it changes to 'parua' (light soil) and ultimately to 'rakar' or gravelly soil along the banks of the streams"¹. The interfluvial black soil belt on the local watersheds remains dry, overgrown with kans and unfit for cultivation. The lighter soil parua near the streams, is cultivated and even the gravelly 'rakar' is often worked into arable owing to its proximity to the dwellings. Fig 60a clearly shows this sequence in each interfluvium: the line of villages near the bank, the belt of cultivation behind the settlements and finally the extensive uncultivated, grassy belt of black soil. The riverside siting is enforced not only because of the nature of local soils and topography but also owing to a deep water table. "There are a number of villages in the district (Banda) which have no well at all, others have only one, and in drier tracts every village lies perched on broken ravine ground near some perennial stream or river owing to the difficulty of water supply."²

¹ Boundary between the river valley of the Ken and the Bundelkhand plateau.
D.C. Banda (1909), p. 4.

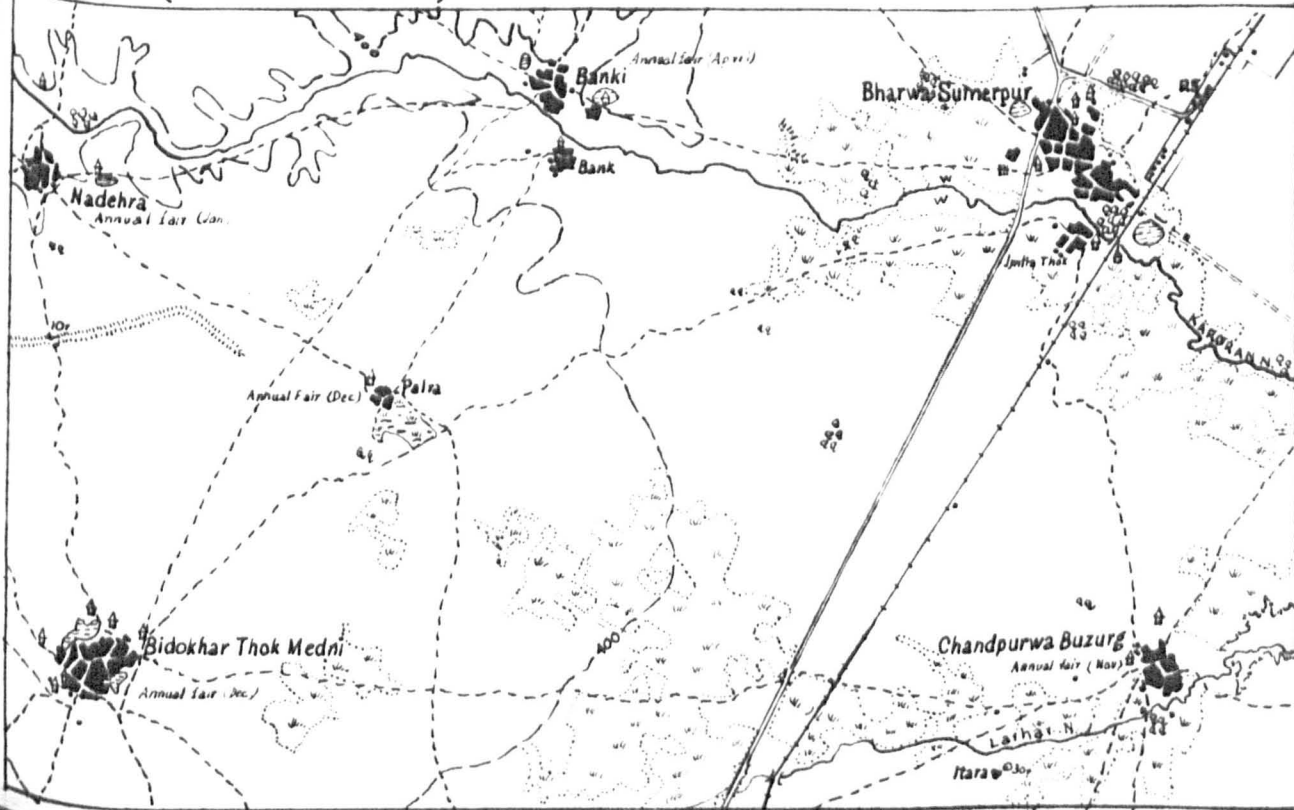
² D.C. Banda (1905), p. 55.

(a) RIVER SIDE SITING IN BUNDELKHAND PLAIN (BANDA DISTRICT)

(THE INTERFLUVES INFESTED WITH DEEP-ROOTED 'KANS' ARE UNFIT FOR CULTIVATION; RIVERS ARE THE SOURCE OF WATER IN THIS TRACT OF DEEP WATERTABLE)



(b) LARGE RIVER SIDE VILLAGES IN WESTERN BUNDELKHAND PLAIN (HAMIRPUR DISTRICT)



The large rivers of the Bundelkhand Plain viz. the Pahuj, Betwa, Dhasan and Ken are associated with ravines as extensive as along the Jumna. In spite of the broken topography, gravelly and sandy soil villages, mostly large, are frequently perched (Fig. 29c) on these ravines partly because of nearness of water and partly owing to the defensible nature of such sites in an area which has been a 'zone of strife' in the past.

The Trans Ganges Plain.

East of the Tons river the rather treeless Bundelkhand Plain gives place to the fertile Trans-Ganges Plain where most of the settlements are surrounded by extensive groves. The waterfront villages situated along the bank of the Ganges are larger than those away from the river. The settlements as a whole are uniform in size and about half as big as the usual Bundelkhand village. They are evenly distributed and lie close to each other at a distance of roughly half a mile. East of the longitude of Benares city or thereabout the depositional function of the Ganges becomes very pronounced as is shown by the wide high levees. Villages on the levees enjoying both a waterfront and a drypoint site are exceptionally large mostly exceeding in size the villages of the Upper Doab.

The Ganges-Gogra Doab.

The chief differentiating feature in the distribution of settlements in the Ganges-Gogra Doab is the absence of usar soil from this Doab in the portion lying approximately north of latitude $27^{\circ}45'$ (or roughly the boundary between the districts of Shahjahanpur and Hardoi). (Fig. 8)

The Upper Ganges-Gogra Doab.

In the northern portion, just below the Tarai groups of dwellings are sprinkled fairly evenly over the plain. The average settlement is about

half two-thirds of the Upper Doab village in size and almost double in number over a unit area. There is an abundance of groves near habitations. The watertable is high, the result partly of seepage from the Tarai, and partly of the heavy rainfall; easily constructed wells have favoured the frequent placing of settlements. Within the general uniformity of distribution some variations can be seen if we take a transect from the Ganges to the Saran.

We have noticed the characteristics of the Ganges khadar, particularly on the west of the stream. The eastern khadar differs from its western counterpart by a higher level and an absence of the steep outer bluff so characteristic of the Upper Doab. This is because "the Ganges is steadily shearing off towards its right bank"¹ and the process of deposition has been on the left of the stream. The khadar which is wide in the south and narrow in Bijnor is divisible into two parallel strips: the new khadar and the older khadar. The newer strip consisting of alluvial terraces is submerged annually by rivers overflow, and habitations - ^{only} temporary huts - are scarce, except on the upper margin of the alluvial flats where there are permanent hamlets. The older khadar above the annual flood-level, has a watertable quite near the surface and is more evenly settled by permanent villages. The water, however that collects in the old channel of the Ganges near the eastern margin of the khadar does not find a direct entry to the Ganges, and causes water-logging in some portions of the upper khadar. The usual settlement here is smaller than those above the riparian tract. The old bank of the Ganges above the khadar has large closely spaced villages.

1 Baron Meston, The Geography of an Indian Village, Geographical Teacher, Vol. 20, (1935), p. 5.

The succeeding tract on the east is the belt of sandhills. Tube well irrigation has brought much of this sandy tract under cultivation contributing to the growth and prosperity of the villages in the immediate locality. The nature of the distribution of settlements, however, has not yet fundamentally changed. Here bhur still persists (Fig. 266) cultivation is scattered and precarious depending mostly on rain. High grasses often strangle the crops. Settlements are mere hamlets.

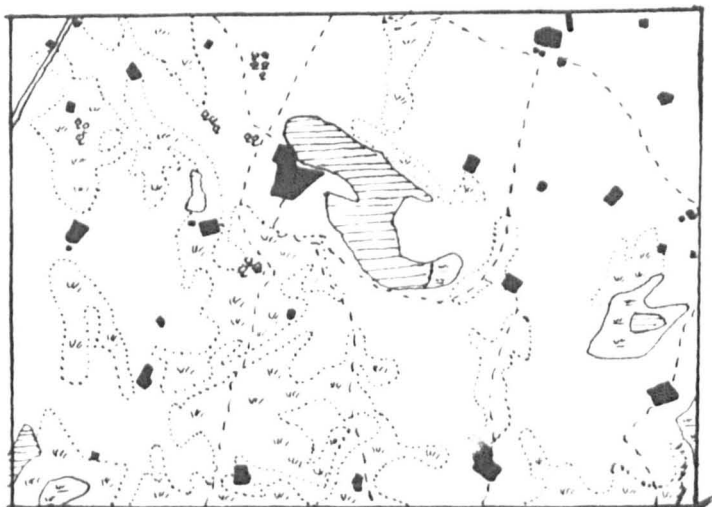
East of the sand hills up to the Sarda khadar the distribution in the loamy tract is even, the settlements being large in marked contrast with the hamlet of the bhur tract (Fig. 31b). The only negative areas are the southern extensions of the Tarai forests or the riparian tracts of the Ranganaga, Kosi and Gumti. In the narrow khadar of these rivers settlements are few but a village is frequently seen on their concave banks. Jungles and grassy wastes are rather frequent towards the east in Kheri. The average muara is almost double the size of that in the remaining districts of the area but the size of settlements is the same. The Sarda khadar is thickly covered with tamarisk and only a few settlements can be seen on cultivated rises.

The Middle and Lower Ganges-Cogra Doab.

The remaining portion of the Ganges-Cogra Doab has three distinct belts from south to north.

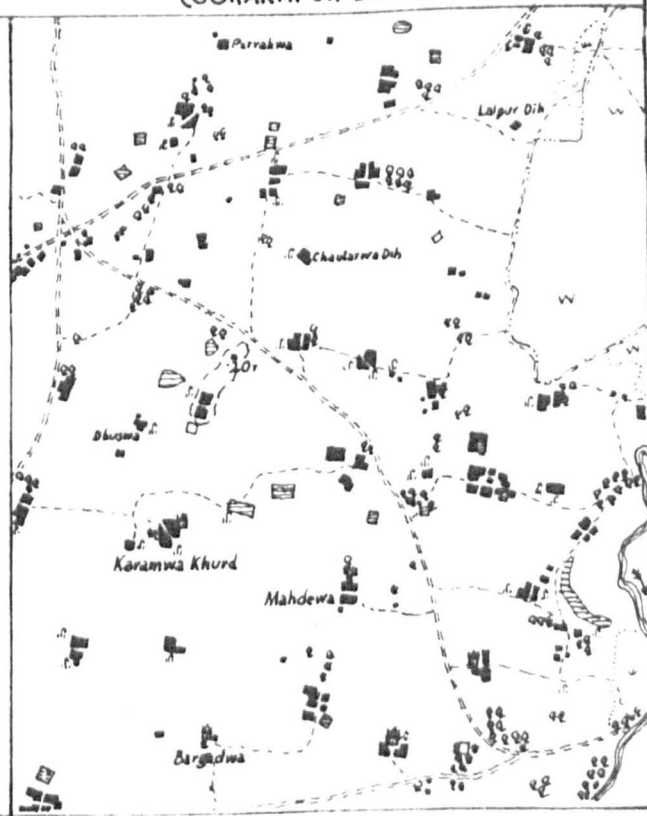
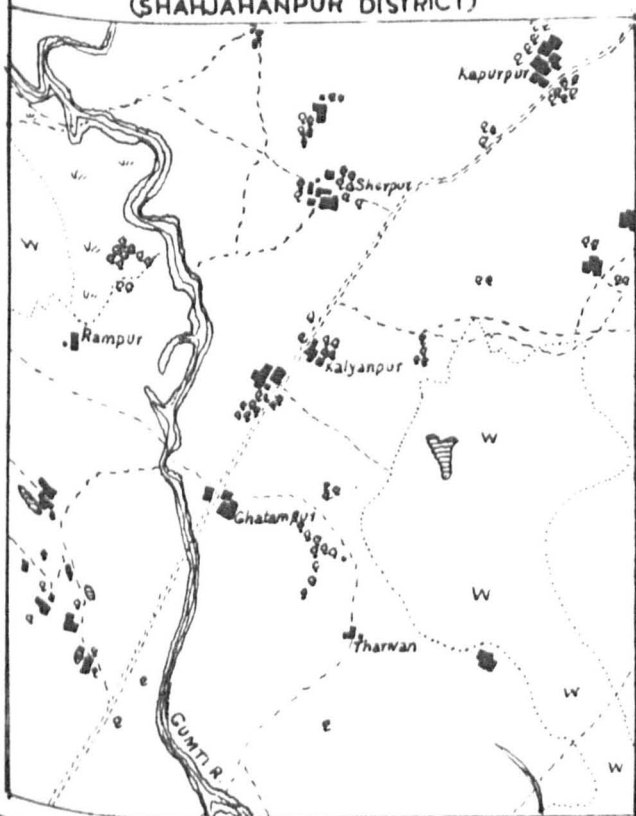
Near the Ganges is the khadar and a relatively narrow belt of 'usar'-free upland. This is succeeded by an extensive zone infested with usar. It covers a ^{roughly} about half of this portion of the ^{Ganges-Cogra} 'Doab' and ^(Fig. 8) extends from the northern borders of Hardoi up to Chazipur. The usar tract is bounded on the north by the Gumti as far as the district of Bara Banki east of which it extends north to cover south Fyzabad and a large part of Azamgarh district. On the east and north of the usar zone is a belt of

(a) DISTRIBUTION OF SETTLEMENTS
IN THE 'USAR' ZONE, GANGES-GOGRA DOAB (HARDOI DISTRICT)



(b) DISTRIBUTION IN THE
UPPER GANGES-GOGRA DOAB
(SHAHJAHANPUR DISTRICT)

(c) DISTRIBUTION OF SETTLE-
MENTS IN THE TRANS-GOGRA TARAI,
(GORAKHPUR DISTRICT)



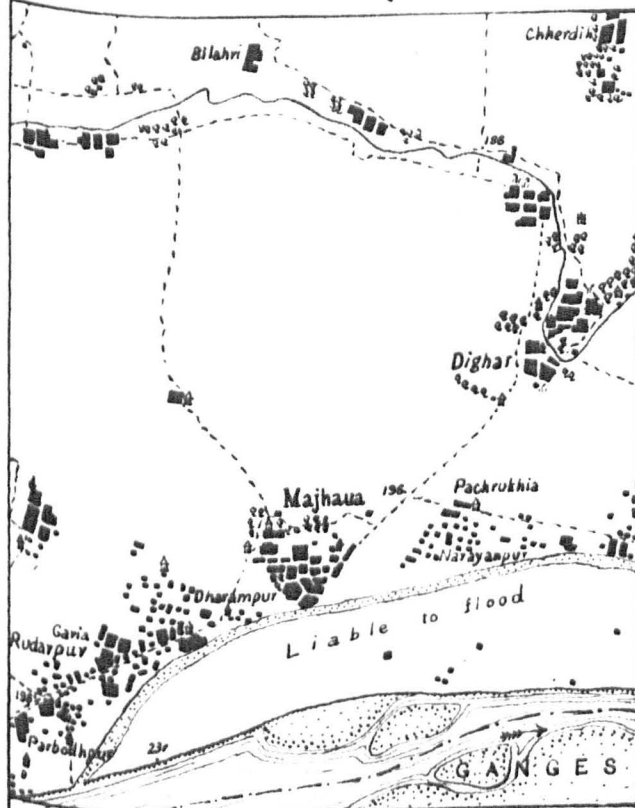
fertile loam wide enough in the north to cover the whole of Sitapur and Bara-Banki districts but gradually narrowing eastwards till it widens again in Ballia having united with the loam tract bordering the Ganges. The khadar of the Gogra unites with the Ganges khadar in Ballia.

We have noted the nature of the siting in the Ganges khadar. The characteristics of this tract persist in the districts of Hardoi and Unao. The Upper khadar, however, gradually narrows south of the Ganges-Banganga confluence though the alluvial flats continue throughout the course of the river. The upper khadar which is traversed by a number of black-waters and dry channels merges with the interfluvium often unperceptibly.

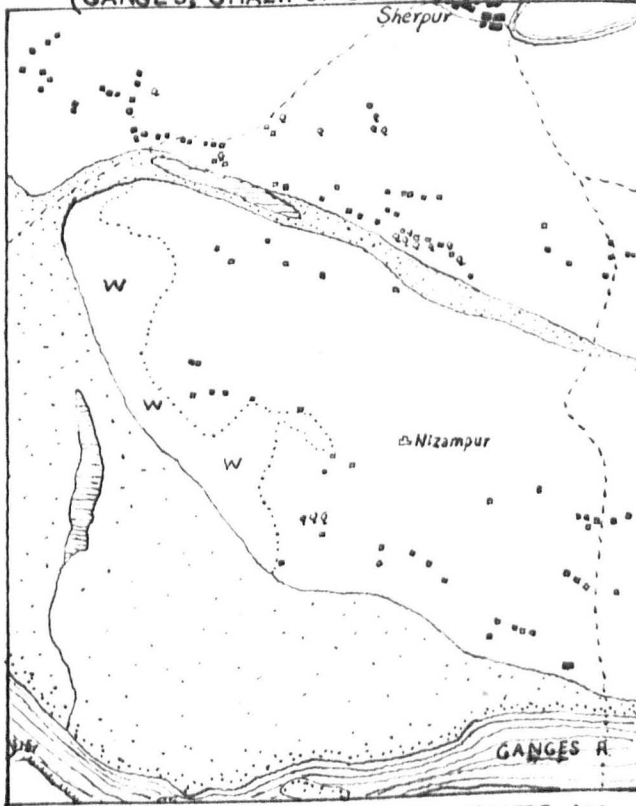
Settlements are usually small and rather unevenly distributed. Side channels often associated with levees are frequently chosen as sites. South-east of Unao to Benares the narrow khadar is characterised by alluvial flats. They are often in the form of double terraces and settlements are sited as seen in figure 29d. East of its confluence with the Gumti well developed levees mark the side of the Ganges. The land immediately on the north of the levees is lower than these dry points and liable to inundation in years of high flood. The population of several mauzas has congregated in large villages on these levees. Such dry point settlements (Fig. 32a), usually double the size of the average Upper Doab village, are seen right from the confluence of the Ganges with the Gumti to that with the Gogra. Similar settlements are noticeable south of the Ganges. Where levees are further away from the stream the alluvial flats occurring in between are sprinkled with temporary huts (Fig. 32b).

The distribution on the loam tract north of the Ganges is evidently very even. This belt is broadest east of Benares and studded with

(a) LARGE DRY POINT SETTLEMENTS ON GANGES LEVEES (BALLIA DISTRICT)



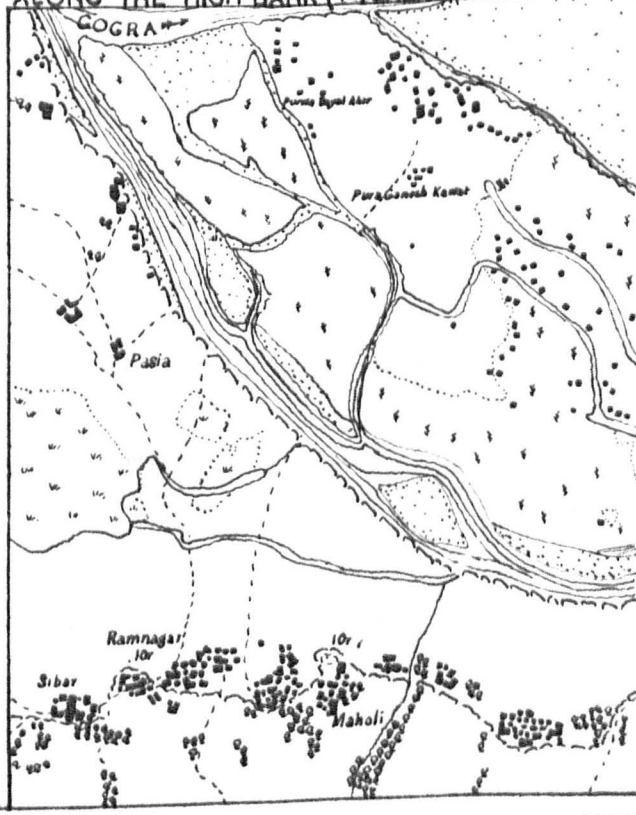
(b) TEMPORARY HUTS IN REGULARLY INUNDATED FLOOD PLAIN (GANGES, GHAZIPUR DISTRICT)



(c) LEVEE SETTLEMENTS (LINEAR) ALONG THE GOGRA BACKWATERS (AZAMGARH DISTRICT)



(d) DISPERSED SETTLEMENTS IN GOGRA KHADAR, COMPACT VILLAGES ALONG THE HIGH BANK (FYZABAD DISTRICT)

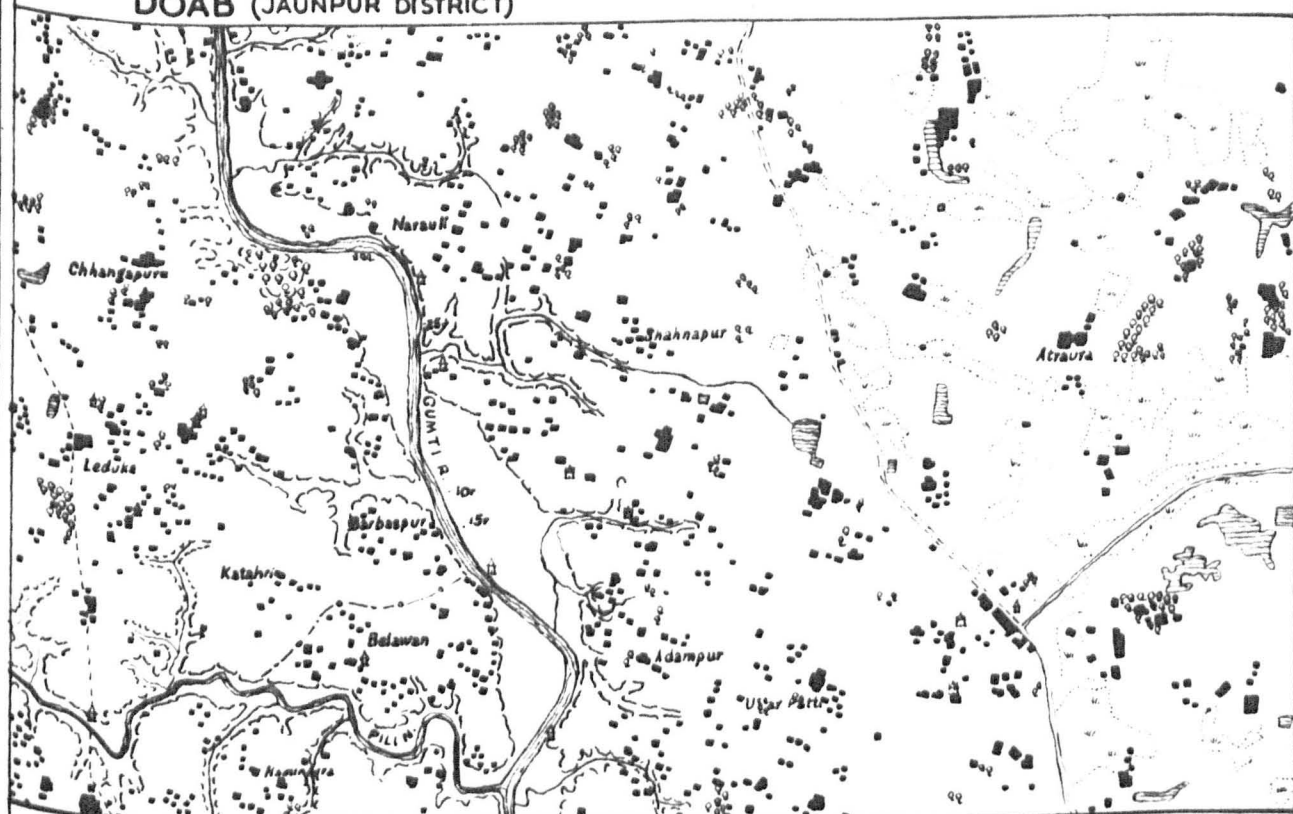


small-sized closely situated settlements.

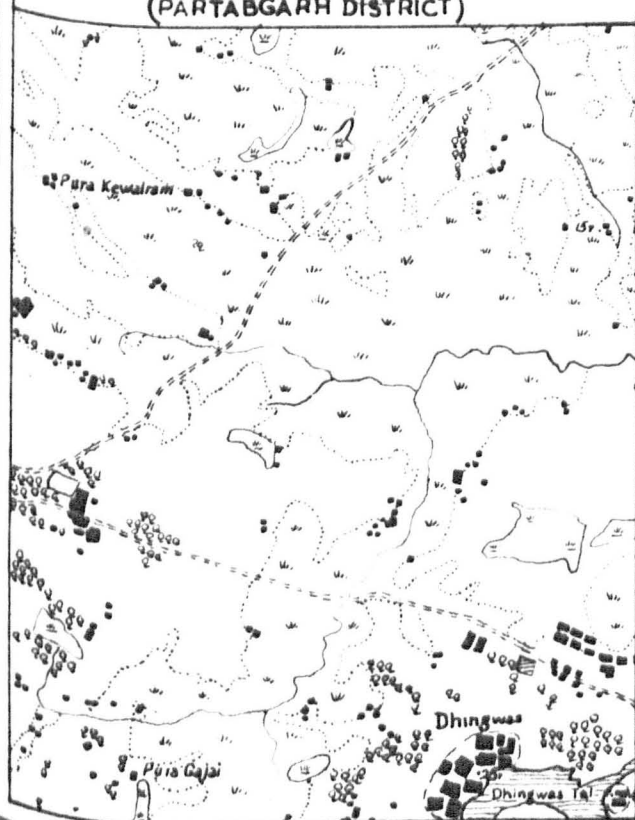
Inside the extensive usar belt broad patches of wastes occur in a very irregular manner side by side with the cultivated country. Closely linked with the patchy nature of cultivation the distribution of settlements is uneven. No habitation on the low-lying and saline usar is usually possible (Fig. ^{31a)}33b). As noticed in the case of the Middle and Lower Doab, the high proportion of usar in the districts of South Oudh leads to the frequent siting of settlements on the usar fringe. In the densely peopled eastern districts the occurrence of usar side by side with fertile cultivated country shows the difference in the distribution of settlements on the two different soils. Fig. 33a shows the amazing frequency of settlements on the fertile loamy country near the Gumti in contrast to their comparative scarcity in the usar area east of the road (shown on the map). It also shows how settlements on the border of usar are larger than those inside the loam tract.

The usar belt has a large number of oxbow lakes - the remnants of the old beds of the Sai, Gumti and other streams. When surrounded by usar they are remote from settlements but if they lie in the midst of cultivated upland they have provided attractive water-point sites (Fig. 33c). Groves are very common (Fig. 33d) often surrounding the village. A village sited on a mound often 10 to 20 feet above the ground may frequently be seen.

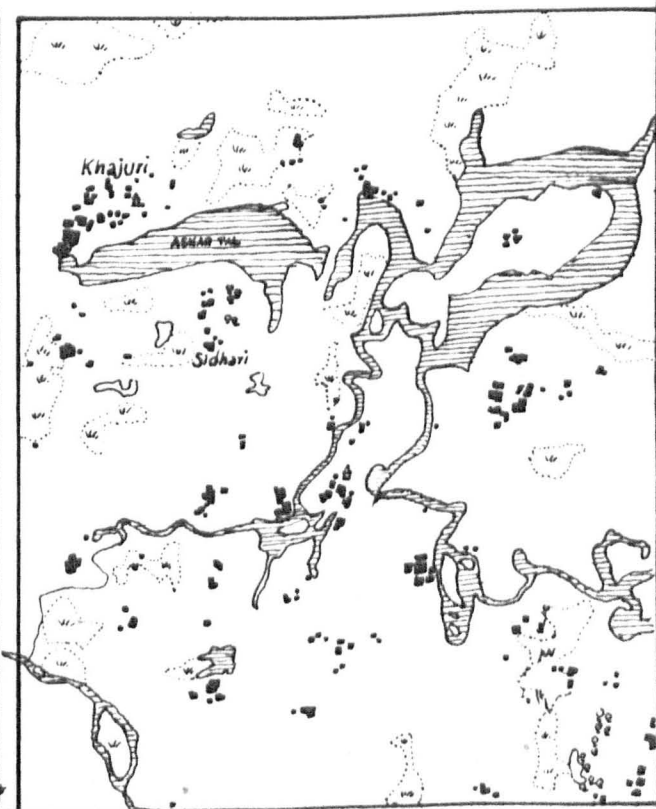
(a) HAMLETTED SETTLEMENTS IN THE EASTERN GANGES-GOGRA DOAB (JAUNPUR DISTRICT)



(b) SITING ON THE MARGIN OF USAR, GANGES-GOGRA DOAB (PARTABGARH DISTRICT)



(c) WATER POINT SETTLEMENTS NEAR 'JHILS' (AZAMGARH DISTRICT)



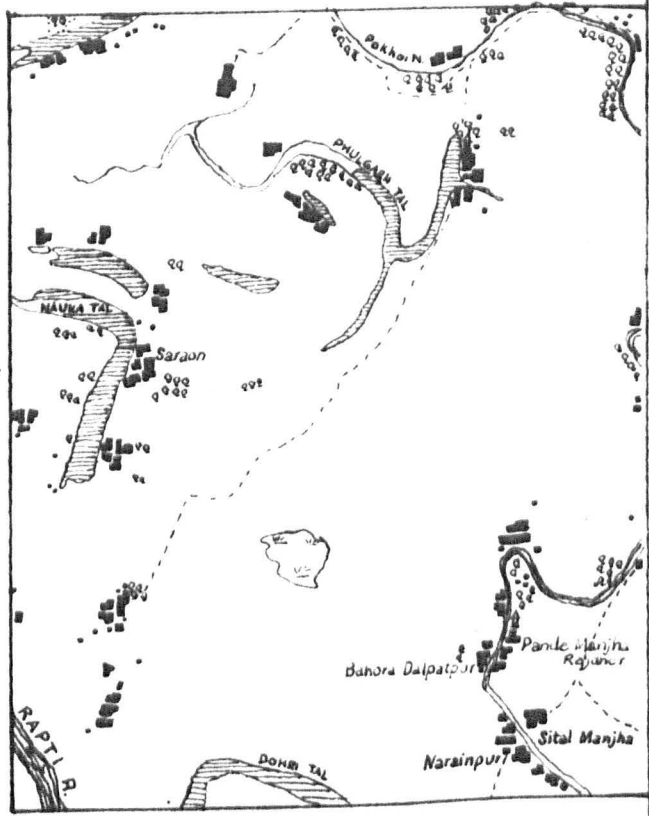
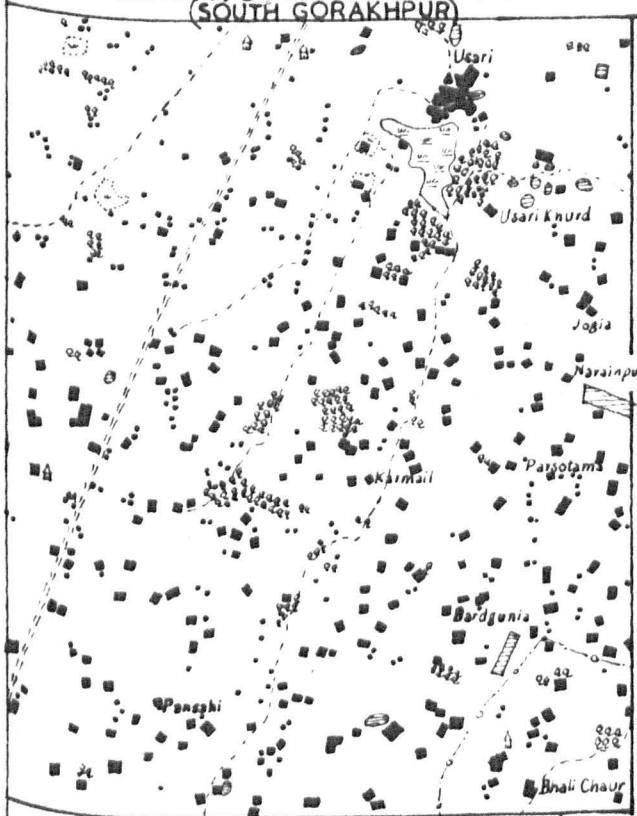
Further north on the loam tract the distribution is even. Settlements gradually decrease in size as we move east.

The khadar bordering the Sarda is wide and 8 or 9 feet below the upland. It is roughly divided into two halves. The lower half bordering the Sarda is traversed by numerous branch channels and subject to annual flood. Settlements consist of hamlets or a few isolated huts in the midst of cultivated rises. The upper khadar is more stable and the soil is more loamy. No irrigation is needed owing to a very high watertable. Settlements are akin to those on the Upland. The Gogra khadar is relatively narrow and the alluvial terraces are bordered by well defined banks. Large closely situated settlements cluster on the high bank (Fig. 32d) enjoying a dry-point site and the advantages of grazing and cultivation on the silt-flats below. Where the alluvial flats are above the flood-level the khadar is sprinkled over with closely located settlements (Fig. 32c) often aligned with the narrow ^{rises} formed by old channels.

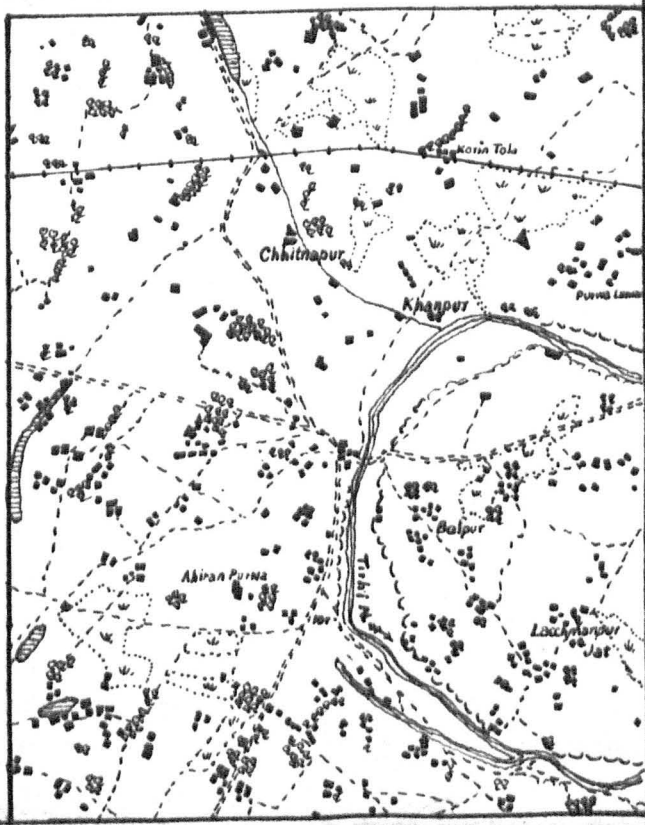
The Trans-Gogra Plain.

Settlements are evenly distributed in the Trans-Gogra Plain in a way dissimilar to that in another area of even distribution e.g. the Upper Loab. This difference can be seen by comparing Figures 34a with Fig. 25 to . What is striking is the closeness and the small size of settlements in this area, lying at a usual distance of 3 or 4 furlongs. The tract has a minimum of waste land. A high watertable has enabled the villager to dig masonry and non-masonry wells wherever he has the need. This has constituted greatly to the frequency of settlements. Minor irregularities of distribution may be seen within a broadly uniform sprinkle of settlements. As the area is subject to frequent floods settlements usually avoid the

(a) FRAGMENTED OR HAMLETTED SETTLEMENTS IN TRANSGOGRA PLAIN (SOUTH GORAKHPUR)
 (b) WATER FRONT & DRY POINT COMPACT VILLAGES (GORAKHPUR DIST.)



(c) FRAGMENTED SETTLEMENTS IN TRANSGOGRA PLAIN (GONDA DISTRICT)



vicinity of rivers. Large rivers, especially the Rapti, however, have developed well-marked levees in contrast with the lowlying land behind the banks subject to inundation during the rains through the spill-channels of these streams. Here settlements are perched on the levees while the riverine tract immediately behind these drypoints is without habitation. Some of these rivers, owing to their meandering courses, have left frequent oxbow lakes whose elevated margins (old levees) are selected as drypoints, waterfront sites (Fig. 34c). The usual settlement is sited on a spot somewhat raised above the level of fields.

The even distribution is disturbed in the Gogra-Sarda interfluvium and in the Gogra riverine. Here a large area is under tamarisk. Dry-point settlements are seen on the silt islands. Wells are difficult to construct owing to the sandy substratum and it is interesting to see huts built along the spill-ways of the Gogra. Though these branch channels are dry in the hot season the watertable in their beds is near the surface and water seeps through into small pits dug by the inhabitants.

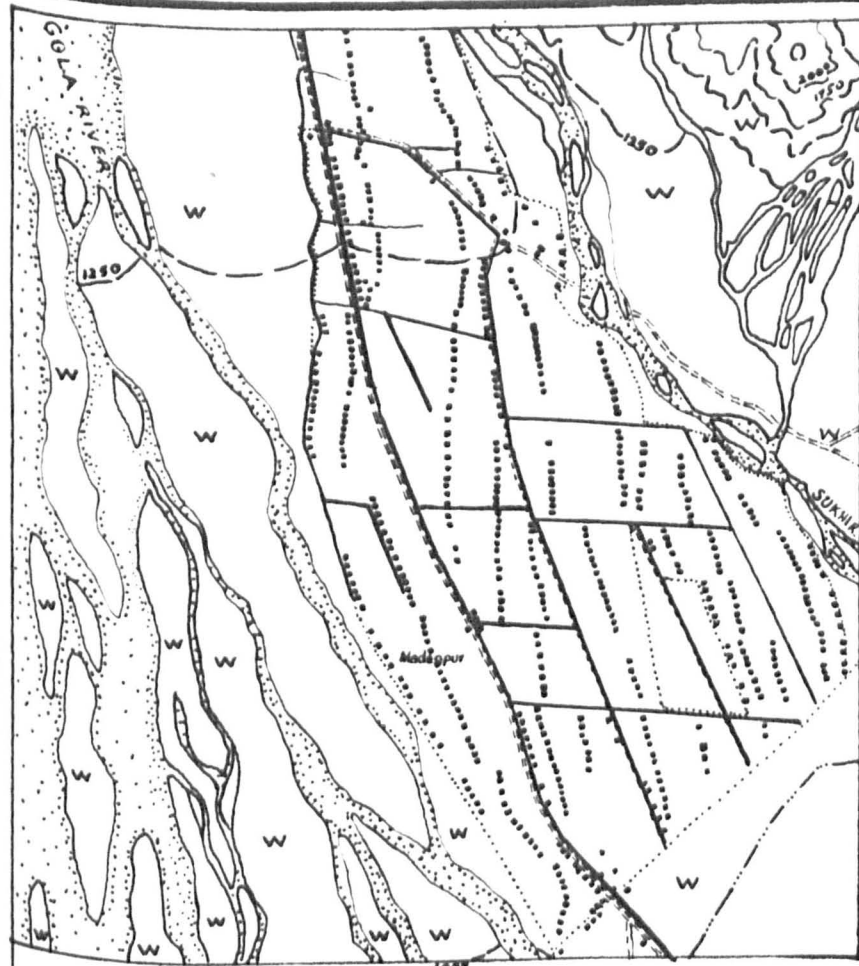
The Bhabar

Waterpoint settlements are most characteristically developed in the dry belt of Bhabar. Every stream that descends the Siwalik Range finds itself on a comparatively level surface at the foot of the hills. The gravels and other sediments are deposited here in the form of alluvial fans of various magnitude. As we have noted earlier the water of these streams, before it is lost in the gravelly soil, is diverted (usually at the apex of the fans) into irrigation channels most of which are masonry. These channels traverse the alluvial fans to the southern limit of cultivation which is determined by the slope of the country and the absorbing quality of the soil.

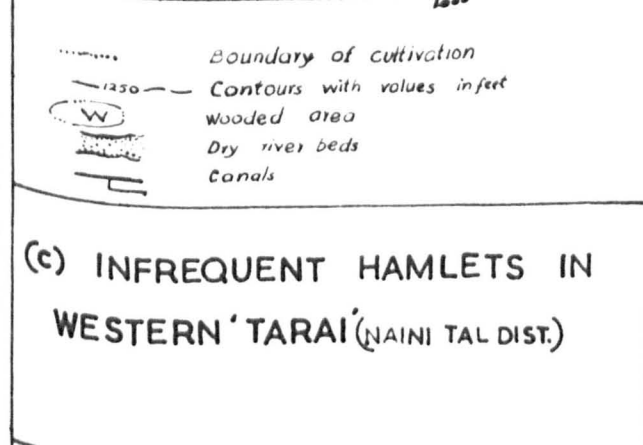
The channels are the only source of water both for human consumption and irrigation. The large streams viz. the Kosi, Baur, Babka, Gola, Sukhi and Mandhaur are associated with extensive alluvial fans some as wide as five miles on either bank of the river. They are not lost in the subsoil boulder and supply enough water to the numerous channels irrigating the whole of the fan. Owing to the gravelly nature of the subsoil and the unknown depth of the watertable wells are entirely non-existent in this region. Surface water in the form of ponds or lakes is unknown. Settlements, therefore, are exclusively confined to the irrigated and cultivated alluvial fans, the dwellings being constructed close to, and parallel with, the channels (Fig. 35a, b). Practically all the Bhabar settlements east of the Ramganga are confined to the alluvial fans of the above-named rivers, which are surrounded by forests on all sides. A few tiny fans formed by small streams, with irrigated patches of cultivation hardly exceeding a few hundred acres support one or two villages in the midst of 'Sal' woods (Figs. 35d). These Bhabar settlements are partly seasonal and partly permanent in the sense that some dwellings in a settlement are occupied throughout the year and others only in winter season. It is the migrant hillmen who have two dwellings - one in the Himalayas where they live in summer, and the other, in the Bhabar which they occupy from November to April. The Tharus (a tribe permanently residing in the Bhabar and Tarai) and labourers from the Ganges Plain employed by the landlords who move to the hills in summer permanently occupy parts of the Bhabar settlements.

West of the Ramganga most of the streams that traverse the Bhabar rise on the Siwalik watershed. They do not contain water perennially even before they enter the Bhabar and irrigation channels are out of the question

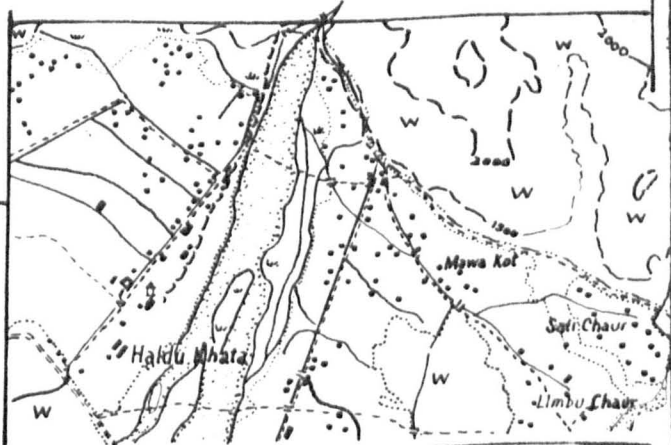
*The southern part of this Bhabar (east of the Ramganga) is a rather dry forested tract and a lonely hamlet or the bungalow of the Forest Dept., are only found at intervals of several miles in small clearings.



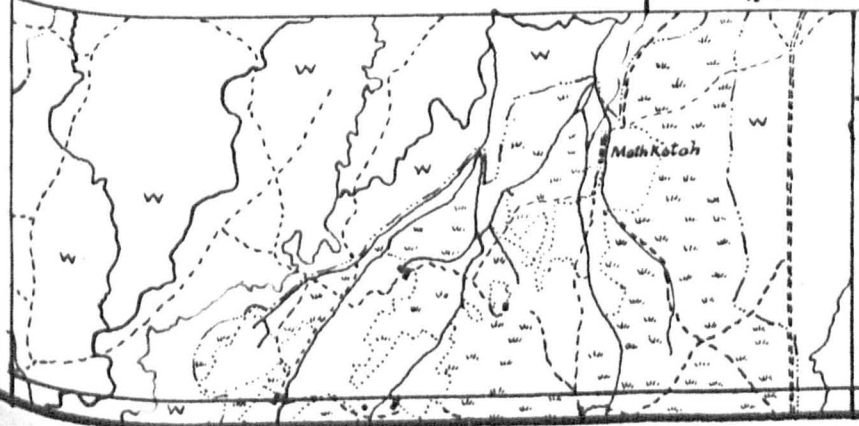
(a) LINEAR SETTLEMENTS ALONG CANALS IN THE 'BHABAR' (NAINI TAL DISTRICT)



(c) INFREQUENT HAMLETS IN WESTERN 'TARAI' (NAINI TAL DIST.)



(b) DISPERSED SETTLEMENTS IN GARHWAL 'BHABAR'



(d) SITING ON ALLUVIAL FANHEAD IN 'BHABAR' (NAINI TAL)

Settlements in the Garhwal Bhabar, therefore, are scarce and do not occupy cultivated patches more than a few square miles on some of the alluvial fans and the rest of the tract is under forests. The Bhabar in Bijnor and Saharanpur loses most of its usual characteristics ^{where} the forests have been felled. Gravels and sands are confined to the broad beds of seasonal torrents called 'raos', and the interfluvies by constant cultivation have been made akin to the Ganges Plain. Though the watertable is deep (c. 60') wells have been constructed near habitations. Villages are as large as those further south but at longer intervals owing to the considerable proportion of land occupied by the 'raos'.

The Tarai

From the viewpoint of distribution and siting of settlements the Kumaon Tarai is distinct from that lying east of the Sarda.

While there is a quest for wetpoints in the Bhabar the villager in the Kumaon Tarai looks for drypoints. Much of the area is under jungle or grassy lowlands. Regular inundation during rains, frequent river channels, a high watertable and the prevalence of malaria make it inevitable that the settler occupies a dry elevated site. Small patches of cultivation are located on occasional uplands in the centre of which lies the lonely Tarai hamlet (Fig. 35c). Some rises may be found on the sides of streams but they are not common, the beds of the streams being usually lowlying and bordered on either side by extensive reedy swamps. Settlements frequently occur by the sides of roads and cart tracks which occupy higher and firmer ground. Grasses and woods gradually dwindle further south and the streams flow through well-defined channels. Small villages here are evenly and closely distributed as in the Upper Ganges-Gogra Doab.

In the Trans-Cogra Plain the Tarai is fairly free from extensive swamps and jungles. Patches of 'sal' forests are found but cultivation extends to their margins. Small patches of swamps occur only in some river beds or near the border of forests. The villages are located on elevated sites in the centre of the mauzas and regular annual inundation favours continuous paddy cultivation. The usual settlement occupies an area of about 4 to 5 acres and is distributed regularly at an average interval of half a mile (Fig.31c).

CENTRAL INDIAN FORELAND.

The Bundelkhand Plateau.

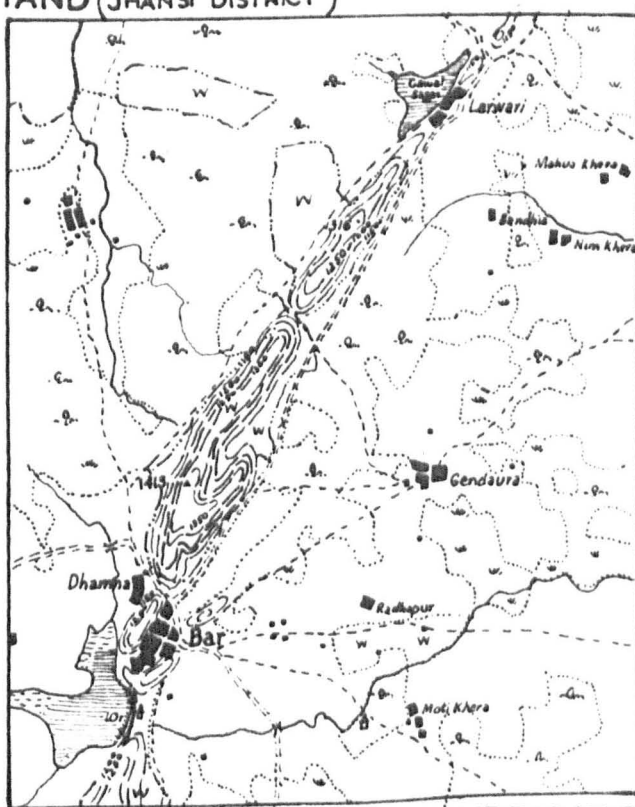
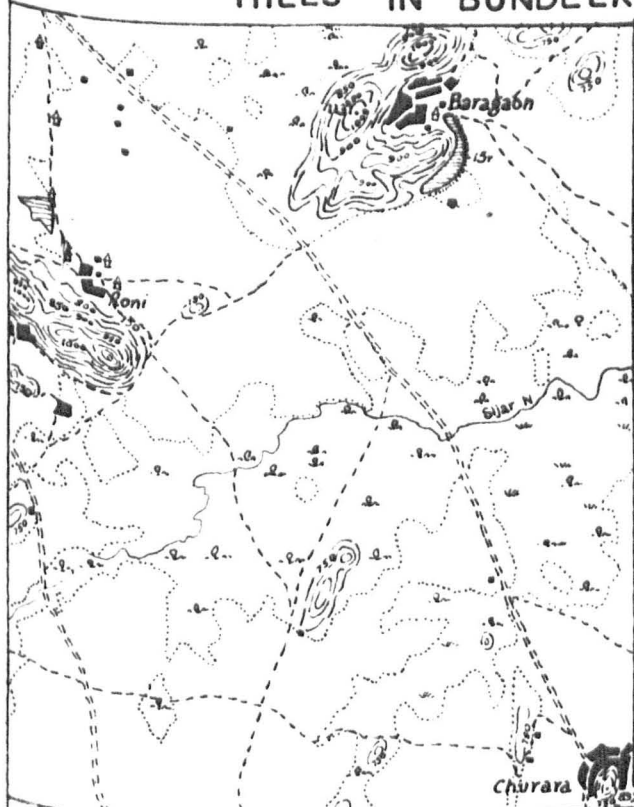
The Bundelkhand upland is delimited on the north roughly by latitude $25^{\circ}30'N$. The characteristic soil is light and gritty. Small ridges usually a few furlongs wide and one or two miles long, though occasionally round, frequently occur over the area lying generally in a north-east-south-west direction and rising a few hundred feet above the general level. In the north they are small and generally bare, but in the extreme south of western Banda, Hamirpur, and in central Jhansi they increase in size and frequency and are usually covered with jungle. South of latitude $25^{\circ}N$ they again decrease in number. Frequently they form natural embankments impounding the water of local streams into large tanks. Elsewhere artificial embankments dam the water of the nalas. Ravines on the sides of streams, so common in the Trans-Jumna Plain on the north, are almost non-existent here because the riverside soil has been kept intact by a strip of woodland along the banks. As we move towards the south, cultivation becomes increasingly patchy owing to the frequency of woods, hills and

dry grassy wastes on the sandy soil. These features result in a rather interesting distribution of settlements.

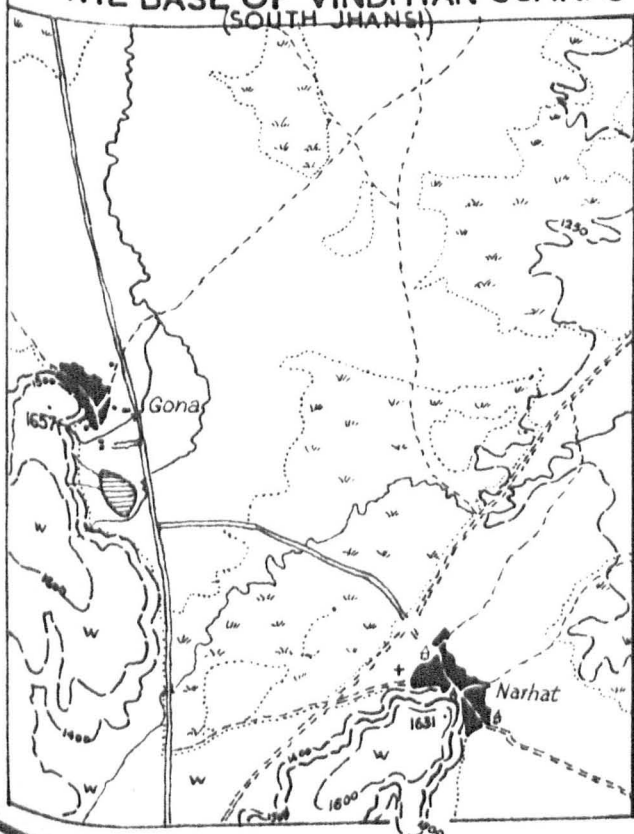
The most striking siting is at the foot of the small isolated hills. A site on the line of contact of cultivation with the hills (Fig. 36a) has several advantages. Not only do the hills impound the water of the seasonal streams into tanks which supply water to men, cattle and fields, but being usually wooded they are the grazing grounds of the village live-stock and a source of fuel and building and agricultural timber to the occupants of the village. The hill-foot situation was defensible during the days of feudal warfare. In the zone of maximum frequency of hills these strong-point hillfoot settlements predominate, the next in order of frequency being those along streams or near interfluvial tanks. The size of settlements varies greatly, the larger ones equalling the Upper Doab village, smaller ones being but tiny hamlets. Generally the hillfoot village is larger than its counterpart in the interfluvium. About half the settlements have tanks near them. Whether situated at the base or side of a hill, near streams or in the interfluvium, most of the settlements can be classed as waterpoint villages.

Hills and tanks decrease in frequency in the blacksoil zone of Lalitpur and Mahroni tahsils (Jhansi) where riverside settlements are the largest in number. In the extreme north of Jhansi villages situated at the base of the wooded spurs are large contact-point settlements (Fig. 36b). These sites are focal points of roads usually where springs occur and streams descend from the Vindhyan hills.

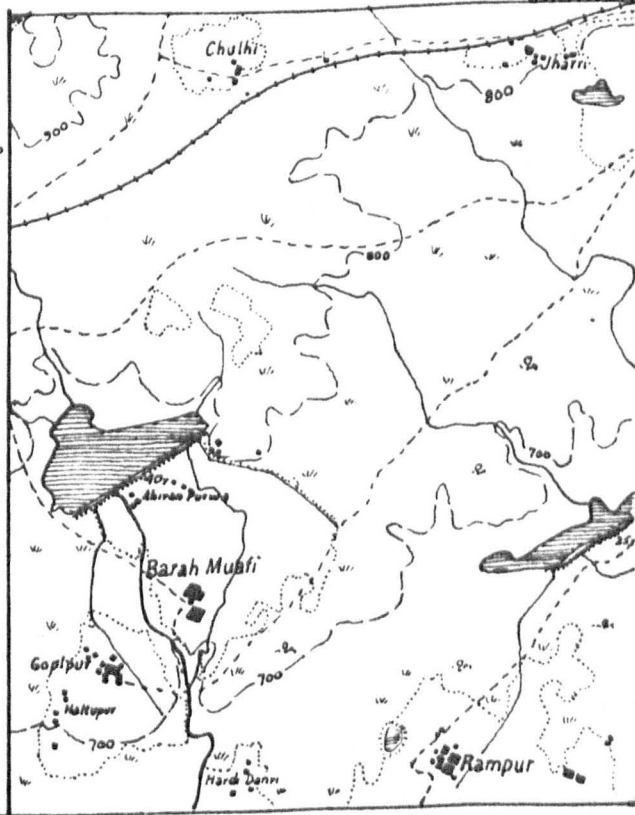
(a) VILLAGES ON THE SIDE AND BASE OF HILLS IN BUNDELKHAND (JHANSI DISTRICT)



(b) CONTACT-POINT VILLAGES AT THE BASE OF VINDHYAN SCARPS (SOUTH JHANSI)



(c) SETTLEMENTS BELOW IRRIGATION TANKS ON VINDHYAN UPLAND (BANDA DISTRICT)

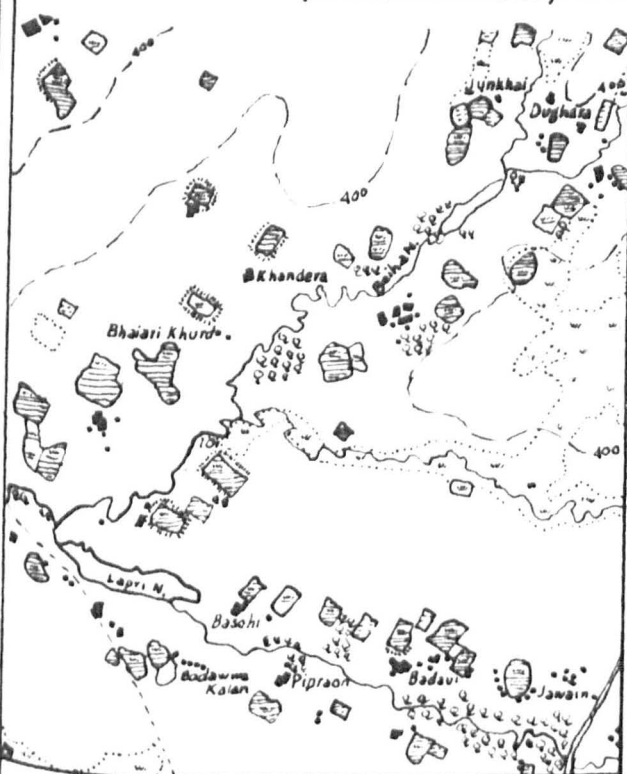


South Eastern Uplands.

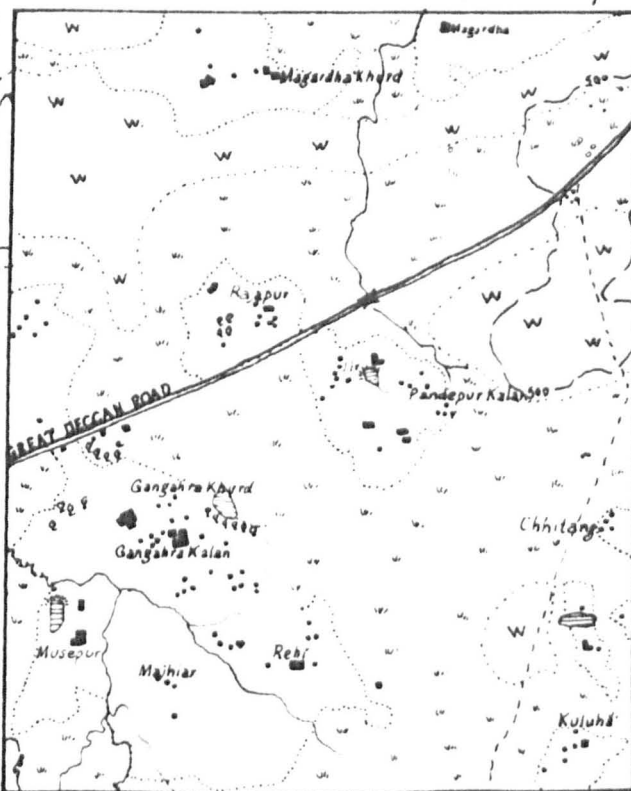
The south-eastern uplands are divisible into two parts viz. the Vindhyan Upland and the Archaean tract south of the Son, according to the type of settlement distribution. The Vindhyan upland is characterised in the north by a hilly wooded belt, roughly five to ten miles wide with small rounded outliers and traversed by numerous seasonal and perennial streams descending from the plateau. Strips of cultivation studded with tanks (Fig. 37a) lie close to the perennial streams and round the hills. The central portions of the interfluvies when not occupied by hills are usually grassy ~~and~~ or stony wastes. Quick run off makes waterpoints important, so settlements are located near the streams and at the foot of hills while the wastes of the interfluvies remain uninhabited. Hillfoot settlements are usually larger than riverside establishments.

Further south at the base of the Vindhyan scarps 'contact point' ^{and the northern fringe of the plateau} settlements are very frequent. The scarps ^{sides} are usually wooded affording regular pasturage; streams descending from the plateau are unpounded into large tanks from which small canals, a few miles long, are taken off to irrigate the fields below. Local chieftans often built their forts on these defensible and advantageous sites and round the forts stand the peasants' dwellings. In Banda where the scarp takes the shape of a regular range called the Bindhachal Range such contact point villages ^(Fig. 36c) are noticed on both ^{sides} ridges of the hill. South of the scarps in the wooded zone of the upland settlements, usually of small size, are located in forest clearings (Fig. 37c) Further south, beyond the jungle, cultivation is more regular, especially in the paddy zone of the Chagar Canal and Belan Valley. Owing, however, to the widespread occurrence of stony thin soil, settlements are usually small.

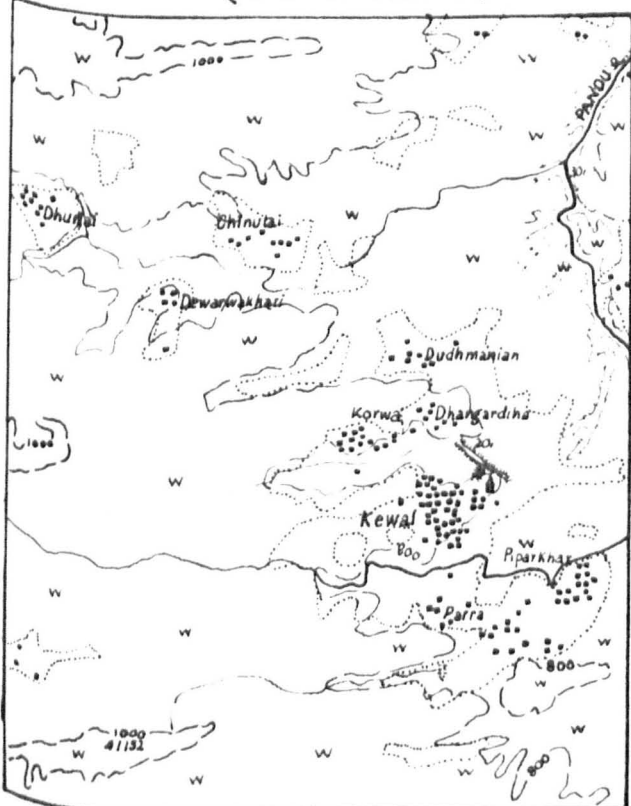
(a) SETTLEMENT ALONG SOURCES OF WATER (TANKS & RIVERS) VINDHYAN UPLAND (SOUTH ALLAHABAD)



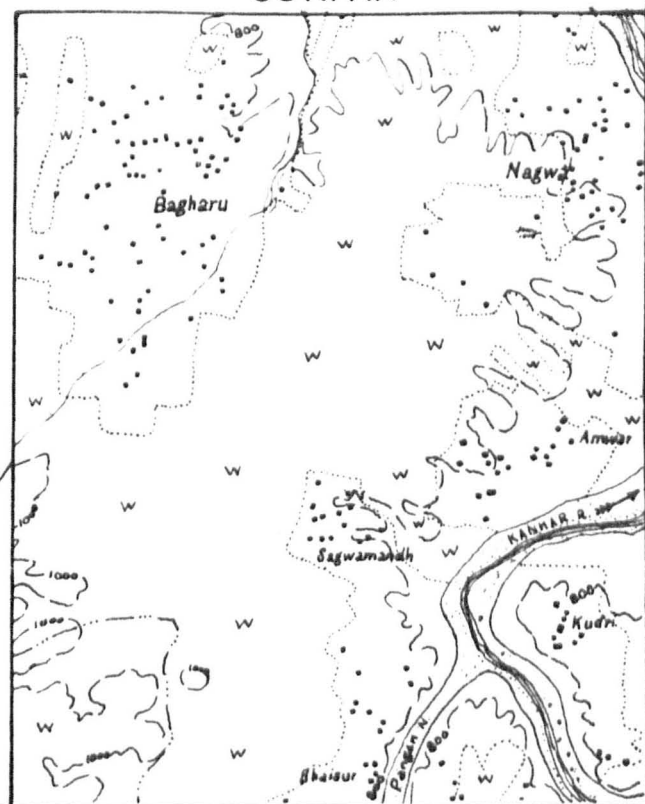
(b) FRAGMENTED SETTLEMENTS ON VINDHYAN UPLAND (MIRZAPUR)



(c) SPUR SITES IN 'SONPAR' (MIRZAPUR DISTRICT)



(d) MARKED DISPERSAL IN 'SONPAR'



The 'Sonpar'!

The plateau topography of the Vindhyan upland gives place south of the Son to a very irregular relief on the Archaean formations, characterised by residual ridges and isolated basins formed by the occasional widening of the valleys of the larger streams which are otherwise narrow and steep-sided. Most of this remote area is covered with jungle. "The soil varies in depth from about five feet on the hill sides to fifty feet in the valleys".¹ It is usually loose and sandy but fine alluvial loam occurs sometimes in the wider basins near the streams. Drainage is very quick; the watertable is variable and usually cannot be reached without piercing the hard rocks. Small filtration wells or water impounded by embankments fail during the hot season owing to the porous nature of the soil and the inhabitants have to depend² for their supplies on rivers and streams.

Settlements, therefore, are very irregularly distributed and large areas of jungle are without any habitation. Small cultivated clearings occur usually on the side spurs of ridges, near some perennial streams or where a seasonal rivulet is dammed and supports one or two villages. Larger streams are often wooded on their banks (where moisture has resulted in a relatively dense growth of forests) prohibiting settlement, so that where settlement has taken place it is sited on the sides of spurs usually above the limit of cultivation. Often a village is at the valleyhead on the sloping interfluvies of ravines (Fig. 37c). Where river valleys have widened into considerable alluvial basins (Fig. 37d) cultivation extends from the sides of spurs to

to the river banks and dwellings are scattered over the cultivated area so that the dwellings of one village often merge with those of another. The greater the height of a settlement the further it is away from water and the smaller its size. Intermittent dry cultivation, (fields being cultivated for three years and lying fallow for the next three), is the rule on non-alluvial sites. The average settlement consists of 10 to 15 huts and while large villages may contain 40 to 60 dwellings, hamlets have only 3 or 4 huts.

THE HIMALAYAN REGION.

Great Himalayas.

The tract north of the Snowy Range (Great Himalayan Range) consists of the parganas Johar and Dharma (Almora district) and Painskanda (Garhwal district) and is known as the 'Bhot' Region. The portion of Tehri State falling in this zone consists of the valleys of the Bhagirathi and its tributaries. The whole tract is made up of a number of valleys¹ separated from each other by high snow-capped ranges running roughly north-south and thus joining the Tibetan watershed with the Great Himalayan Range. Each valley is separated from the other and has its separate identity. Its link with the outer world is through the pass at the head of the valley in the north and through the gorge it has carved out of the Great Himalayan Wall in the south. The entire region remains buried in snow from October to March. The snow-free period extends from April to September and during the hottest days the mid-day temperature ranges from 65 to 75F.² The area

¹ The Tons, Bhagirathi, Saraswati, Dhaul, Goriganga, Dharma and Kali (in order from west).

² Traill, G.W., Statistical Report on the Bhotas Mahals of Kumaon, (included in the Report on Kumaon and Garhwal, by J.H. Batten (1851), p. 74.)

is beyond the influence of monsoonal rain and any precipitation even during the summer months, is in the form of snow, hail and storms causing heavy landslips and destructive avalanches.

The primary consideration in the siting of settlements is safety from avalanches. This has led to all the villages being confined to the *above-mentioned* valleys mostly at a distance less than a few furlongs from the rivers and habitations outside these safety zones are rare. Settlements are located either on moderate slopes of spurs close to the river or on alluvial cones formed by small tributaries of the main stream. Great care is taken to avoid the locality of steep slopes.

The next important consideration in siting is proximity to the Tibetan markets. "The nearer the village is to the Tibetan frontier the greater are its advantages".¹ The Bhotia collects salt, wool and borax from the Tibetan markets, during the summer and comes down to the Lesser Himalayas or Bhabar during winter to exchange these commodities with grains, *and other goods* which are taken to Tibet next summer.

Agriculture is a subsidiary occupation. Sites on alluvial cones provide cultivable soils and facilities for flow irrigation.

The settlement in the Great Himalayas is primarily a trade depot. These high villages lying mostly at an elevation of 1,000 to 11,000 feet and being subject to an extremely vigorous climate are inhabited only during the summer months by the Bhotia women and children whose menfolk, after sowing the fields, cross into Tibet for trade. The winter residences of the Bhotias lie in the Lesser Himalayas south of the Snowy Range or in some cases

¹ Atkinson, E.T., Gazetteer, North-Western Provinces of India, Vol. III, Himalayan Districts, Vol. III, (1886), p. 93. (A quotation from Traill).

in villages in the southern portions of the valleys. As for example, much of the population of the Bhot region in Garwhal collects at Joshimath in the winter season. When the families are settled in the Lesser Himalayan residences some of the Bhotia traders start with their merchandise brought from Tibet to Bhabar markets e.g. Ramnagar and Haldwani.

Settlements are usually at a distance of two to four miles from one another occurring alternately on either side of the river. The average settlement is larger than that in the Lesser Himalayas owing to the need here of concentrating dwellings on a single safe site out of reach of avalanches as mentioned above.

The Lesser Himalayas.

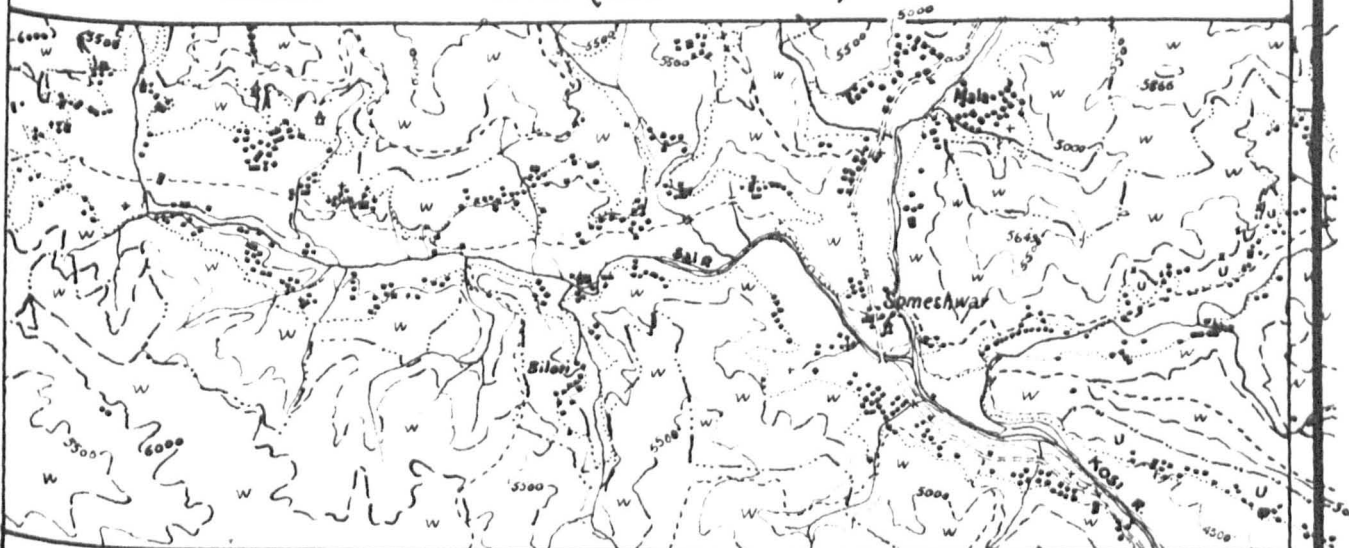
The entire region is a confused mass of ridges and valleys running in all directions. Numerous perennial streams take their rise usually in a spring near the crest of each ridge and rush down to meet a large stream at the base of the ridge. These perennial streams cut the side of the ridge into spurs and re-entrants and often deposit an alluvial cone in the valley of the larger stream below. The larger streams either join the Juma, Ganges, Ramganga, Kosi and Sarada or one of their tributaries. It is rare to find an unbroken stretch of even one square mile of level ground. The region is pre-eminently a country of slopes. Small comparatively level pieces of land, a few hundred acres in extent, however, are of common occurrence near rivers. Often these flattish areas called 'bagar' are ranged into gigantic 'terraces' scores of feet one over the other. From the human point of view the gradient of slopes is extremely important. Gently sloping ridges can easily be terraced, retain deeper

soil and facilitate movement. When the angle is steep, terracing is costly and arduous, the soil thin and subject to constant erosion. Though this region ranges from about - 2,000 to nearly 10,000 feet above sea-level most of the river valleys lie below 5,000 feet. Generally speaking the climate of the river valleys is far from healthy the temperature¹ from March to October rarely falls, except after heavy rainfall, below 80°F, a result of the low situation and the reflection of insolation from hill sides. During the cold season (November to March) the valleys are shrouded with heavy mist during the forenoon, and while there is hoarfrost in the valleys by night, the hillside a thousand feet or so above, is not affected. As a whole in open situations even a few hundred feet above the valley the climate is more equable. Forests cover most of the country above 8,000 feet. They also clothe the upper parts of most ridges irrespective of their elevation.

The conditions outlined above result in a very uneven distribution of settlements. Not only the forests and bare steep slopes at all levels but also the area above 7,000 - 8,000 feet is almost without settlements. Cultivation rarely goes higher than this and the upper limits of cultivation and settlements are naturally not very different. Settlements occur side by side with cultivation which (except in some portions of central Almora and Garhwal where series of ridges under continuous cultivation occur) may be seen in patches divided by intervening ridges, ravines and woods. While at some places, a valley may widen out, though rarely more than a few furlongs on either side of the stream (Figs. 38a) and support a more or less

¹ Paw, E.K., Report on the Tenth Settlement of the Garhwal District, (1896), p. 6.

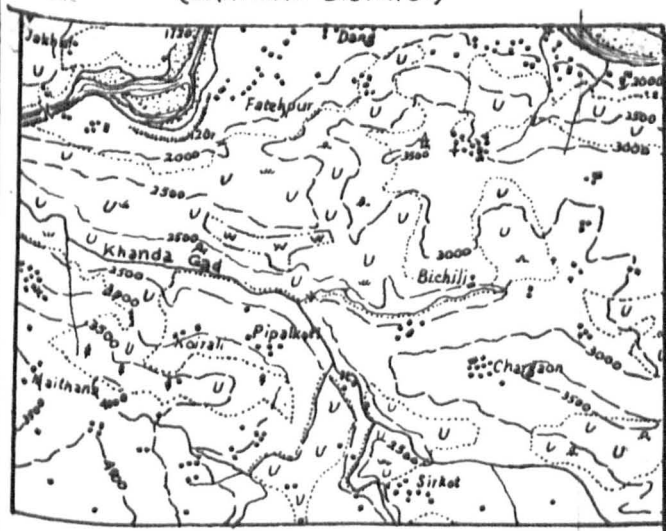
(a) SPUR SETTLEMENTS ALONG A VALLEY IN THE LESSER HIMALAYAS (ALMORA DISTRICT)



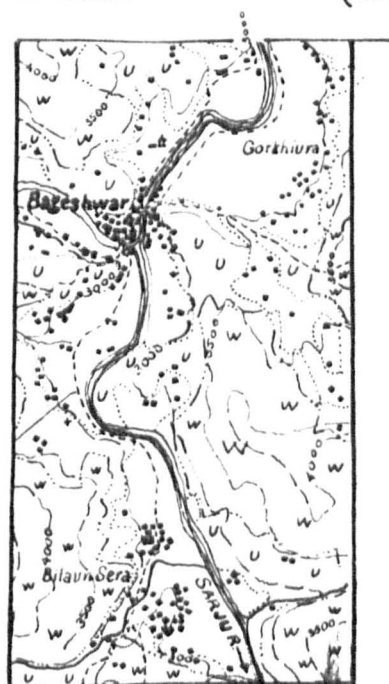
REFERENCE

- | | | |
|-------------------------|-------------------|-----------------------------------|
| Dwellings | other wooded area | Rivers with perennial tributaries |
| Boundary of cultivation | Bare waste | Spring |
| Reserved Forests | Track | |
| | Contours | |

(b) RELATIVELY DISPERSED SETTLEMENTS, LESSER HIMALAYAS (GARHWAL DISTRICT)



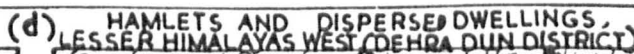
(c) LARGE VILLAGES ON ALLUVIAL CONES, LESSER HIMALAYAS (ALMORA DISTRICT)



continuous chain of settlements on the spurs of the valley sides, at others it may narrow into deep gorges devoid of any agriculture or habitation. Similarly, where a ridge slopes gently on one side and steeply on the other prosperous settlements may occur on the former while the latter remains unsettled. In spite of all these irregularities of distribution we notice an increasing frequency of settlements as we move from north to south. This is associated with a gradual decrease of height and broadening of valleys. The maximum frequency of settlements is reached in a central belt running from Dehra Dun to Almora districts. Settlements also increase in number from west to east owing to the broader valleys in the latter direction. Thus while the valley sides of the broadest rivers in the west viz. the Jumna and Tons have a usual gradient of about one in three ^{those} of the Gunti and Kosi in Almora have a slope of one in ten to fifteen (Figs. 38a, 39d). On the southern face of the outermost range above which are situated the hill stations, the frequency of rural settlements decreases in comparison to the central belt owing to the relatively steep slopes and the dense forest growth.

The predominant and typical site for settlements in the Lesser Himalayas is a spur overlooking a river valley. Fig. 39f shows the advantages of such a site in relation to the land use in the region. As we ascend from the bank of the stream we find in succession seven stages viz. (1) the richest alluvial lowland given to paddy and always irrigated¹, (2) land on a higher level only partly irrigated and given to drier crops, (3)

¹Water is brought down to the fields through channels locally known as 'guls'. These channels are taken off from local rivulets a dam being constructed across them at a point above the land to be irrigated. The gul is cut roughly along the contour line of the ridge. Near the river bank before the gul joins the stream it turns one or two water mills. Irrigation is by flow and an invariable top-dressing of rich silt is deposited by flooding on the fields.



an unirrigated terraced slope, the lower half of which is double cropped, the upper half growing a single 'mandua' (*eleusine coracana*, a coarse millet) crop, (4) the village site in the midst, but nearer the upper limit of cultivation, (5) the untterraced and intermittently cultivated land, (6) open jungle: the village grazing ground, fuel and timber reserve and finally, (7) the reserved forests. Most mauzas approximate to this ideal. Variations occur in which case either the forest is absent owing to the steepness or deforestation of the upper slopes or the riparian lowland is non-existent because of the steep angle of the valley side near the stream. (The two cases are related to the concavity and convexity of the slopes).

"These advantages and disadvantages compensate one another in a surprising manner and there is really far less diversity in the value of 'villages' than one would at first suppose".¹

The site on the middle of the spur jutting out from the hillside is airy, well drained and safe from landslips and above the sultry heat of the valley bottom. The site is at a minimum distance from the cultivation below and the grazing ground and forests above. Near the village lies the spring² which is the most common source of drinking water. If no spring exists, water is brought in a conduit from a stream above, or the stream below cultivation is utilised as a source of water supply. Owing to the rapidity of drainage and the rocky substratum the question of water for human consumption and for irrigation is so essential that few settlements lie at a distance greater than a few furlongs from some perennial stream.

¹ *Illustrations of the villages of the Almora district* by D.C. Almora (1911), p. 47-48.

² *Notes on the water supply of the Almora district* by D.C. Almora (1911), p. 49. One often notices springs on all sides of a ridge occurring more or less at the same level. Settlements on the sides of such ridges may be seen confined to these zones of springs.

A considerable number of the typical spur settlements are associated with relatively wide valleys (Fig.38a). But it is not common to find a settlement on the alluvial land near the bank of the river. Such riverside sites are avoided owing to the richness of the level paddy land which is occasionally flooded by irrigation channels, the sultry climate of such a situation and fear of floods. The few settlements that occur on the banks of rivers are usually shrines on the confluence of sacred rivers (Fig.38c) or where tracks following the valleys of two streams meet. Tracks in the Lesser Himalayas frequently occupy the elevated ridgetops or the sides of spurs, passing through the spur settlements. Whenever a secondary track joins a main track in a valley a settlement is seen. Riverside settlements may also be due to a sudden increase of gradient above the valley lowlands or a downward extension of forests making a spur site impossible. Often settlements are very frequent at the heads of both large and small valleys e.g.

the Sai Valley head (Fig.38a). The valley in these cases may be a little wider than further down owing to the denudation of the slopes by numerous headstreams. The usual topography is in the form of an amphitheatre of gentle gradient, the settlements lining the slopes near the upper limit of cultivation.

Another departure from the characteristic spur site is that of the infrequent ridge-top settlement. Tiny pieces of cultivation, often untarred, may occur on flat pieces of level ground. This open airy situation is invariably associated with a mountain trail. Often ridge-top settlements have sprung up near tea gardens or are the residences of shopkeepers catering for mountain travellers in their annual

migrations.* Sometimes they are associated with temples.

The usual settlement in The Lesser Himalayas is small. The number of 'villages' with more than one thousand persons is only 4 in Naini Tal, 2 (including the plain portion) in Almora and 19 in Tehri, 11 in Dehra Dun and none in Garhwal. Thus only a few settlements can be found in this region comparable in size even with the average settlement of the Ganges Valley. While a considerable number of settlements consist only of one or two dwellings the most frequent size is 15 to 20 houses. The size of settlements is related directly with the extent of cultivation in the mauza. Large villages can occur only where the valley of a river is unusually broad or near the confluence of rivers where the rich riparian lands of the two valleys have united; or on alluvial fans (Fig. 38c). Settlements subsisting on a few acres of cultivation on ridgetops or steep spurs or in forest clearings are evidently the smallest.

* There are two types* of migrants in the Himalayas viz. the Bhotias and some inhabitants of the Lesser Himalayas. We have noted the movements of the Bhotias. (p. 95, prompted by the advantages of trade with Tibet and excellent grazing in the Great Himalayan Valleys.

A portion of the Lesser Himalayan population, especially from the northern parts of this region where severe winter is relatively of agricultural idleness moves down to the Bhabar after the summer crops have been harvested and the sowings of spring crops completed. The hill-man finds employment and a sunny warm climate in the Bhabar zone from November to April. The migrants consist of three classes of people. The richest group consists of the landlords who own most of the land in the Bhabar and have permanent residences both in the hills and the Bhabar zone. They either dispose of their gain in the Bhabar markets or carry it back with them on their return journey to the hills. The second class of people who come down from the hills are labourers finding ready employment in the Bhabar forests which are worked to their maximum during this season. The last group is those of herdsmen who come with their livestock. They profit by extensive and rich grazing and carry on a lucrative trade in chi (clarified butter). All these people leave the Bhabar and reach the hills before the rabi crop is ready for harvesting.

Pant, S.D., Social Economy of the Himalayas 1935.

very strong influence on the sitting of settlements. (Fig. 38c).

S.D. Pant (1911), p. 41.

The 'Duns'.

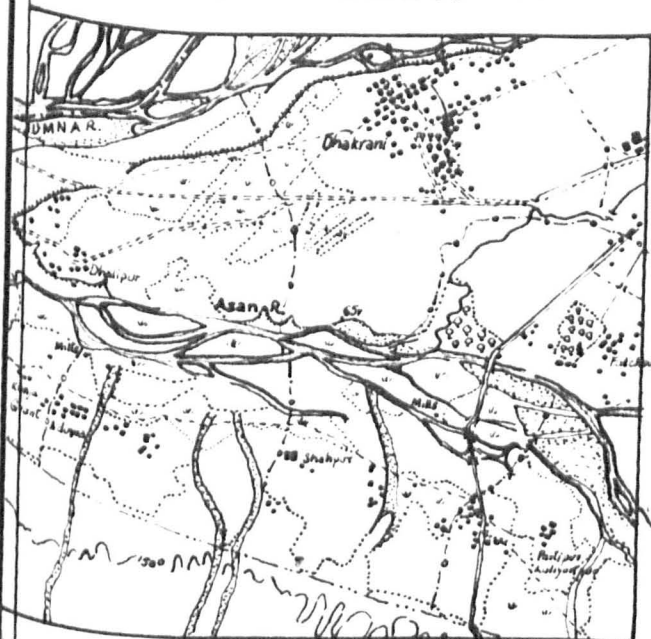
Only two of the Duns viz. Dehra and Kotah Duna, have cultivation and settlements. Overlying the Siwalik formations and built of detritus from the same these longitudinal valleys are very similar to the Bhabar on the south of the Siwalik Range. As the soil is gravelly and porous, and wells are practically impossible to construct the Dun settlements like those in the Bhabar are waterpoint settlements.

In Dehra 'Dun' a considerable proportion of the northern slopes of the valley, and the whole of the Siwalik slope on the south is under forests. The gravelly beds of 'raos' form another type of negative area. Drinking water wells exist only in a few villages. Despite a copious rainfall the porous nature of the soil makes irrigation necessary. As in the Bhabar most of the streams disappear into the earth near the foot of the hills and do not emerge until they have reached the lowest drainage line occupied by the large rivers viz. the Song, Suswa and Asan. Not only do the private and government canals supply water for irrigation but they are by far the most important source of water for human consumption. The villagers, settling near canals, are able to live on and cultivate land which would otherwise, for lack of drinking water, be barren. Again a tenant obtaining three or four acres of canal-irrigated land will cultivate ten or twelve acres of dry land; but for the canal the whole would be left uncultivated¹ where canals are out of reach perennial rivers are the alternative source of water.

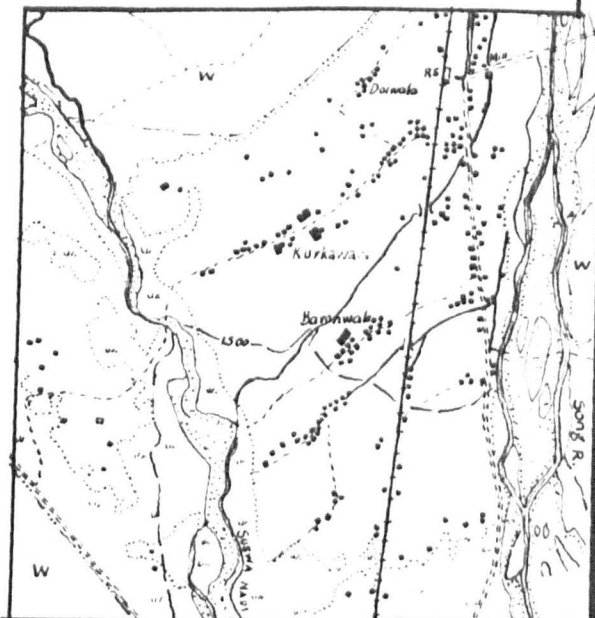
The largest number of Dun settlements are near canals (Fig. 406). The influence of canals on siting is predominant. Where water for drinking and irrigation is abundant and close by, lines of communication exert a very strong influence in the siting of settlements. (Fig. 406).

¹D.G. Dehra Dun (1911), p. 45.

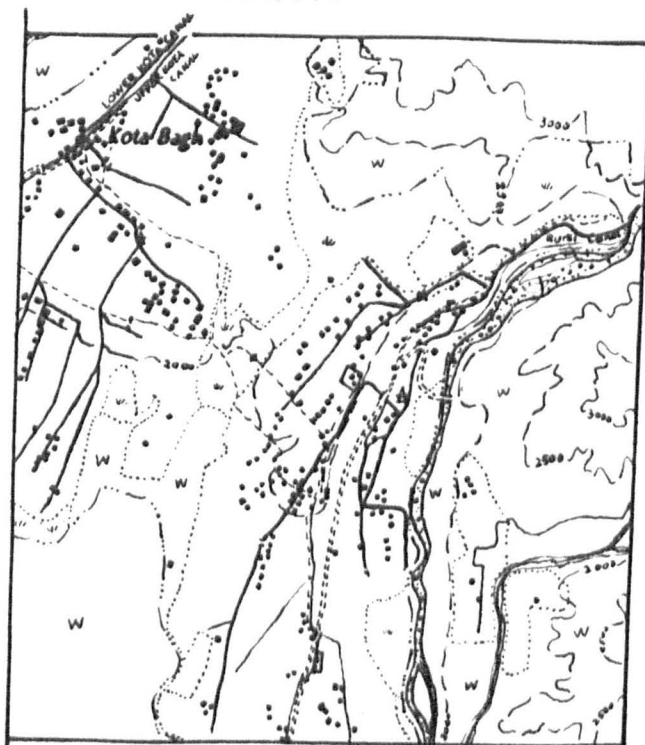
(a) SETTLEMENT NEAR RIVER BEDS, WESTERN DEHRA DUN



(b) LINEAR SETTLEMENTS, EAST DEHRA DUN



(c) SETTLEMENT ALONG CANALS, KOTAH DUN



The river-side settlements have taken advantage of the rapid slope of the country. Lying at a distance of only a few furlongs from the stream they are 100 - 200 feet above the flood level (Fig. 40a).

Settlements, roughly confined to the valleys of the large rivers, are unevenly distributed in comparison with the Ganges Plain. The basins of the larger rivers viz. the Jumna and Asan are more continuously settled than the narrow valley of the Sarda and Song. The settlements vary in size according to the nature of water supply, soils, and the age of the establishment, the average being about twenty dwellings.

The Kotah Dun,

a beautiful tract emulating the Dehra Dun in appearance and quality, lies between the Baur on the east and the Dabka river on the west. The cultivated and settled portion is a rough quadrangle about 8 miles long and 4 miles wide. All the settlements are waterpoint establishments of about a score of dwellings lying close to the irrigation channels (Fig. 40c) which are the only source of drinking water.

The Siwalik Range.

Almost the whole of the Siwalik Range from the Jumna up to the Sarda is a continuous unsettled tract covered with reserved forests. The topography is extremely rugged being a maze of crested ridges and spurs cut into a bewildering relief by myriads of ravines and torrents. There is not an open intermont basin or level ground which can be cultivated. A lonely temple or a hut may be seen near the passes carved out of the crest of the range by torrents through whose narrow beds, dry during the hot weather, pass the infrequent tracks, or in gaps formed by the large rivers e.g. the Ganges and the Kosi. Where 'Duns' are non-existent the Range is packed

CHAPTER IV.

TYPES OF RURAL SETTLEMENTS.

The province contains four main types of rural settlements (Fig. 41) which may be described as follows:

1. Compact Settlements.
2. 'Cluster and Hamlet' Type.
3. Fragmented or Hamletted Settlements.
4. Dispersed Settlements.





The compact settlements cover by far the largest area of the province occupying the whole of the Doab (save a small tract in the middle of the region), the Trans-Jumna Plain and the Bundelkhand Upland, the Upper Ganges-Cogra Doab, the Tarai, and the well-marked levees or uplands in eastern U.P. near some parts of the banks of the large rivers viz. the Ganges, Cogra and Rapti. The chief feature of this type is the concentration of almost all the dwellings of a mauza in one central site.

The second type differs from the first by reason of the existence of a few separate hamlets, usually, one or two, in the mauza apart from the compact main village. This, being a transition type, covers roughly those tracts which lie between the zones of compact and fragmented settlements. The type is characteristic of a zone in the Middle Ganges-Cogra Doab, a small part of the Doab, and a narrow zone surrounding the fragmented type.

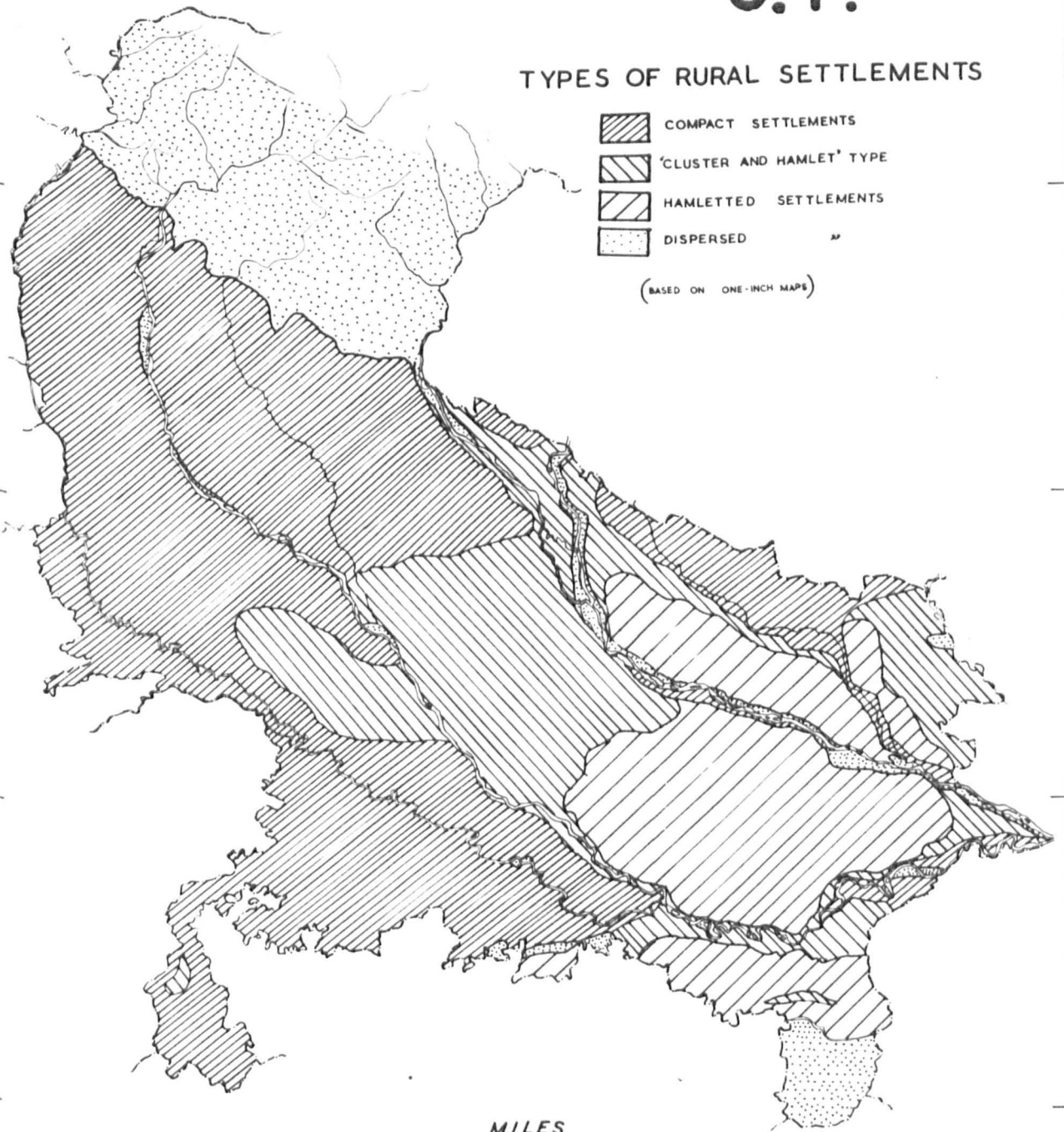
The third type viz. the Fragmented Settlement is characteristic of the eastern part of the Ganges-Cogra Doab, the southern half of the Trans-Cogra Plain and the Vindhyan Upland. The settlement of a mauza in this type consists of a main site and several hamlets or 'fragments' standing separate

U. P.

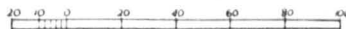
TYPES OF RURAL SETTLEMENTS

-  COMPACT SETTLEMENTS
-  'CLUSTER AND HAMLET' TYPE
-  HAMLETTED SETTLEMENTS
-  DISPERSED

(BASED ON ONE-INCH MAPS)



MILES



from one another and often extending over the entire mauza. The dispersal of population into the several hamlets is so marked that the main site is much smaller than in the foregoing two types of settlements and indeed, if only size is kept in view, it is often difficult to distinguish the main site from the surrounding hamlets. In Sultanpur, a district typical of 'fragmented settlement' the number¹ of 'inhabited sites' per mauza² is five. In Gonda district it is over six.³ Some mauzas of the zone contain as many as 50 to 60 hamlets.

The dispersed type is the characteristic settlement of the Lesser Himalayas, the Duns, the Bhabar, the Siwalik Range (wherever it is settled), the Sonner i.e. the Archaean country south of the Son and the Khadar of some rivers especially the Gogra and the Ganges. It must be mentioned that the dispersal noticed here is not of the type existent in the newly settled countries of the world e.g. N. America, Australia or Argentine where almost each rural homestead stands in a separate farm. Here dispersal may be regarded as relative as the houses are not usually grouped into compact agglomerations as in the Ganges Valley but generally stand separately from each other though all of them may not be on separate farms in the midst of cultivation. What is significant is the relatively long distance between dwellings compared with the congested sites of the plains settlements.

¹ Based on Fordham, J.A. Final Settlement Report of District Sultanpur, (1940) and Sahay, B., Census of India, 1941, V. U.P. Tables (Delhi, 1942).

² Means 'inhabited mauza'.

³ Derived from Singh, J.K., Final Settlement Report of Gonda District, (1944) and Sahay, B., Census of India, 1941, V. U.P. Tables, (Delhi, 1942).

Before entering into a regional discussion of the types of settlements we may consider here some of the important factors which have contributed to the agglomeration or fragmentation of settlements in the area. The causes for the dispersal of settlements in the Himalayan and sub-Himalayan area, the Sonnar and the Khadar are much different from those operative in the rest of the province and will be discussed along with the dispersed type.

Factors Which have Contributed to the Agglomeration of Rural Settlements.

1. Uniformity of Relief and Soil Fertility.

The proverbial monotony of the Gangetic Plain is well suited to the agglomerated type of settlement. There is no irregularity in the relief to cause diffusion of resources. The general sameness of scene has fostered a sense of community. Though there are variations in the nature of soils from region to region and even within the limits of the same mauza, the general productivity of the soil in most parts of the plain is more or less uniform and this fertility has enabled a large number of peasants to live together in compact settlements. In the words of Demangeon¹ the compact settlement "will be found, as an ancient feature, chiefly on lands which were fertile from the beginning".

2. Comparative Lack of Surface Water and Deep Water-Table.

In the Ganges Valley the relation between the types of settlements and the nature of rainfall and water supply is considerable. With the lower rainfall in the western part of the valley and Bundelkhand surface water in the form of lakes and ponds is not very frequent. The village pond which

1 Demangeon, A., 'Agricultural Systems and Schemes of Distribution of Population in Western Europe', The Geographical Teacher, Vol. 13, (1925-26), pp. 199-205.

is usually near the inhabited site supplies water for irrigation and 108. affords pasture on its margins. The pasture is utilized in common by all the inhabitants of the village. The pond or tank and its meadow bind inhabitants together in a compact settlement. In the Ganges Plain masonry wells are the main source of domestic water supply and dwellings are built round them in the form of villages or hamlets. In the areas of deep watertable, however, owing to the difficulty and cost of construction, masonry wells are infrequent and population clusters in compact villages round the water source while in the zones of high watertable, where such wells are more numerous because they can be cheaply constructed wherever the need arises, the population need not concentrate into one central site and is likely to spread up into several outlying hamlets in the mauza. The compactness of settlements in the Trans-Jumna Plain is thus partly due to the tract being the zone of the deepest watertable in the Ganges Plain. In much of the Doab also the watertable appears to have been much deeper before the advent of the canals than it is now. For example, near about 1865 the average watertable in Bulandshahr district was some¹ 80' below the surface. Now it is probably not deeper than 30'. The rise of watertable in the Doab is a comparatively recent phenomenon and does not appear to have modified the original compactness of settlements. Lack of masonry wells in the Dundelkhand is combined with a quick run-off and restricted occurrence of natural sheets of water in the form of ponds. The lack of water in the mauza is very strongly manifested in the development of compact settlements. "The collective building of dams and irrigation channels for the storage and distribution of rain water and the construction of tanks for artificial irrigation.. have promoted the evolution of compact villages."²

3. Co-operation in Agriculture. It has been asserted³ that communal cultivation was prevalent in the Ganges Valley in the past. Thus Mukerjee regards

¹D.G. Bulandshahr (1903) p. 42.

²Mukerjee, Radhakamal, Man and His Habitation (1940), pp. 63-64.

³Ibid, Chapter II, pp. 58-90 and Land Problems of India by the same author (1933) Chapter II, pp. 13-28.

intensive farming with a fixed routine of cropping necessitating "a common agricultural routine and collective management of pastures and distribution of water supply, to have "succeeded an earlier regime of a collective ownership and periodic re-distribution of holdings, village groves and meadows."1 According to Demangeon "the compact village may be held to imply the existence, at least at the origin of some form of communal cultivation."2 Whether communal cultivation existed or not there does exist at present a considerable extent of mutual co-operation in agricultural activities. Wells, tanks or ponds, pastures and similar land, usually rent-free, are regarded as common properties of the inhabitants. Agricultural implements e.g. ploughs, spades, sickles, carts and draught cattle are frequently exchanged or borrowed. When agricultural labour is scarce many cultivators form a team in digging, ploughing or harvesting, working in the fields of the partners in turn. Seeds and fodders are usually borrowed. Thus a host of collective habits have worked as binding forces in compact settlements.

4. Fragmentation of Holdings and Strip Cultivation.

The holdings of a peasant are distributed over the ~~manu~~ in fragmented parcels of diverse size and fertility. The most fertile, heavily manured and irrigated land surrounds the village, followed by another zone given to the chief food crops and irrigated from wells or canals and the outer-most zone, the poorest in fertility is given to dry cultivation, usually millets and fodder crops. (This pattern is substituted in the eastern districts by one where the outer-most block of land is lowlying and wet given to paddy). The cultivator usually has a strip or more in each

1 Mukerjee, Radhakamal, Man and His Habitation (1940), p. 61.

2 Mukerjee, Radhakamal, Man and His Habitation (1940), p. 61.

soil zone. While the scattered field system equalises opportunities for all, its successful utilisation is co-existent with the centripetal force afforded by the compact village. "All paths and tracks across the fields; which for each cultivator lie scattered like autumn leaves, lead to the village that is the meeting ground of all!"¹ Residing in the central cluster, the villager is at a minimum economic distance from his scattered fields. The transport of plough, cattle and carts to and from the scattered plots has fostered compact settlements.

5. Clan Solidarity.

"In the United Provinces of Agra and Oudh, the village communities are founded mostly by agricultural tribes, clans and castes forming close communities In Oudh, however, the influence of rajas or chiefs and thakurs has reduced the village communities to a subordinate position."² Commenting on the size of the mauzas Baillie observed that "in the western (Meerut, Agra, Rohilkhand and Allahabad divisions) 'villages' the soil is in general owned by strong coparcenary bodies of the peasant proprietor type all assisting in the cultivation or management of them such subdivided 'village'.³ Such coparcenary bodies as the Jats, Gujars and Thakurs whose clan solidarity has held them together in a compact site. The Jats are practically confined⁴ to the Upper and Middle Doab, the Trans-Jumna Plain

¹ Mukerjee, Radhakamal, Man and His Habitation, (1940), p. 62.

² Mukerjee Radhakamal, Land Problems of India, (1933), p. 18., see also Baden-Powell, B.H., The Indian Village Community, (1896) Chapter VI, pp. 225-287.

³ Baillie, D.C., Census of India, 1891, Vol. XVI, The North-Western Provinces and Oudh, (1894), p. 103.

⁴ Turner, A.C., Census of India, 1931, U.P., Vol. XVIII, Pt. II, Tables, (1933), pp. 499-548.

west and the Ramganga-Ganges Doab. The Gujars are most numerous in the Upper Doab and the Ramganga-Ganges Interfluvium while the Jhakars are very common in the Bundelkhand.

6. Social and Economic Bonds.

Apart from co-operation in agriculture there is a good deal of social and economic interdependence among the inhabitants of a village. The division of labour which is one of the features of the caste system affords certain facilities to the occupants of a compact settlement. The presence of landless labourers, artisans, tenants, traders and priests all tend to maintain the self-sufficiency and solidarity of the village. Though the 'panchayat' (council of five) has lost much of its authority, people of lower castes still maintain this organization which exercises a considerable degree of influence over their social life. Among the higher castes it is usually non-existent and the growth of landlordism has greatly reduced its influence. The social gatherings in the centre of the village usually under some shady tree or near the temple; the mutual rejoicings on festivals, the gathering of neighbours after the day's work near the well in summer and round the fire in winter when tales are told and talks of fields and crops exchanged; all these have contributed their influence in the direction of compact settlements. The peasant with no field work for some months in the year engages himself in cottage industries. Such subsidiary occupations flourish well in compact settlements. The closely-knit village is a convenient centre for the itinerant petty trader, who buys the surplus grain, and often supplies the village with cloths, kerosene oil, yarn, utensils and other petty requirements. The presence of the moneylender and the quack is also a centripetal force.

7. Religion and Superstition.

There are strong superstitions about sites among all castes. A new site for a house is avoided as far as possible owing to the fear of its proving inauspicious. Houses can be built on a new site only after the sanction of the priest has been obtained. Village gods are supposed to reside on the outskirts of the village. "The 'dechar' or village gods from a very distinct group, to whose honour in almost every village, petty offerings are made at appointed seasons at the mounds ('than') sacred to each in almost every village in the Province".¹ A villager usually does not dare cross the 'protected jurisdiction'. Though the growth of education is overcoming this superstition most people still retain a varying degree of allegiance to these godlings. This is an important factor contributing to the compactness of settlements. Moreover, the ancestral site of a house is usually regarded as sacred unless the family is in decay. Extension of a settlement on the south or west is also forbidden, the two directions being considered of ill omen.

8. State of Security in the Past.

The nature of security in the past seems to have a very important influence on the settlement types in the area. While certain parts of the province have been associated with the movement of armies, recurrent battles and incursions of marauders, others by their relative remoteness have comparatively speaking, escaped such disturbances. Obviously in the areas of frequent troubles villages aimed at defence and lived in compact settlements.

In order to appreciate the geographical extent of such troubles and the

¹ See the District Gazetteer of the Province, Vol. I, p. 100.

Baillie, D.C., p. 223, op.cit.

Journal of the Asiatic Society of India, Vol. 1, (1901), p. 100.

influence of the security factor on settlements we may cast a brief glance at the main disturbances in the history¹ of the province.

After the establishment of the Indo-Aryans (c. 1,000 B.C.) the first great battle - Mahabharatha - is supposed to have been fought at Hastinapur (now believed to be in Meerut district). The next main disturbance after the reign of Asoka was experienced at the hands of the 'Sakas' or Scythians who advanced from the west as far as Muttra. The province enjoyed peace during the days of the Guptas of Bihar (5th century A.D.), but this was followed by a disturbed period when the White Huns, coming from Central Asia, fought with the Guptas and other petty chiefs. The subsequent four centuries were relatively free from foreign incursions till Mahmud of Ghazni invaded the Doab in the beginning of the 11th century plundering Eulandshahr, Muttra and Kanauj. Chori's general invaded the Doab and captured (1192 A.D.) Meerut, Mahoba (Banda) and Koil (Aligarh). Subsequently Chori defeated Jaichand of Kanauj (1194) and Budaun and Ajodhya were made the seats of his governors who had to fight a good deal with their subjects. "Bundelkhand had not been subdued and the first half of the 12th century was a time of war in most parts of the Provinces."² During the succeeding two centuries the province enjoyed comparative peace under the Slave, Tughlak, Khilji and Sharqi rulers till Timur invaded Meerut division in 1339. "The first half of the 15th century saw a succession of puppet rulers or usurpers at Delhi or Kanauj, while the Doab, Rohilkhand and Bundelkhand were scene of risings by the Hindus and conflicts between

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The historical facts summarised in the following paras. have been derived mainly from the Imperial Gazetteer of India, Provincial series, U.P., (1), (Calcutta, 1908), pp. 17-32.

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Imperial Gazetteer of India, U.P. Vol. I. (ibid), p. 22.

the kings of Jaunpur and Delhi".¹ The Lodi Dynasty founded by Bahlol (1450-51) remained engaged in crushing the petty local rulers and those of Jaunpur for about 25 years. The western part of Trans-Jumna Plain and the Doab were again the scene of trouble during the time of Babar. These were battles at Panipat and Sikri and his troops at Kanauj defeated the Afghans who had held the Middle Doab. There was some trouble during the early days of Akbar's rule (1556-1605) after which the province entered a period of relative peace which was to last for a century and a half.

The disturbances that took place after the death of Aurangzeb (1707 A.D.) were more frequent and may be deemed recent. Their influence on the nature of settlements is important. Apart from the frequent battles and movement of troops there were recurrent incursions of armed bands and looters. After the passing away of Aurangzeb the dissolution of the empire was accompanied by the growing power of Jats, Sikhs and Marathas. The Sikhs first invaded Saharanpur and Muzaffarnagar (1709). At the same time the Jats were harrying the territory west of the Jumna. The Marathas first appeared in 1729 in Bundelkhand where the 'Bundelas' were trying to rid themselves of Muslim rule and the ^{western part of the} area remained for 70 years under the Marathas. They plundered Agra and Etawah in 1737 and again invaded the Doab in 1751. Nadir Shah attacked Delhi in 1738 and his successor, Ahmad Shah Durrani came as far as Agra (1752). With the growing weakness of the Mughals new states began to be formed within the U.P., the chief among them being Oudh, Farrukhabad and Rohilkhand. The Muslim rulers joined Ahmad Shah Durrani in the battle of Pani Pat (1761) against Marathas, Jats and Rajputs who suffered

¹ Ibid. and north of the Jumna the area has been relatively peaceful.
Ibid. ., p. 23.

a crushing defeat. The British who were advancing from the east along the Ganges defeated the allies (Shah Alam and Shujauddaulah) at Buxar (1764) and again overcame the Nawab (in Cawnpore district) who had joined the Marathas. In the meantime the Sikhs continued to raid the north of the present Meerut and Bareilly divisions. The Jats who had seized Agra invaded Delhi in 1763 but were over come by the Marathas who held the city at that time. The Marathas began to maraud Rohilkhand and extorted from Shah Alam the territory of Allahabad (1773). When the British troops came to guard the Oudh frontiers the Marathas were forced to leave Rohilkhand, the Doab and Allahabad territory. The Jats were driven out of Aligarh, Muttra and Agra by the emperor's chief, Mirza Najaf, but the yearly incursions of Sikhs grew more and more serious. Moreover, the Marathas continued to grow in power and captured Agra, Muttra and Northern Doab (1787). But the influence of the Company was rapidly growing and within about 70 years the whole province passed under them. The old lawlessness, however, did not disappear quickly. Dacoity and 'Thagi' was rife. The Mutiny which broke out in Meerut aroused former chiefs who created trouble at Bareilly, Farrukhabad, Banda, Cawnpore, Jhansi and Lucknow. Since then the chief fears of the villager have been robbers and communal strifes.

From what has been said above it is clear that the geographical extent of upheavals in the past has been varied. The area of maximum disturbance has been the Upper Doab and the tract west of the Jumna. The rest of the Doab, Bundelkhand and Rohilkhand come next in order of insecurity. From the examination of the chronicles it is evident that east of the Rohilkhand and north of the Ganges the area has been relatively peaceful.

The Battles and troop movements meant a danger to the peasants in the form of the trampling of crops, looting of property and cattle, loss of honour and life. In order to defend themselves villagers congregated in compact settlements often surrounded with mud walls round the fortress or mansion of the local chief or landlord so that they might defend themselves against vagrants from armies. The more frequent danger was from armed bands of Jats, Sikhs and Marathas who are said to have indiscriminately plundered villages that came in their way. "All was fish that came to a Maratha net, and the smallest cultivator was not below the notice of their plunderers".¹ The influence of these marauders of a comparatively recent time is more important than the distant events of the past and is manifested in the compact settlements which are most characteristically developed in the Upper Doab, Trans-Jumna Plain West and Bundelkhand. Other areas, viz. Rohilkhand, the Middle and Lower Doab which suffered less from the looters have smaller agglomerations.

Factors which have Contributed to the Spreading or Fragmentation of Settlements.

We have noticed above the causes accounting in various degrees for the agglomeration of settlements. There are factors, however, both physical and cultural which have operated in the opposite direction leading to the development of hamlets or the break-up of the village fragments in the eastern districts of the province (Fig. 41). We examine these factors briefly as follows:-

¹ Baillie, D.C., (op.cit.), p. 103.

1. Abundance of Surface Water and High Water-Table.

The higher amount of rainfall in the east results in a high water-table east of the Ganges. Surface water in the form of ponds and lakes is relatively plentiful. The density of masonry wells which can be more easily and cheaply constructed in any part of the mauza appears also to be high in the eastern districts of high watertable. The frequency of the sources of water (wells and other water forms) in the mauza has thus obviated to a considerable extent the need for clustering in a compact central site and has contributed to the spread of population to outlying hamlets.

2. Floods.

Floods are of more frequent occurrence in the eastern districts owing to the higher rainfall and fall in the gradient of river channels. The Gunti is often in spate in its lower courses, owing to a lack of other drainage channels in the large area it drains. Similarly, the Trans-Gogra Plain is often flooded by the Repti, Sarda and the Gogra. Thus in the eastern districts a considerable area may be inundated during years of exceptional floods as in 1938. Only elevated blocks in the mauza remain above water. But as the extent of such rises is limited and all the inhabitants of the mauza in this densely populated tract cannot be accommodated on one small site the inhabitants occupy most of the available elevated blocks in the mauza which although only a few feet higher than the surrounding area are sufficiently elevated to assure good drainage and so possible escape in years of heavy floods. This almost imperceptible unevenness of levels in the mauza is associated with the process of alluvial formation of the plain. It is aided artificially, for once a site is occupied it continues to rise by the accumulation of debris.

3. Low Agricultural Castes and Caste Hierarchy.

In Oudh and Eastern U.P. the proportion of low agricultural castes¹ is higher than in the west. Of these the more important castes viz. the Kurmis, Koeris, Bhars and Muraos, who are the thoroughbreds of the soil, show their influence on settlements by their agricultural habits.

The Koeris and Muraos, the vegetable gardeners, whose cultivation is by spade and hand labour rather than by plough, are engaged in "intensive, meticulous exploitation of the land"² While Koeris are roughly confined to the Benares and Gorakhpur divisions, Muraos are most numerous in Oudh. Owing to the attention needed by their valuable crops they often build their hamlets in their fields near the well. The Kurmis, one of the most numerous castes are practically absent from the Doab and the Trans-Jumna Plain West (ie. West of Chambal-Jumna confluence) and are found in the rest of the Ganges valley especially east of the river (Ganges). They are one of those castes who are most honestly devoted to the fields, the preservation of its fertility and productivity. Occupying the second position from the bottom in the Hindu caste hierarchy³ they enjoy no enviable position in village society. They are not reluctant to leave the main site and settle near outlying plots. Thus they have contributed to the multiplication of the outlying hamlets in the area where they are most numerous. The Ahirs another numerous caste whose geographical distribution is roughly continuous with that of the Kurmis are devoted mainly to cattle rearing and

¹ Turner, A.C., Census of India, 1931, U.P. Vol. XVIII, Pt. II, Tables, (1933), pp. 499-548.

² Mukerjee Radhakamal, Man and His Habitation, (1940), p. 71.

³ Brahman - Kshatrya - Vaishya-Shudra.

dealing in milk and ghi (clarified butter). In their need for grazing ground and plenty of water for cattle they often build outlying hamlets in khadars, near moist grassy depressions or ponds and lakes.

Apart from these agricultural castes there are the untouchables, viz. Chamars, Pasis and Doms who rarely possess land, cannot draw water from the village wells and occupy the lowest position in rural society. The Pasis and Doms are most numerous in the areas of fragmented settlements. They live in a separate hamlet "at the outskirts of the village or sometimes even entirely segregated from it and possessing its own tanks, wells and boundary gods".¹ The chamars are of universal occurrence in the Ganges valley but the untouchability factor is less rigid in the west, so that the security factor and the difficulty and cost of constructing wells have kept them in the western districts in one corner of the village, of course in a separate ward. East of the Ganges where caste bias is stronger the Chamars usually live in a separate hamlet.

4. The Influence of Land Tenures.

As noted earlier the land in the Doab is mostly owned by coparcenary bodies who reside in the village and are devoted to cultivation. In the east, however, most of the ground is owned by a few privileged taluquaders and landlords² whose gradual usurpation of the common pastures and village wastes and whose absenteeism have led to a deterioration of the village collectivism and economic welfare. The growing power of the landlord in Oudh and the permanent settlement in Benares Division has eclipsed the

¹ Mukerjee, Radhakamal, Man and His Habitation. (1940), p. 104.

² Baillie D.C., (op.cit.), p. 103.

authority of the panchayat.

There is a considerable relation between the proportion of landless labourers and fragmentation of settlements. In the Doab, and Bundelkhand - the zones of strife - historical and other factors have preserved the compactness of the village. In the east, however, especially in the eastern districts of the Ganges-Gogra Doab and the Trans-Gogra Plain a high proportion of agricultural labourers (Fig. 19) is related to the fragmentation of rural settlements. This is because the agricultural labourers belonging usually to the lower castes are made by the landlord or subletting tenant to settle on, and look after their fields and groves. The proportion of agricultural labourers has increased in the Middle and Lower Ganges-Gogra Doab and Trans-Gogra Plain because the average holding ¹ (incidence of cultivated land per cultivator and his family) is the smallest (4.3 - 4.7 acres) in this area and further subdivision of holdings by the law of inheritance and the growth of population have reduced petty tenants to the status of landless labourers.

The fragmentation of settlements is also due to the frequent desire of the landlord to settle near his holdings and gather round him a number of agricultural labourers bound to him by loan or by cultivable plot given in return for services rendered.

5. Security.

We have seen that the area roughly east and north of the Ganges except Bihilkhand enjoyed comparative peace during all times in history.

¹ Turner, A.C., Census of India, 1931, U.P., Report, p.45: The holdings 4.3 and 4.7 refer respectively to the Sub-Himalaya East' and 'Indo-Gangetic Plain, East', meaning ① Gorakhpur, Basti, Gonda, Bahraich and ② Benares, Jaunpur, Ghazipur, Ballia and Azamgarh ^{districts}, respectively.

It was also relatively out of reach of the looting bands of Sikhs, Jats and Marathas. British influence first came to the eastern parts of the province. After the defeat of Shujaudaulah (1764) by the British the Nawab's territory was gradually drawn under British protection. British troops were sent to guard the Oudh frontier in 1773 against Marathas. ^{In 1775} Asafuddaulah made a treaty with the British by which the latter obtained sovereignty over most of the Benares Division. Later the decline of the Oudh rulers led to a further growth of British influence. Thus it is the eastern area which have enjoyed a longer period of security in the recent past than the western districts which remained harassed by the Marathas, Jats, and Sikhs. The feeling of security has helped the growth of hamlets near fields where the cultivators can pay better attention to their crops. "Their simple huts can be run up in a few weeks on any spot which is sufficiently elevated above the rain-floods and their almost only object is to be ^{as} near as possible to the fields they cultivate".¹

Nature and Causes of Settlement Types in Various Tracts.

Compact Settlements.

The Upper Doab. The compactness of settlements is most perfectly developed in the Upper Doab (Saharanpur, Muzaffarnagar, Meerut and Bulandshahr districts). All the houses of a mauza are piled together in one large central agglomeration (Fig. 25). While the monotony of relief, uniform fertility of soil, the nucleating force of the wall, the efforts of coparcenary proprietors to keep the mauza intact, the clan solidarity of Rajputs, Jats and

¹ Frontiers of India, p. 71, op.cit.

Gujars have all been operative, the past insecurity in this zone of strife has probably been one of the most important factors in the development of such compact villages.

In the Middle and Lower Doab compact villages (Fig. 284) are the characteristic settlements but they are smaller than in the Upper Doab and the inter-village distance is shorter. Though the area was raided by the Marathas it was relatively aloof from the incursions of the Sikhs, and Jats during the 18th and 19th centuries.

The Trans-Jumna Plain. The Trans-Jumna portion of the Muttra district (Fig. 29a) is akin to the Upper Doab in respect of large compact settlements. In Agra and Etawah the agglomeration is similar to that on the north of the river. East of the Chambal-Jumna confluence (Figs. 29 b, c, d, 30^ab) almost half of the agglomerations are as large as in the Upper Doab which the rest are very small. The intervening distance between villages is considerable and usually there is one settlement per 3 square miles. The Trans-Jumna Plain, lying on the other side of the barrier (Jumna) was more frequently raided by marauders especially the Jats and Marathas. Scarcity of water is nowhere in the Ganges Plain so strong an agglomerating force as in this tract. Need of building on elevated sites in the sticky mar (black soil) is another cause of compactness.

The Bundelkhand Upland. The relief here is not so strong as to lead to any marked diffusion of cultivated land. On the other hand the hills, by affording strong points, have fostered agglomeration. (Figs. 36 a, c). The area was disturbed not only under the Marathas but by the frequent feuds between the Bundela chiefs and the critical position of the tract between the kingdoms of Northern Hindustan and Peninsular India, also made

self-defence of great importance to the villager. A large number of the villages are the former strongholds of local chieftains who gathered the peasantry round their forts (now ruined) and afforded protection from opponents. We have already noticed the lack of water and need of concentration near tanks and river banks.

The Upper Ganges-Cocra Doab. Here too the settlements are compact (Fig. 316)

) with the main difference from the Upper Doab that villages are smaller and lie closer together. The small size is related to the process of subdivision of larger mauzas into smaller ones and the development of newer villages in them. Though there are certain factors e.g. the high water-table, heavy rainfall and the existence of kurmis and Muraos which should have fostered the development of hamlets, the insecurity of the region (Rohilkhand) seems to be one of the main reasons for agglomerated settlements.

The Tarai. Curiously enough the settlements in the Tarai are compact (Fig. 317). Certain conditions here e.g. relative security in the past, plenty of water and comparatively recent occupation of the area, are such as should have fostered the development of hamlets. Yet all the inhabitants of the mauza are concentrated in a central site. Almost regular inundation during rains ^{appears to} have caused nucleation rather than spreading. The small uplands available in the mauza are sufficient to accommodate all its inhabitants in this less densely peopled tract. The malarious lowlying paddy fields occur in continuous expanses and are too damp and unhealthy to afford sites for hamlets. "The bad characters living just across the border in Nepal territory are still troublesome and organised dacoity is far from uncommon".¹

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D.G. Corakpur (1909), p. 156. See also D.G. Basti (1907), p. 127; D.G. Pilibhit (1909), p. 131; D.G. Kheri (1905), p. 121; D.G. Bahraich (1903), p. 107.

The proximity of the Nepal border encourages frequent robberies and thefts as the criminals cross over to the other State and escape punishment. The presence of thick sal forests affords an easy refuge to such criminals as well as being the home of many wild animals. All these causes have fostered nucleation.

The Levees. Elevated levees of the large rivers viz. the Ganges, Gomra and Rapti are tracts of compact settlements (Figs. 32a,d, 43b) presenting a contrast in the zone of fragmented settlements. The compactness is due to the physical causes dealt with in the previous chapter. The narrow elevated space above flood-level provided by these uplands and the nucleating force of the masonry well in these tracts of very deep watertables are the main causes of concentration.

Cluster and Hamlet Type. In this intermediate type the population is neither spread in numerous detached hamlets nor is it concentrated in a single agglomeration. The occurrence of a few outlying hamlets around the central cluster is almost invariable. Fig. 28b. Occupying an intermediate zone the settlements are an expression of the mingled influences of agglomerating and disintegrating factors. Many landowners, especially in Oudh, invest¹ small amounts of capital in founding hamlets, hoping to be repaid by the rise of rents and the extension of cultivation in their vicinity.

Fragmented Settlements.

The average village consists of a main site and several hamlets. Some of the mauzas possess as many as fifty or sixty detached sites,

¹

D.G. Unao (1903), p. 12.

and are treated as a single unit for the purposes of revenue and administration. This 'dispersion' of population into numerous hamlets is unique and presents a marked contrast to the compactness of settlements in the other parts of the province. Each detached hamlet is frequently occupied by a distinct caste. The caste-basis of fragmentation is very well indicated by the names of hamlets of which the first part indicates a caste¹ and the second means a hamlet, viz. Chamran purwa, Dhobian purwa, Pande Purwa, Ahiran Purwa and Lunian Purwa etc. The disintegrated nature of settlements is shown very well by Figs. 34a and 34c in the Trans-Gogra Plain, by Figs. 33a and 33c in the Ganges-Gogra Doab and by Fig. 37c in the Vindhyan Upland. Abundance of surface water, high watertable, the caste factor, a large proportion of agricultural labourers, and tenants-at-will and relative security and peace in the past have all contributed with varying degree to the spread of population in separate hamlets. Easy and cheap construction of masonry wells has acted as an important centrifugal force. In some cases¹ the holders of proprietary and under-proprietary tenures have founded small hamlets on their holdings. They are, on the other hand, dispersed chiefly in a few doablands around them. Land belonging

Dispersed Settlements.

The Lesser Himalayas. The Lesser Himalayas are the largest tract with a more or less dispersed settlement. Here geographical factors, rather than cultural, have been dominant.

¹ D.G. Sultanpur, (1903), p. 14.

Chamran P. = Hamlet of Chamars (an untouchable caste working in leather).
 Dhobian P. = " " Washermen.
 Pande P. = " " Pande (a section of Brahmins).
 Ahiran P. = " " Ahirs (cowherds).
 Lunian P. = " " Earth-diggers.

Discussing the siting of settlements in this region in the preceding chapter we have seen how the varying topography, different elevations and slopes have determined the habitability of a spot. Level ground is uncommon and where it occurs it exists only in small patches. The marked slopes of spurs and ridges restrict the extent of any settlements that can be built on them. The lowlying, relatively flat, alluvium near riverbeds sometimes offers a chance for agglomeration but the steamy hot summer of the valleys and their more profitable use as paddy lands discourage nucleation. Not only the depth and fertility of the soil and its moisture retaining capacity, but also the extent of its surface depend on the gradient of slopes. In this 'country of slopes' therefore, large blocks of fertile soil are absent. Occurrence of forests, as we have seen, is by no means continuous. Some extensive patches may cover a series of ridges with very small clearings here and there but usually the trees are confined to the upper parts of ridges with occasional patches extending down the slopes. The distribution of water is also scattered. Nowhere do springs exist in groups conducing to an agglomeration. They are, on the other hand, dispersed supplying water only to a few dwellings around them. Land belonging to a mausa is limited in its productivity and cannot support a large agglomeration. The difficulty of movement on the slopes also helps dispersal. Thus the dissemination of settlements in the area is intimately related to its 'physical character', "the whole aspect of which leads to a diffusion of resources - arable land, water, and natural sites with pleasant exposures!"¹

¹ Finch and Trewartha, Elements of Geography, Physical and Cultural, (1942), p. 641, N.B. The quotation is referring to 'hilly lands' is applicable to the Himalayan Region.

"The scanty areas available for cultivation are separated by intervals so extensive and by paths so inaccessible that each cultivator must live on his own lands, and in general their cottages are scattered all over the hillside:¹

The proportion of tenants-at-will is negligible. Most of the cultivated land is owned by proprietors or tenants who have occupancy rights in the soil. People are, therefore, free to build their dwellings anywhere on their holdings. The proverbial honesty of the hillman also obviates the need of clustering. People are "very law-abiding"² and most of the thieves in local jails are those who belong to the Ganges Valley and have committed thefts in the submontane tracts of the Himalayan districts. The Lesser Himalayan settlements can be divided into three sub-types:-

(1) By far the largest in number are the settlements (Figs. 38 & 39) in which each dwelling is located at a considerable distance from the other in separate fields. These isolated homesteads, however, in the case of irrigated mauzas are not scattered all over the cultivation but are located in an intermediate zone (Figs. 38 a & c) on a spur usually above the irrigated land in separate fields which are given to dry cultivation. Each family possesses a garden or orchard and a field or two round the dwellings, the rest of its holdings lie being scattered in the irrigated cultivation below. Near the houses and usually above them are long strips of grass like village green on which the cattle graze in common. About a dozen separate dwellings may be scattered over 30 or 40 acres of

¹ best exemplified. While the dispersed settlement which is predominant in Baillie, (op.cit.), p. 105.

² This opinion occurs in all parts it is most numerous in the more wooded D.G. Naini Tal (1904), p. 169, see also D.G. Almora (1911), p. 133; D.G. Garhwal (1910), p. 105; and D.G. Dehra Dun (1911), p. 154.

land while a similar area in the Gangetic Plain is occupied by the largest of villages where about 500 ^{houses} may be packed together.

In the dispersed settlements of the mauzas without any irrigated lowland dwellings are scattered over the entire arable area (Figs. 39a & c), the holdings of each family lying round the homestead.

The extreme case of dispersal where a single dwelling is the entire strength of a settlement is frequently seen especially in forested tracts where clearings are very small.

(2). The next most frequent type of settlement is a variant of the dispersed type (Figs. 39d). In this case dwellings are partly scattered in separate fields and partly grouped together. The clustered dwellings form a small hamlet often in rows of half a dozen houses and the scattered dwellings lie round the hamlet. The development of hamlets depends to a great extent on the availability of level ground.

(3). The least numerous class of settlements is that in which dwellings form one or more compact blocks and dispersed dwellings are scarce. (Figs. 38c). They have come into existence where there is some congregating force e.g. a wide expanse of level ground, a well-drained alluvial cone and the occurrence of the arable land in a compact block. Where one or more of these conditions obtain the few large and compact villages of the Lesser Himalayas may be seen.

There is no single tract in the region to which any one of these types is confined. This is implied in the irregularity of relief we have just emphasized. While the dispersed settlement which is predominant in the region occurs in all parts it is most numerous in the more wooded and rugged northern half and also on the breastworks of the Himalayas. Smaller nucleations are more frequent in a central belt - less forested and more

regularly cultivated country than other tracts in the Himalayas - running through all the Himalayan districts. The zone is clearly shown on the Forest Map (Fig. 9).

The Duns. Settlements in the Duns (Dehra and Kota) are more or less disseminated (Figs. 40 a, b, c). In most cases houses are scattered over fields but in some, especially large villages, there is a central nucleation (e.g. Kota Bagh, Fig. 40c or Baronwala Fig. 40b). Such clusters are more noticeable in the older settlements near the town of Dehra. Even in the settlements where such small compact blocks occur they do not include all the dwellings a large number of houses being scattered in fields. The causes of dispersal are many. A large number of settlements are relatively recent¹ subsequent to the construction of canals and the settlement of land by the British Government. Cultivation is broken into patches by the deep-bedded raos (torrents) and patches of woodland. Here the centripetal force - the well - is almost entirely absent. The waterpoint here is not a 'point' but a line in the form of a canal or river. This has also led to the scattering of houses along the sources of water.

The Siwalik Range, as noted in the preceding chapter is mostly under forests and has few settlements the majority of which are dispersed. Clearings are very small and the relief though lower in elevation, is hazy and irregular.

The Bhabar. Figs. 35 a, b and d show the nature of dispersal in the

Bhabar. The settlements indicated on the maps are the permanent habitations

¹ At the time of Shore's settlement (1825) the Dehra Dun tahsil had only 156 'villages' (P.G. Dehra Dun, p. 129). In 1941 (Census Tables) the tahsil contained 422 'villages'.

of the canal irrigated areas. "In the long settled villages of the Bhabar each tenant has his homestead on his field by himself, generally a substantial building with a small yard or garden, a grainstone and a threshing floor"¹ The grass and wattled huts of the immigrants from hills who settle in this zone during the winter are also dispersed being "at a considerable distance from each other".² The causes of dissemination are more or less the same as in the Duns viz. the absence of wells, dangers of damage to crops by wild animals from the adjoining forests and great attention to irrigation in a thirsty country. "The gul or watercourse runs as a rule down the centre of a 'village' and on either side are the fields which are generally of a larger size than in the southern districts; they are all parallel and straight, suited to the requirements of irrigation".³ The large size of the fields and the nature of their arrangement along the canals are further causes of the scattered situations of the dwellings. The dispersed settlement of this tract is confined to the Naini Tal and Garhwal Bhabar, and its forested portion in Bijnor. In the deforested Bhabar of Saharanpur and Bijnor the dispersed settlements give place to the nucleated type, for reasons mentioned in the preceding chapter (p. 89)

The Khadar. We notice on Fig. 4 small tracts with disseminated settlements in the riparian tracts of the Ganges, Sarda and Gogra. Detailed pictures of these can be seen in Figs. 26a and 32b,d. Though the khadars of the rivers cover a larger area than the dispersed settlements development of dispersed

¹ D.C. Naini Tal (1904), p. 118.

² Ibid.

³ Ibid., pp. 57-58.

settlements has been retarded by factors mentioned above (pp 127-117). Tendencies towards spreading as we have seen, are greater in the east and we see a relatively large part of the Cogra Khadar under disseminated huts. Settlements in these flood -plains are associated with new alluvial fields allotted in compact holdings to peasants. Wild animals, especially blue bulls are a great menace to the crops in these relatively lonely tracts. Non-masonry wells can be dug *sometimes* near homesteads owing to the mellowness of the soil and height of watertable, or water can be derived from shallow pits dug in the beds of nalas. All the temporary thatch huts, which are portable, are dispersed. (Fig. 326).

South Eastern Uplands. There are two tracts in this region with dispersed settlements viz. the Sonner (Figs. 37c and d) and a narrow tract on the Vindhyan hills in South Banda. The dispersal in the Sonner is often more marked than in the Lesser Himalayas (Fig. 37A) with houses at a distance of 50 to 100 yards or so, scattered in the midst of cultivation. Where, however, valleys or basins are broad as in the Kon Basin or Son Valley dwellings may cluster into hamlets.

Here also the irregularity of relief and occurrence of forests have led to the diffusion of arable land. Water is scarce and the supply scattered. Poor sandy soil does not permit intensive cultivation. Certain central - Indian Tribes such as Agarias and Korwas inhabiting this tract have no agricultural instincts and reside in scattered dwellings in forest clearings. The area is still very much isolated and was more so in the past being away from the paths of invaders. The comparative honesty of the people has also helped dispersal, there being no fear of robbers.¹

¹ (iii)
D.G. Mirzapur, p. 181.

The Great Himalayan Region. Our knowledge as regards the types of rural settlements in the Cis-Tibetan zone is meagre. No large-scale maps of this region are available and the records are almost silent on the point. Consequently we have left this tract blank on the map (Fig. 41) as a 'zone of uncertainty'. The geographical conditions of the area, however, appear to have contributed to clustering relatively to the Lesser Himalayan region. Owing to the steepness of the upper slopes and to the dangers of avalanches and land slides and the villages are generally built on small sites on more or less level grounds afforded by moderate slopes, ^{along} valleys, and alluvial cones. The need for protecting the village, fields and communications from avalanches by joint building of wooden and stone fencing, and afforesting slopes appears to have favoured nucleation (Fig. 42). The unevenness, however, of topography, where level ground is non-existent, and the nomadic habits of the people might have acted in the opposite direction.

Fig. 42



NITI

NITI: A Compact Village in the Cis-Tibetan Zone in the Valley of the Dhaulī River (From 'Kamet Conquered' by F.S. Smythe, 1932).

CHAPTER V.

Village Patterns.

Villages in the U.P., where there seems to have been nothing like a planned rural settlement, are a sort of natural growth in their physical and cultural setting. Thus although they do not possess well-defined shapes and a distinct internal plan there is considerable arrangement, both in the internal structure, and external outline of the villages, which is very clearly related to the nature of their site and cultural features. We see an unmistakable connection between the configuration of the site, surface water (river, canal, tank or pond), well, the nature of the soil, cultivation, groves and the shapes of the fields on the one hand and the patterns of settlements on the other. Village cart tracks, roads, mosques and temples are intimately related to the structure of the village. The state of insecurity in the past and the present social make-up of the village are significant factors in the development of village patterns. Nevertheless in a large number of villages lanes are so crooked and dwellings piled in so irregular a fashion that no pattern is discernible.

As is evident it is only the compact settlements which, on account of the aggregation of dwellings and resultant lanes, are susceptible to a study of pattern. The villages patterns discussed or illustrated in this chapter, therefore, belong mainly to the zones of compact and 'cluster and hamlet' types of settlements and to the nucleated villages occurring in the area of 'fragmented' settlements.

Rectangular Pattern. The most common village shape in the area where nucleated settlements occur is roughly rectangular (Figs. 43 a to e). One of the main reasons for this pattern is the shape of the cultivated fields. Since olden times the measure of land seems to have been a 'bigha'. Though the bigha is a variable unit it is 'generally based on a square each side of which is a certain number of paces or else haths (cubits).'¹ The most prevalent land measure now is the pukka (standard) bigha - or a square a side of which is the chain of 55 yards. This is based on the native unit 'biswansi' or a square each side of which is a 'latha' ($5\frac{1}{2}$ cubits, now standardised at 8 feet). 20 biswansis make a 'biswa' and 20 biswas make a bigha.² This system of land measure based on some sort of square unit has resulted in a similar field pattern i.e. almost all the fields are some sort of rectangle whose boundary lines roughly run north-south and east-west. Village paths and cart tracks which run on the boundary of fields usually conform to the field pattern. It is evident that a rectangular form of field requires a minimum turning of the plough and the least strain on bullocks. Such a plot is easier to make and measure than that of any other shape. In a rural environment where everything is made subservient to cultivation the tendency is not to disturb the ploughable shape of the most fertile fields adjacent to dwellings. (Fig. 44). This accounts to a great extent for the common rectangular form of the villages.

¹ Report of the Heights and Measures Committee (1913 - 14), p. 35.

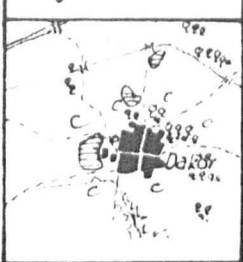
² A pukka bigha thus is 3025 square yards or $\frac{5}{8}$ of an acre.

VILLAGE PATTERNS

a. A RECTANGULAR VILLAGE



b. A rectangular village



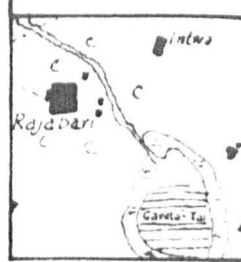
c. A rectangular village



d. A rectangular village



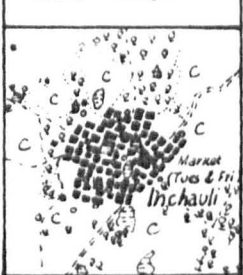
e. A rectangular village



f. checkerboard pattern of the crossing of a road and a cart-track.



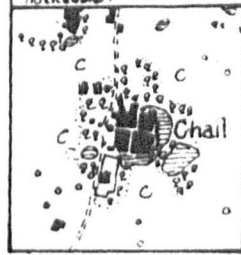
g. A large checker-board village.



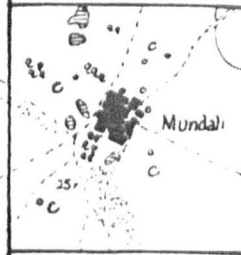
h. checkerboard pattern; note the influence of cart roads and wells.



i. A square village, the restricting influence of roads, ponds and groves is noticeable.



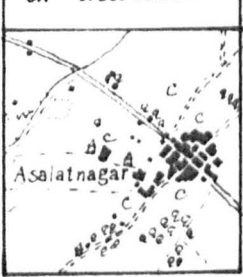
j. A square village; note the influence of cart-tracks.



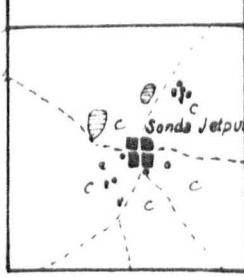
k. A square village with marked checker-board pattern.



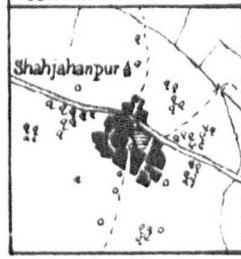
l. A square village on cross-roads.



m. Four-square Plan.



n. A hollow rectangle with a pond in the centre.



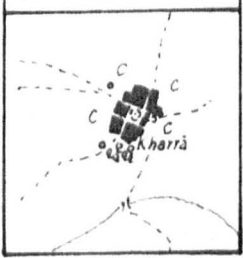
o. A hollow square with a mosque in the centre.



p. A hollow rectangle with a temple in the centre.



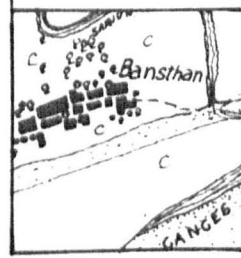
q. A hollow rectangle with a mound (the site of a ruined fort) in the centre.



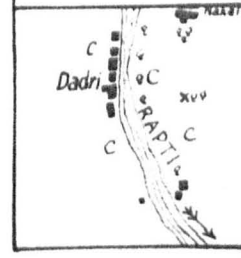
r. A hollow rectangle with a few shady trees in the centre.



s. Elongated village on a levee.



t. Elongated village on a levee.



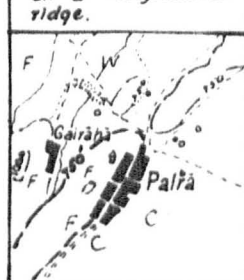
u. Elongated village on a riverfront.



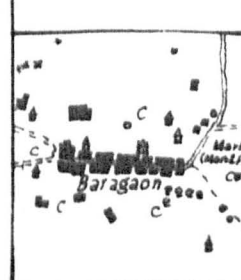
v. Elongated village by a tank.



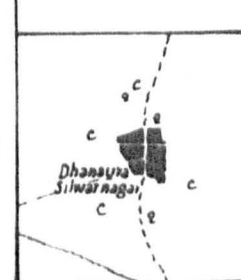
w. Elongated village on a longitudinal ridge.



x. A strassendorf.



y. Herringbone pattern.



Compactness which is a result of factors dealt with in the foregoing chapter requires houses to lie as close to each other as possible. In the absence of a fortifying circular wall the most convenient form to the villager in which a maximum clustering of dwellings might be effected is some sort of rectangle. Another important factor is superstition about house-orientation. The villager tries to build his house in a way that its axes should not depart from the north-south and east-west line. A different aspect is regarded as ill-fated and is uncommon except in the Doab and Bundelkhand. Combined with the need for aggregation and given the rectangular shape of houses such an orientation of dwellings results in a rectangular form of village. The most predominant shape of a mauza is a sort of rough rectangle and the village pattern corresponds to this shape.

That the rectangular pattern is probably a heritage of the ancient past is brought out by reference to standard village plans in Manasara.¹ Eight village plans are described in the book all of which are rectangular. Harvell² has illustrated four of these plans. "The true position of the cardinal points having been carefully determined by means of the shadow of a gnomon rules for the construction of which are given in the Silpa Sastra

¹ Manasara is a Sanskrit text in 'eleven manuscripts', devoted to the science of Hindu Architecture. The work has been rendered into English by P.K. Acharya as "Architecture of Manasara" (published by the Oxford University Press, 1933). The origin of the book is doubtful but the translator guesses it to have been written in the 5th to 6th century A.D. (p. IViii, preface).

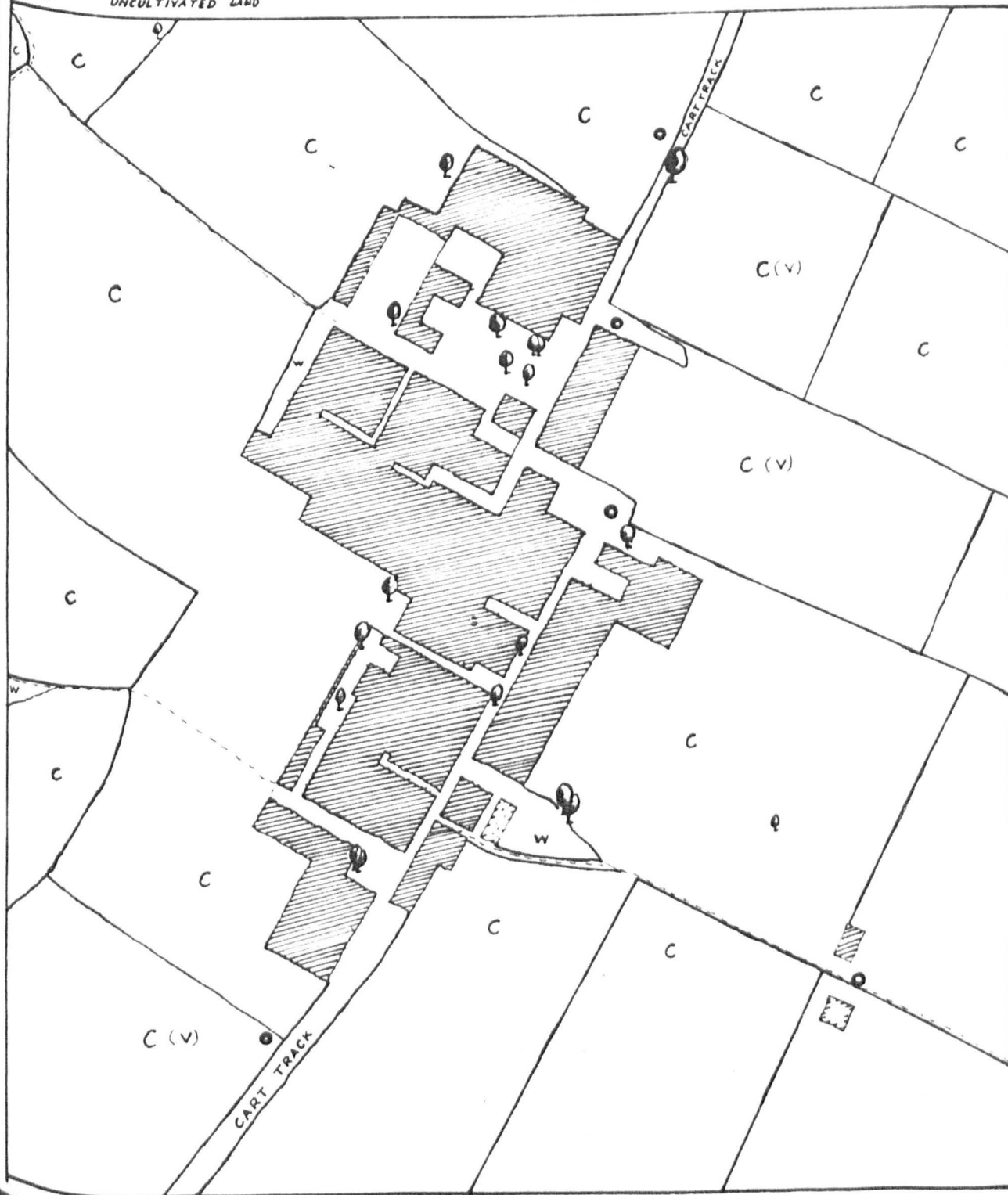
² Havell, E.B., The Ancient and Medieval Architecture of India: A Study of Indo-Aryan Civilization, (1915), pp. 16-17.

THE MAP OF A VILLAGE (RASULPUR IN ALIGARH DISTRICT, SURVEYED BY THE WRITER IN DECEMBER, 1943) SHOWING THE RECTANGULAR ARRANGEMENT OF DWELLINGS AND LANES IN RELATION TO FIELD-PATTERN, WELLS AND CART TRACK

SCALE
0 30 FT

C CULTIVATED FIELDS
C (V) " " given to vegetables
W UNCULTIVATED LAND

DWELLINGS
TEMPORARY HUT
RUINED HUT
● MASONRY WELL
--- PATH
○ TREE



(literally, the book of Architecture viz. Mānāsara) the alignment of the main streets of the village was marked out¹. The fortifying rectangular wall or fence with four gates was invariably² present. The radial plan was avoided in order to check easy access by the enemy to the centre of the village, to avoid congestion of traffic and to prevent streets being in the wrong direction for the sun.³

Falling within the broad rectangular types are the less common patterns where owing to physical and cultural influences the ground plan is more regular.

Checkerboard Pattern. The checkerboard or a rough grid plan is a feature of some of the large rectangular villages (Figs. 43f, g, h, k). Such a term is used to indicate the layout where lanes intersect roughly at right angles and combined with the rectangular subblocks of the village present a resemblance to a checkerboard pattern. In a large number of agglomerations two streets, corresponding with the four gates of the village are wide enough to allow the passage of bullock carts - the most common vehicle for agricultural transport. As a matter of fact these relatively broad lanes are

1 Ibid. . . p. 9.
2 Ibid, p. 10
3 Ibid, p. 16. A word of caution may be uttered here about the inferences drawn from Manasara by ardent interpreters. A study of Havell will lead one to believe that the village plans drawn by him were prevalent in the early Hindu period. Even a cursory glance at Acharya's translation will show the contrary. This is clear from the language of Manasara where the description of the 8 types of village plans is worded in the form of instructions to the builder and there is no mention of these types being prevalent. The work, however, enables us to form an idea of the village plans considered suitable in the age it represents.

restricting the entrance of the village outside a single gate. This might have been an old boundary wall but along the present feature there are

a continuation of the village cart-tracks. Other subsidiary lanes (narrow spaces between houses or their groups) run more or less parallel with the main lanes. The tendency to make the walls of dwellings correspond, as far as possible, with the cardinal points of the compass also helps the checker-board arrangement. Such a layout renders internal movement easy. Generally the village is made up of several wards (tolas or tolis as they are locally called) inhabited by distinct castes. Brahmins reside in a central ward or that near the temple, the vegetable-growing castes viz. Koiria, Murao etc. reside in the block bordering the 'goind' - the most fertile and heavily manured fields near dwellings (goind is usually not on all sides of the village), the lowest castes, if settled in the main site, e.g. Chamars usually occupy the meanest corner and away from the temple. Muslims usually occupy a separate quarter their position being clearly indicated by the mosque. Almost each ward has separate wells for its residents. Even where the watertable is high drinking water cannot be obtained except from masonry wells which each individual cannot afford to construct. Wells, therefore, lie on the inter-sections of lanes. In the building of houses one of the primary considerations is accessibility to the nearest sweet-water well and wells usually lie on the outskirts of settlement. Where, however, they are in the centre of the village an open space surrounding them maintained for direct access to the source of water. This adjustment of dwellings to wells again helps the checkerboard pattern (Fig. 439). Proximity of mosques or temples is improper probably owing to the fear of

The Square Village. In some cases the rectangle assumes a square shape. Such a pattern is associated with villages lying at the crossings of cart-tracks or orads. (Fig. 438). The pattern is also related to some feature restricting the extension of the village outside a square space. This might have been an old boundary wall but among the present features thick orchards

surrounding the village on all or some sides or tanks or roads seem to have a similar restricting influence. (Fig. 43j). An allied pattern is that of 'four-squares' where the village consists of four distinct blocks lying at the inter-section of two main lanes or cart tracks. ^(Fig. 43m) The pattern is also due to the division of different castes in four distinct quarters of the village.

Hollow Rectangle or Square. A very interesting variant of the rectangular pattern is that in which there is an unbuilt open space in the centre of the village. This is a common type in the Jalaun district where the hollow is occupied by the site of the old fort of the local chieftain or zamindar, round which dwellings of the villagers congregated. Though the fort fell into disrepair and has disappeared the site is marked by a mound in the centre of the village. As it is thought ominous to build on ruined sites the space remains unoccupied imparting the characteristic pattern to the village (Fig. 43q). Other features which have led to the development of this pattern are mosques (Fig. 43o) or temples (Fig. 43p) occurring in the centre of the village. Places of worship especially temples usually lie on the outskirts of settlements. Where, however, they happen to be in the centre of the village an open space surrounding them may frequently be seen. This is due to a prevalent notion that the close proximity of mosques or temples is improper probably owing to the fear of some sort of sacrilege. Sometimes the hollow may be occupied by a pond (Fig. 43n) or simply by a few shady trees (Fig. 43t) and used as a convenient place for tethering cattle or threshing crops. The place is also a suitable gathering ground for vendors and for the panchayat assembly (wherever it exists). In summer peasants gather under the trees for

relaxation or in winter evenings a fire may be made round which the village folk exchange talks or stories. It is ^{sometimes} here that the weekly or biweekly market takes place.

Elongated Village. Another frequent form within the rectangular pattern is of the elongated village where one of the axes of the village is markedly longer than the other. This is mostly due to the influence of the site. Natural or cultural forces in the site are such as have either restricted the growth of the village in some directions or fostered its extension in others. Thus in the areas liable to inundation levees (occurring along rivers, oxbow lakes or old channels) the rectangular cluster usually becomes abnormally elongated along the high ground (Fig. 43st). Oblong villages in the Ganges Plain are due more to this cause than any other. Even where there is no danger of floods the advantages offered by the proximity of a river lead to the elongation of the village (Fig. 43u). If the site is a narrow strip between two streams flowing very close together the village certainly becomes oblong. Clusters situated on a bank marking the edge of an alluvial terrace show a similar pattern. Other water-fronts e.g. the side of a lake or tank ^{may} exert a similar influence (Fig. 43v). In the Trans-Jumna tract where an elevated site on the side of a hill was sought after for the purpose of defence, villages are often oblong if they happen to be on narrow longitudinal ridges (Fig. 43w).

Among the cultural features in the site the most important is a road or cart track. Though, as we have noticed earlier, villages only infrequently lie on main highways they do happen to be situated along

unmetalled roads (and the cart road is an almost invariable feature of the countryside). If the road is an important link with the surrounding villages or country towns elongation may be very conspicuous. If, however, the road is a recent feature the settlement remains indifferent to it particularly if there is no trading class in the village. The extension of a village along the road is often remarkably encouraged if the settlement is a market centre and draws goods from or exchanges them with, the surrounding villages or towns (Fig. 43^x). Such a pattern approaches what may be called a strassen-dorff ("street village"). The frequent development of this type, is, however, precluded mainly by the relative self-sufficiency of the village, and its general indifference to highways of communication. The average village is self-sufficient because of the simplicity of its needs. Cloth if not woven in the village can be had in the nearest market. The village shop provides salt, kerosene, spices and grains, the local bania dealing in these articles. Where a shop is non-existent the nearest market is the source of supply of these essentials. The male children are educated, whenever it is deemed necessary, in the local or neighbouring primary school. Agricultural implements, leather goods and pottery are supplied by the village blacksmith, cobbler and potter respectively.

The religious life of the villager is looked after by the local priest. Almost all the essentials for his frugal meal are produced in the village fields. He rarely calls a doctor. The priest or the village quack know some hotch-potch which combined with his credulity are quite efficacious. Building material is locally available in the form of mud from the pond, tiles made by the potter and timber derived from the village groves and worked by the village carpenter. Extraordinary needs e.g. metal utensils

or fine cloth can be purchased when the villager attends a fair or goes to the administrative centre for litigation. Highways were avoided in the past owing to the danger of troops or bands of marauders. Metalled roads and railways that appear to connect villages are superimposed features and have not influenced village patterns to any noticeable degree. Thus whereas in advanced countries the town with its charms and amenities draws rural dwellings near roads leading to the development of ribbon or linear patterns, in the U.P. villages generally have so far remained indifferent to the main roads.

Herringbone Pattern. Where the rectangle is characterised by a main lane with all the subsidiary lanes meeting the former almost at right angles the pattern is what has been called 'herringbone'¹ (Fig. 43y). The pattern evidently is a result of the unusual importance of the main street indicated by the tributary nature of the by-lanes.

Other Forms Allied to the Rectangular Pattern.

Other common types are villages where the rectangular plan is replaced by variants not coming under any of the above mentioned patterns. A frequent type is one in which two rectangular blocks of houses lie at right angles to each other giving an 'L' pattern (Fig. 45_{a-c}). One of the limbs seems to be a later extension of the village. It might have been due to a growth of the original population or it may be a colony of new immigrants or of

¹ See Youldon I.C., "The Scarplands of Wiltshire, Gloucestershire - Somerset Border - a regional study with particular reference to urban and rural settlements" (B.A. Thesis submitted in the University of London, 1945).

VILLAGE PATTERNS

a. L-shaped village with cultivated fields in the angle



b. L-shaped village at the crossing of cart-tracks



c. L-shaped village at the sharp bend of a river



d. Rectangle with indentations due to vegetable growing plots



e. Fan-pattern with lanes converging on a pond



f. Fan-pattern with lanes converging on a road



g. Fan Pattern associated with convergence of tracks



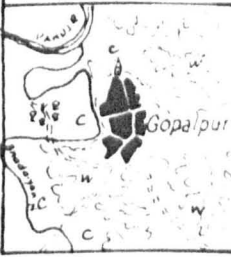
h. Fan pattern with lanes converging on a pond



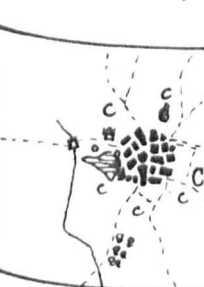
i. Fan pattern with lanes converging on a temple



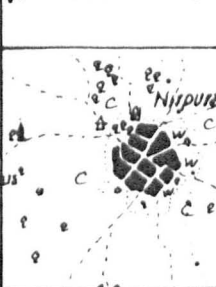
j. Fan pattern with lanes converging on a river front



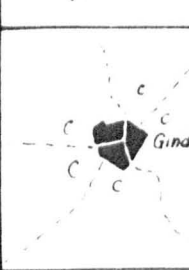
k. A circular village



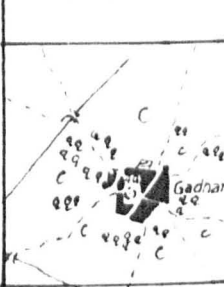
l. A circular village



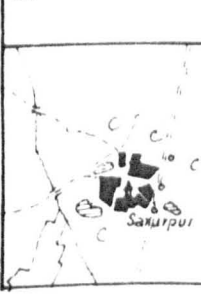
m. A polygonal village



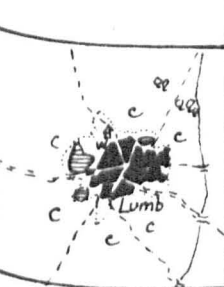
n. A polygonal village



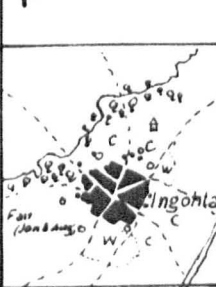
o. A hollow circle



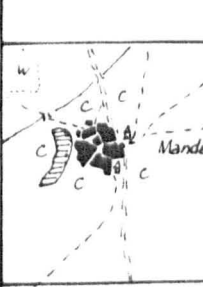
p. Radial Pattern



q. Radial Pattern



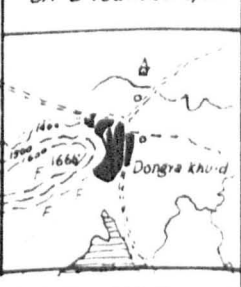
r. Radial Pattern



s. Oval pattern on the alluvial edge of Bangar



t. Horse-shoe pattern on a rounded spur



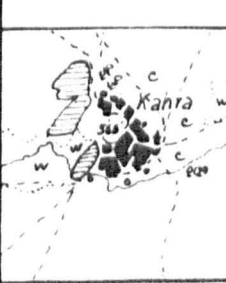
u. Horse-shoe pattern on a round hillock



v. Horse-shoe plan with broadening on one side due probably to the road



w. Horse-shoe pattern round a hillock



x. Irregular pattern



y. Irregular pattern



some distant caste. The angle between the two limbs is often occupied by fertile fields given to vegetables (Fig. 45a) especially if an irrigation well happens to be situated there. Such a pattern often results from two linear forces acting at right angles to each other e.g. two roads or cart tracks (Fig. 45b) or a water-front and a road. The form may also develop at sharp bends of rivers (Fig. 45c) or two sides of a rectangular pond.¹ The 'L' may be modified into a T or some similar form according to local conditions.

A shape more common than the 'L' pattern is that of a rectangle with step-like indentations on one or more of its sides. The outer shape of the ground plan is related to the boundaries of fields. That houses have been adjusted to the rectangular corners of vegetable-growing plots is clearly indicated by the pattern. (Fig. 45d).

Fan Pattern. A very interesting pattern is often seen where some focal point or line is situated at one end of the village. The focal object may be situated at one end of the village. The focal object may be a tank (Fig. 45e), a riverside (Fig. 45f), a road (Fig. 45f), an orchard or even a

¹ Lying usually on the outskirts of the village, the pond or ponds themselves a result of excavation for building, subsequently become an important feature in the rural landscape especially if they contain water throughout the year. They are the easiest source of water for the cattle and are used by villagers for bathing. Thus the pond exerts an important influence on the structure of the village. Villagers surrounded on two or three sides by a pond assume a square or rectangular form. Those surrounding a rectangular pond on three sides assume a C shape. Various other individual forms are related with ponds. A feature more important than a pond is a mound which supersedes all other factors and the pattern of the village is determined by the shape of the mound. (Dhingwas, Fig. 336).

a well or a place of worship (Fig. 45i). The lanes of the village converge here imparting to it a characteristic fan-pattern.¹ The pattern is more conspicuous if the focal object has a curved line convex to the village. The pattern may also develop owing to the convergence of tracks more on one side of the village than on the other. (Fig. 45g).

Circular Village. In the Upper Doab and Trans-Jumna districts large villages are characterised by a very high degree of compactness. The outer walls of dwellings, adjoin each other and present a continuous front so that, viewed from without, the village presents the appearance of a walled and fortified enclosure pierced only by a few openings.² This form is heritage of the past particularly of the eighteenth and nineteenth centuries when the security of the villagers was uncertain. A considerable number of these semi-fortified villages have a circular pattern. The round form was a natural result of maximum aggregation, for the purposes of defence, round the mansion of the local zamindar who used to protect the peasantry against a foray by a neighbouring chief. Though there is little evidence at present remaining of the fortifying walls round these villages, their semifortified structure clearly suggests that a device existed in the past for protection against marauders. And both economy of labour and cost necessitated the wall being circular leaving its imprint on the existing pattern of the village. (Fig. 45k, l).

1

See Mortimer H.M. 'East Devon, the Distribution and Pattern of its Villages and Smaller Towns' (M.A. Thesis submitted in the University of London, 1940).

2. "Synopsis" of Census writers (All. S.M., 'Organisation and Settlement in D.C. Muttia, pp. 77-78; D.C. Meerut, (1904), p. 103; D.C. Saharanpur (1909), p. 99.

Radial Plan. The circular village where a number of streets converge on its centre assumes a radial plan (Fig. 45p,q). The pattern is usually a result of the dominant influence of some feature in the centre of the village e.g. the zamindar's house, a sweet water well or the village shop. The radial plan may sometimes be seen in villages other than circular. In a few cases the pattern becomes what may be called a spider's web, a variant of the radial plan where apart from the converging lanes there may be one or two concentric lanes. (Fig. 45t).

Hollow Circular Form. Allied to the circular village is the pattern where there is an unbuilt space¹ in the centre of the village. (Fig. 45o). The causes are more or less the same which lead to the development of such a pattern in rectangular villages. The difference is only in the outer shapes.

Polygonal Village. As the village was probably never built according to plan irregularities in the outer shape of circular villages are common. This brings us to the polygonal village a form intermediate between the circular and rectangular, a most numerous after the latter and genetically allied to the former pattern. The form seems to be a later stage of the circular pattern. With the need of defence having gone the subsequent extensions of the village have not kept in new the circular aggregation and the form has become polygonal (Fig. 45m,n). The pattern is more common in the Doab,

Rohilkhand and Bundelkhand than elsewhere, the need for defence in the past being the obvious reason.

¹ "Hollow Circular Form". Though for the purpose of revenue and
G. "Rynkdorf" of German writers (Ali, S.M., "Population and Settlement in the Gheggar Plain", Indian Geographical Journal, Vol. XVIII, April - June, (1942), p. 174.

Oval Village. On the outerbank of flood-plains an oval village is sometimes noticed. Where the river bank is convex to the stream the outerbank has a similar rounded projection towards the flood-plain. Compact villages situated on such rounded projections (rounded due to diluvial action) develop an oval form (Fig. 45s).

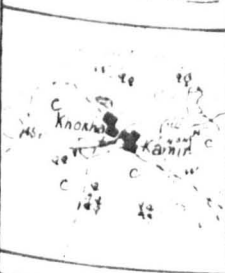
Horse-Shoe Pattern. The horse-shoe pattern is characteristic of a large number of hill-foot villages in Bundelkhand. These villages built on the side or at the base of the rounded ridges or hillocks line the advantageous side of the hill forming a girdle round it and the resulting form is like a thick crescent or a horse-shoe (Fig. 45t-w). If there is a street running parallel with the base of the hill with a belt of dwellings on both sides the pattern shows a double-girdle arrangement (Fig. 45u). If a road passes by one side of the hillock only the growth of the girdle of settlement is wider on this side than on the other (Fig. 45v). Sometimes the hillock served not only as a defensible site but also impounded the local stream into the form of a tank at its base. In such cases the settlement usually occupies the side opposite to the tank (Fig. 45w) yet remaining close to it. A pattern akin to the 'horse-shoe' is also characteristic of some of those villages of Jalaun which were built round the old mound fortress but did not surround it on all sides.

Double-Nucleation. The dopple dorfer (double village) is a group of "two villages so near together that it must be admitted that one grew up by colonisation upon the edge of the other"¹. Though for the purposes of revenue and

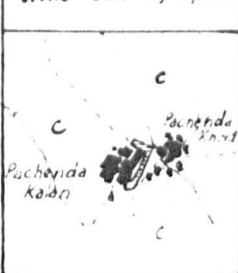
¹ Brunhes, J., Human Geography, "translated by T.C. Le Compte, (1920), p. 152.

VILLAGE PATTERNS

a. Double-village on either side of a canal



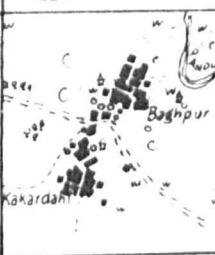
b. Double-village on either side of a pond



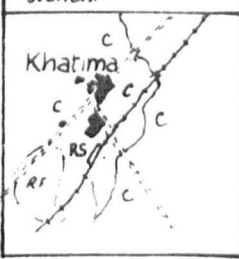
c. Double-village on the two sides of a hillock



d. Double-village on either sides of a road



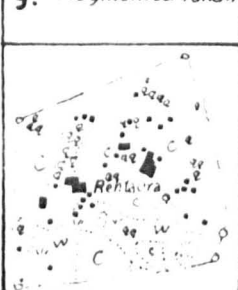
e. Doppel-dorfer associated with a railway station



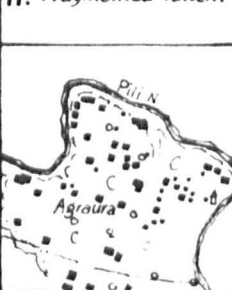
f. Fragmented Pattern



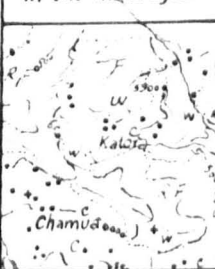
g. Fragmented Pattern



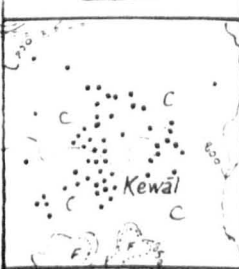
h. Fragmented Pattern



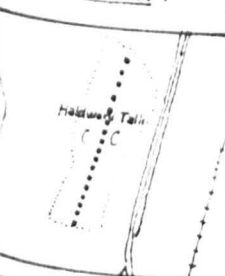
i. 'sprinkled' pattern in the Himalayas



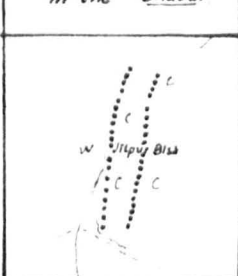
j. 'sprinkled' pattern in the Sonar



k. string pattern in the Bhabar



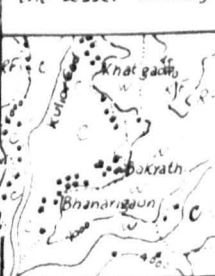
m. string pattern in the Bhabar



n. 'Contour' pattern in the Lesser Himalayas



o. 'Contour' pattern in the Lesser Himalayas



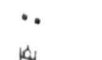
p. Rectangular hamlets in partially dispersed settlements in the Himalayas



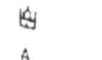
KEY TO FIGURES 43, 45 & 46



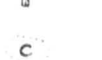
villages & hamlets



separate dwellings



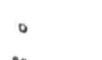
mosque



temple



cultivated land



uncultivated land



masonry well



grove



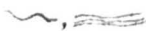
mauza boundary (approximate)



cart-track



roads: unmetalled, metalled



rivers



ponds: perennial, non-perennial



swamp



canals: minor, main



embankment



river with flood plain



ravines



contour



mound



reserved forest



other wooded area

administration each section may be treated as a separate establishment their geographical proximity is unquestionable. In the rural landscape a minor obstacle may be strong enough to check the coalescing of the two settlements and lead to the formation of dopplendorfer. Thus a minor nala is often the cause of such a form (Fig. 46a). Sometimes a mound or hillock may result in twin villages situated on either side of it, (Fig. 46c). A large tank which is utilised by the two villages on its either side may also be the cause of such a pattern (Fig. 46b). Double-nucleation may sometimes result from an intervening road (Fig. 46d). On occasions the parent village is a few hundred yards from its market ward situated on some line of communication, having a non-agricultural function and being the residence of traders, and shopkeepers. Where a railway station comes to be located near a village the shops of a few confectioners, betel and cigarette sellers and graindealers for conveyance drivers and their animals lead to the formation of a new establishment a furlong or so from the parent village (Fig. 46e). A proportion of the inhabitants of the new settlement may only keep their shops near the station, their actual residence being in the parent village.

Irregular Cluster. Another important class, already alluded to comprising a large number of compact settlements is that where no plan is noticeable.

The village is an irregular pile of houses huddled together in such a way that no internal plan or external form is discernible. (Fig. 45x,y).

The Amorphous settlements of east U.P. , unless they are clustered

consist of numerous hamlets scattered over the mauza (Fig. 46f,g,h). Though each of the hamlets itself is more or less rectangular their relative arrangement is so irregular that no pattern of the settlements taken as a

whole emerges and such settlements can best be termed amorphous or "groupe-ment nebuleux".¹

Pattern which depends on the "arrangement of streets and houses"² cannot be studied in the case of dispersed settlements where dwellings are scattered and streets non-existent. This in general is applicable to the disseminated settlements of the U.P. There is, however, some arrangement noticeable in the placing of dwellings with reference to the site occupied and on this basis two types are important viz. (1) String or Linear Pattern and (2) Contour Pattern.

The String Pattern, Characteristics of the canal-irrigated Ehavar (Nainital and parts of Bijnor and Garhwal Ehavar) is a remarkable linear development. All the dwellings of a village are built in a continuous line along one of the irrigation channels most of which are masonry. The settlement has, therefore, no breadth except that of the dwellings while in length it may often exceed a mile. (Fig. 46k). The reasons for such a development are obvious. In this porous dry tract not only for crops but also for men as well as cattle the irrigation channels are the only source of water. Owing to a deep water table wells are non-existent and the porous pebbly soil renders the existence of surface water impossible. All the dwellings are built (in separate holdings) along the canal. Sometimes a settlement may consist of two or more 'strings' depending on the number of channels or dis-tributaries traversing the 'village'. There are instances of two parallel

strings of dwellings, one on either side of a canal (Fig. 46p) or one on each side of a street.

¹ Mortimer, op. cit. There are small clusters (Fig. 46p) of houses in contact

² Finch and Trewartha, Elements of Geography, Physical and Cultural, (1942), p. 654.

rows of houses coming into existence that away from the banal being due to greater attention needed by the fields (Fig. 46m). Linear villages, though not exactly similar to those of Bhabar are quite frequent in the Dehra and Kotah Duns (Figs. 40 b & c). As discussed in the third chapter the Bhabar and Duns are much alike so far as the nature of water supply is concerned, and owing to the dependence on canals linear patterns are frequent in the Duns.

Contour Pattern. In the Lesser Himalayas the arrangement of dwellings on the hill-slopes is often striking. All the terraced fields run parallel with contours as the terrace walls are in close sympathy with the latter to check erosion. The settlement is usually above the terraced zone and lying parallel with the terraced fields it also corresponds with the contour line of the ridge or spur (Fig. 46n, o). This 'contour pattern' is the result of the zonal land use - the various zones from the valley bottom to the ridge-top (Fig. 396) being parallel with the base of the hill and therefore with the contour. The shape of the settlement accordingly becomes convex towards the valley when it is situated on a spur (Bhanarigaon, Fig. 46o) and concave when the village is in a re-entrant (Fig. 46n).

When dispersal is fully developed the arrangement of dwellings with reference to the space occupied may be termed 'sprinkled' in analogy with the sprinkling of grains on the ground (Fig. 46i, j; also see Bagaru Fig. 396). When, however, dissemination is partial and along with the dispersed dwellings there are small nuclei (Fig. 46p) of houses or compact hamlets the latter are frequently rectangular in pattern, being rows of half a dozen houses on either side of a street.

REGIONAL DISTRIBUTION. We have incidentally mentioned the regional distribution of some of the patterns discussed above because of their localised occurrence ^{and} in order to avoid the impression that they occur anywhere in the province. We have yet to indicate the regional distribution of most of the patterns especially of compact villages.

Their delimitation into various regions is impossible owing to the association of the various patterns with diverse causes a large number of which are inherent in the site and the cultural make-up of the village. The following points about the distribution of the village patterns, however, brought out by a close examination of the one-inch survey sheets-analogues of "Professor Maitland's Wonderful Palimpsest"¹ (Ordnance Survey Maps)-may briefly be noted.

The rectangular village which is the predominant type as well as its allied patterns are most numerous in the regions of 'Compact' and 'Cluster and Hamlet' Types of settlements. Nucleated villages in the zone of 'fragmented' settlements also are characterised by the rectangular and allied patterns. Individual forms within this broad group may occur anywhere according to local conditions. For instance the elongated village related with forces inherent in the site has a wide range of distribution. The checkerboard pattern is a characteristic of large villages and is not uncommon. The hollow square plan is related to a similar pattern of the common in the zone of compact and 'cluster and Hamlet' types of settlements. The Hollow square is a pattern associated with some abnormal feature in the internal structure of the village and its occurrence is not common except in Jalaun (as mentioned above). Perfectly square villages too are not frequent.

The 'L' pattern and rectangles with *step-like indentations* are quite common types and more numerous in the east than in the Doab and Bundelkhand. This is because while some waste land adjoining the village is common in these two drier tracts, in the east fertile fields almost invariably border the dwellings which have avoided the fertile *plots* and led to such patterns.

The circular village which is related to the need of defence occurs in the regions most disturbed in the past viz. the Upper Doab and Trans-Jumna Plain. The largest villages in these tracts are frequently circular denoting their great age. The occurrence of circular villages east of the Ganges is rare. Patterns allied to the circular form viz. the polygonal, radial,¹ hollow circular (in the descending order of their frequency) correspond in their distribution to the circular type. The polygonal form which is a rough variant of the circular pattern may also be noticed in Rohilkhand and Western Oudh, the areas which along with the Doab and Bundelkhand suffered more from insecurity in the past than the other parts of the province.

The Fan-pattern, as we have noted, is a result of the peculiarities of site and is independent of any regional characteristics. The Horse-Shoe shape is a characteristic of the Bundelkhand hill-foot settlements.

1

Very frequently the radial plan is related to a similar pattern of cart-tracks. In those areas where agriculture is less intensive and soil less fertile e.g. the Trans-Jumna Plain, cart tracks are more numerous than in other parts of the Ganges Plain, joining villages with their neighbouring settlements like the spokes of a wheel. These tracks which most probably came into existence when villages were still in their early stage influenced their pattern as the settlement grew.

CHAPTER VI.

RURAL HOUSE TYPES.

The rural house of the province is both a geographic and economic index. It tells strikingly by the structure of its roof and its aspect the nature of climate. The truth of the remark that "climate expresses itself through the form of the 'roof'¹ is amply brought out by the houses of the province. Rainfall decreases from east to west and north to south and so does the slope of the roof of rural dwelling. We notice a gradual change from the high-pitched tiled roof of eastern U.P. to the flat-mud-roof of drier west and south-west. Similarly the slope of roof decreases from the high-pitched thatch of the rainiest submontane plain to the low angle, flat-tiled roof of Bundelkhand. Building materials which are the gift of the environment indicate the regional characteristics of geology, soil, water features and vegetation. The size, height and standard of comfort indicate the economic condition of the peasant. The average large and roomier house of the Doab speaks of a relatively better economic condition of its occupant in contrast with the lowlier dwellings of the rest of the non-Himalayan portion of the province showing the poverty of the average peasant.

Though rural houses of the area differ from region to region in some important aspects there are certain features of universal occurrence in the average dwelling of the non-Himalayan tract. One of these is the 'angan'

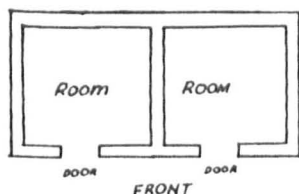
1

Brunhes, J., Human Geography, translated by T.C. Le Compte, (1920), p. 86 (footnote).

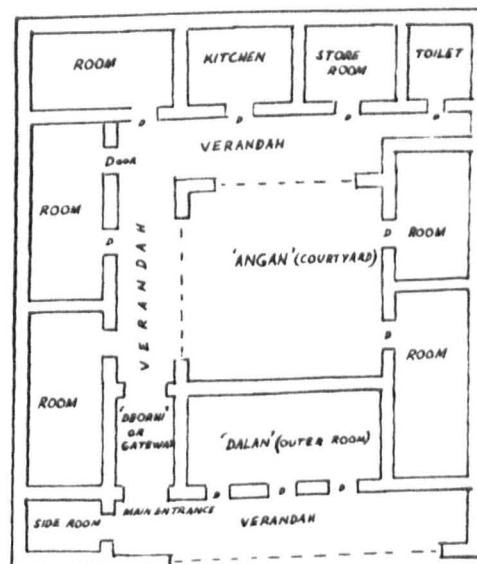
or inner courtyard surrounded by rooms. Owing to the hot climate the angan is an essential item in the average dwelling of the province below the Himalayas. In the hot season as well as on clear nights of rainy season women and children sleep here as the ill-ventilated rooms or verandahs are too hot and stuffy. One of its corners is used as a kitchen during summer. Purdah is observed to varying degrees almost in every house and the open and relatively airy space that the courtyard provides is almost inevitable considering the hot and sultry weather of about two-thirds of the year. It is in the angan that women perform a lot of indoor work e.g. grinding, husking and drying of grains. Lack of ventilation is a common feature. Windows are almost unknown and skylights (crude apertures in upper portion of walls) are rare. This is partly due to the ignorance of the people about even the rudiments of health and hygiene, partly to fear of thieves - the most common type of crime being burglaries and thefts, and partly to strong notions about indoor privacy. In almost the whole of the non-Himalayan portion of the province (except the hilly trans-Jumna tracts) the building material of walls is clay mud derived from the village pond or depression. We have seen in the introductory chapter the general absence of forests in the Ganges Plain - a vast expanse of deforested and closely cultivated tract. Thus the lack of cheap timber, more precisely rafters for a wide span, expresses itself in the universal narrowness of rooms in dwellings. Throughout the non-Himalayan part of the province irrespective of any regional house type, three categories of dwellings based on the economic differences of the people will be found in every tract. Thus the dwellings of landlords, banias or other moneyed people (Fig. 47c) though partaking the characteristics of the regional type, are large, high and often masonry or two-storied. The second category consists

GROUND PLANS OF TYPICAL HOUSES

Scale for all plans
 Feet 0 2 4 6 8 10 20 Feet

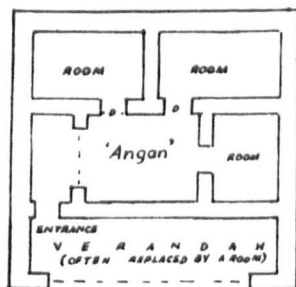


a. PLAN OF A TYPICAL
HIMALAYAN DWELLING

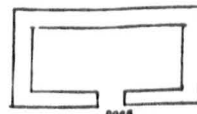


THATCHED
CATTLE
SHED

c. PLAN OF A TYPICAL MUD OR BRICK
HOUSE OF A WELL-TO-DO LANDLORD
IN THE GANGES VALLEY



b. PLAN OF AN AVERAGE
PEASANT'S MUD HOUSE IN
THE GANGES VALLEY



d. PLAN OF THE MEANEST MUD HUT
IN THE NON-HIMALAYAN AREA

of the middling house of the average peasant. (Fig. 47c). By its ground plan size, and structure it is most representative and most numerous in any tract and has, therefore, been more thoroughly discussed. Lastly the dwelling of the poorest class especially the untouchables which consists of a single - room hut and is usually thatched is of universal occurrence in the non-Himalayan portion. (Fig. 47d).

Dwellings in the lower ^{alluvial} flats of large rivers e.g. the Jumna, Ganges, Cogra and Sarda are of thatch and wattle. Owing to the light friable soil, recurrence of floods, waterlogging, and a humid air, mud houses are unsuitable to the riverain tracts.

In spite of these points of similarities there are well-marked differences - very distinctly geographical - in the houses of the various tracts of the province. Taking into consideration the most important differences viz. those of building materials, form of roofs, number of stories, and general appearance we are able to distinguish the following eight rural house types (Fig. 48) in the province:-

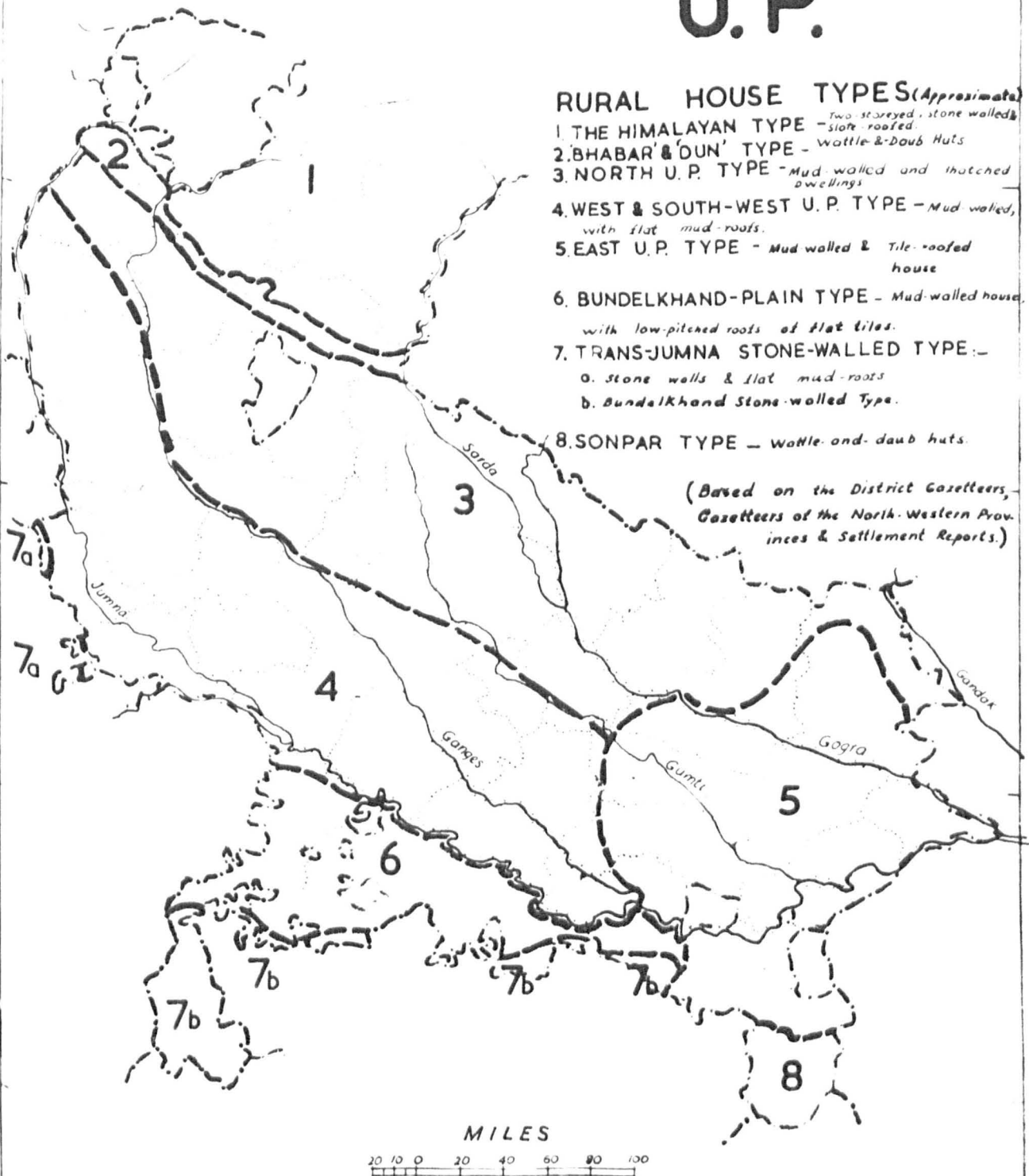
1. The Himalayan Type (Stone-walled, two-story and slate-roofed house).
2. The Bhabar and Dun Type (wattle-and-daub house).
3. North U.P. Type (mud-walled and thatch-roofed house).
4. The West and South-West U.P. Type (Flat-mud-roof and mud-wall house).
5. East U.P. Type (mud-walled and tile-roofed house).
6. Bundelkhand Plain Type (mud-walled and flat-tiled roof dwelling).
7. The Trans-Jumna Stone Walled Type of (a) the Trans-Jumna Plain West.
(b) Bundelkhand.
8. Sonpar Type (wattle-and-daub hut).

U.P.

RURAL HOUSE TYPES (Approximate)

1. THE HIMALAYAN TYPE - ^{Two storeyed, stone walled,} slate-roofed
2. BHABAR & 'DUN' TYPE - ^{Wattle & Daub Huts}
3. NORTH U.P. TYPE - ^{Mud-walled and thatched dwellings}
4. WEST & SOUTH-WEST U.P. TYPE - ^{Mud-walled, with flat mud-roofs.}
5. EAST U.P. TYPE - ^{Mud-walled & Tile-roofed house}
6. BUNDELKHAND-PLAIN TYPE - ^{Mud-walled house, with low-pitched roofs of flat tiles.}
7. TRANS-JUMNA STONE-WALLED TYPE: -
 a. ^{Stone walls & flat mud-roofs}
 b. ^{Bundelkhand Stone-walled Type.}
8. SONPAR TYPE - ^{Wattle-and-daub huts.}

(Based on the District Gazetteers, Gazetteers of the North-Western Provinces & Settlement Reports.)

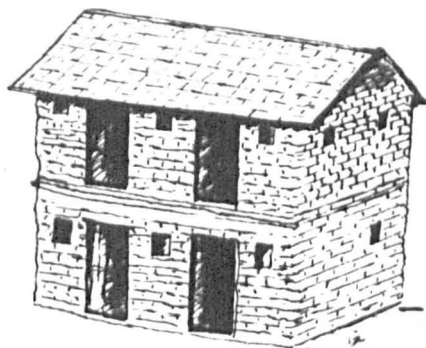


1. The Himalayan Type. The Himalayan house like its geographical environment has nothing in common with the rest of the province. From the standpoints of building materials, layout, structure, ^{standard of} form and comfort it is a distant type. The most predominant features are (1) Stone walls, (2) two storeys, and (3) slate roofs. The average dwelling is an oblong rectangular structure with gable-ends and sloping roofs. Walls are made of hewn stone joined ordinarily with clay or with mortar in better houses. Burnt lime is used as mortar. In the case of the dwellings of well-to-do people walls are plastered. The floor of dwellings are usually paved with concrete. Where slates are not quarried shingles may be used in roofing but this shingle roof is more or less confined to north Chakrate tahsil when deodar (*cedrus deodara*) is plentiful. In better dwellings a paved enclosure in front of the house is a common feature. (Fig. 49c). The enclosure is known as 'chawk' and fruit trees like oranges, and peaches are frequently planted at its outer edge. Trees less adjacent to dwellings are lopped off and after erecting a platform on their stems hay is stacked in a conical form, the pile having a vague resemblance to deodars. (Fig. 49d).

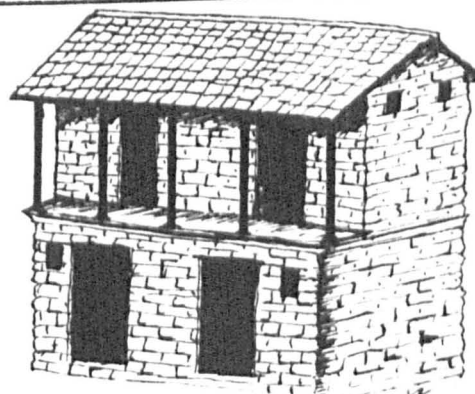
The Himalayan rural house in its plain form, known as dopura makan (two-storey house), is a four-room, double-storied building with two rooms on the ground floor and two on the upper storey. (Fig. 49a). The usual dimensions are 15 by 25 or 30 feet (Fig. 47a). Each of the rooms has a separate door in front of the house. While the upper floor is used by the family the lower storey called 'goth' is frequently tenanted by cattle. Separate cowsheds.

RURAL HOUSE TYPES IN THE HIMALAYAN REGION—Stone-walled, two-storied and slate-roofed dwellings

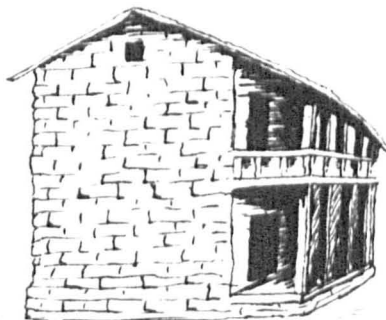
(All the illustrations of House Types are based on the sources mentioned on fig. and the writer's observation)



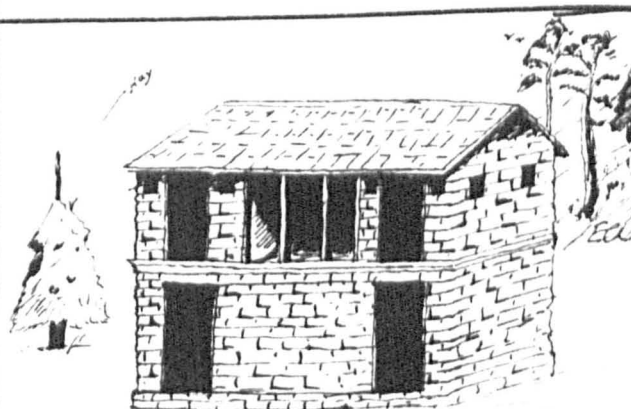
a. 'DOPURA MAKAN'—The common two-storey, four-room dwelling.



b. 'DANDYALA'—The house with a verandah in the upper story.

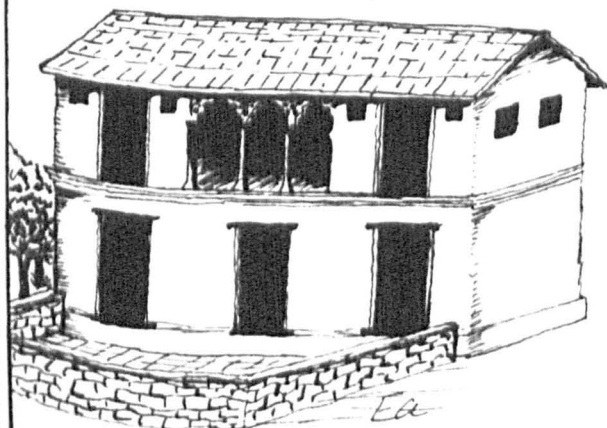


c. 'DANDYALA MURE'—The verandah is a subsequent addition by erecting wooden posts in front of the lower rooms.

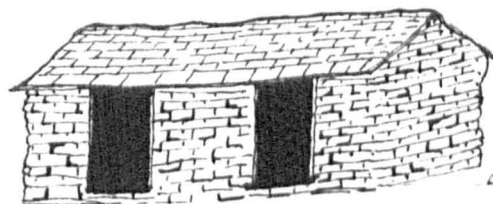


d. 'AIWAN' (mansion)—The upper storey is trisected by partition walls, the end spaces built into rooms and the central into a verandah. Note the deodar-like haystack.

e. 'TIBARI' (the three-window house)—the richest & largest type with 6 rooms, a three-arch verandah with carved wooden pillars and with a paved enclosure in front.



f. THE POOREST (one-storey, two-room) DWELLING



however, have now become invariable features of almost all villages. In bazars the lower storey may be used as a shop.

Dandvala is a variant of the average house with a verandah in front of the upper rooms (Fig. 49b). The verandah is about 5 feet wide and its roof is supported by wooden posts called 'danda' (hence dandvala). This house is greater in width than the domura makan by the width of the verandah. The lower rooms are consequently wider than those upstairs. Access to the upper storey is provided by a staircase which lies inside the building. The verandah is a source of great comfort to the inmates of the house. They sit, gossip and smoke here and use the place as a sleeping room during hot summer nights.

Owing to the great advantages of verandah villagers have frequently added this structure to the ordinary domura makan. This has been effected by erecting wooden pillars in front of the lower rooms and building a verandah over them in front of the upper storey. (Fig. 49c).

'Aiwan' (a Persian word meaning a mansion) is another improvement on the simple domura makan. Its plan is similar to that of the dandvala, the usual ground dimensions being 20 by 30 feet. The lower storey has two rooms. The upper storey is divided into three parts. The side spaces are built into rooms while the central one is left open in front forming a verandah (Fig. 49d).

The 'Tibari' or three-window house is a further improvement on the aiwan. In this case the front of the verandah is fitted with finely carved wooden pillars, two of these being on either end and the remaining two trisecting the space between them. Circular arches of carved wood are added at the upper ends of the posts. The usual tibari is 20 by 50 feet and thus this type of house is much larger than any other form of Himalayan house. The lower storey has three rooms, each provided with one or two doors.

The verandah, owing to the greater width of the house, extends only up to the ridge-pole the back space being built into a small room. The structure is costly and belongs to well-to-do landowners.

Mud-walled or thatch-roofed houses so common in the rest of the province are almost unknown in the Himalayas. Single-storey, two-room dwellings of stone-walls and slate roofs may be seen (Fig. 49f) where the owner is poor. The walls are often of rough hewn stones. Such houses generally belong to Doms. This type is more frequent in the north where conditions are more rigorous.

Mention may be made of the portable habitations of the Bhotias, used by them on their way in their migration during summer to the cis-Tibetan region or in winter to the Bhabar. They are light tents called 'tarkeb' pitched by means of poles improvised on the spot, and can accommodate a family of five. Richer people use the 'tambu' which is a more roomy and elaborate tent. Having reached the cis-Tibetan zone, before they move into Tibet, a few herdsmen take sheep and goats to the bugial or the pastures (of succulent grass) on high slopes (between 10,000 and 12,000 feet). "The herdsmen erect a crude chalet-like stone shelter!"¹

The Himalayan house is, par excellence, a product of its geographical environment. The geological formations of the area provide ample material for stone walls and slate roofs. "Throughout the whole of the Himalaya the crystalline axis is always separated by a belt of unfossiliferous sedimentary deposits from the band of the Sub-Himalayan rocks which

¹ Pant, S.D., 'The Social Economy of the Himalayas' (1935), p. 55.
Pant, S.D., (op. cit.), chapter 31.

skirts the outer foot of the mountain the belt occupies the greater part of the Lesser Himalayan Ranges."¹ These sedimentary rocks consist of limestones, dolomites, shales, ^{and} slates. Beyond the crystalline axis limestones and shales occur in the cis-Tibetan zone. Thus stone good enough for ordinary building purposes is found almost everywhere. Slate and limestone quarries occur almost in every inhabited tract. Limestone boulders are found in river beds also.

The topography of the area expresses itself through the form of dwellings. The relative steepness of slopes and lack of level ground has limited ground dimensions of dwellings, and the lack of ground space has been compensated by double-storied structures. Absence of the angan in the Himalayan house is partly due to the want of level ground. Moreover, the cooler climate obviates the necessity of passing much of their time by the occupants in the open space provided by angan. Purdah system is rare² in the Himalayas. Owing to the tedious nature of cultivation women are engaged in outdoor work as much as their menfolk. These factors also account for the absence of anger (an essential and universal feature of the Indian house) from the Himalayan dwelling.

Owing to the ubiquity of forests, timber for building purposes is available in the neighbourhood ^{of} almost every settlement. Though various types of trees are utilised chir pine (*pinus longifolia*) is the staple building timber. Good rafters and beams cheaply available here have facilitated the

¹ Burrard, Hayden and Heron. A Sketch of the Geography and Geology of the Himalaya Mountains and Tibet. (Delhi, 1933), p. 292.

² Pant, S.D., (op.c it.), chapter XIX.

construction of double-storied houses. Owing to its solid structure the pitch of the roof is not high and is usually about one-fourth of a right angle.

Houses generally face cultivation which lies down the slope. Such an aspect is advantageous in view of the fact that cold mountain winds descend towards valleys. During winter ridgetops above 5,000 feet frequently receive snowfall while snow sojourns on higher situations for some days especially in the north. Thus cold winds are a regular feature during winter on slopes below high hills and not infrequent below lower ranges. In the tract immediately to the south of the Great Himalayas the snowy ranges lower the temperature of the air in contact with them and make the latter glide down slopes by its own weight. Houses looking away from ridgetops are protected against cold winds. Doors and windows are constructed on the lee-ward side. Where houses congregate into compact hamlets they face the street. ^{One of} The reason for the better rural house in the Himalayan region, apart from the facilities provided by the natural environment, is the relatively better economic condition of the people as compared to the rest of the U.P. "Almost the whole population consists of peasant proprietors or cultivators with occupancy rights." ¹ Among Doms alone will be found a section of people who are tenants-at-will or 'halis' (ploughmen) who are "boarded and lodged by their owners." ² The Doms as a class have considerably advanced ³ under the British rule and are skilled blacksmiths, masons, carpenters and oilmen

¹ Pauw, E.K., (op.cit.), p. 35.

² Ibid, p. 36.

³ D.G. Almora (1911), p. 110.

and many have become respectable citizens and even contractors. The greatest advantage which the Himalayans have over plainsmen is the small revenue they have to pay to the State. Subsidiary sources of income are cattle-rearing and trade in ghi, labour in forests, regular annual visit of pilgrims from every nook and corner of India, military service, employment in the several hill stations and cantonments, trade with Bhabar and Tibet and cultivation of cash-crops like potatoes, turmeric and ginger. The net result of all these factors is "that Kumaonis are better off than any peasantry in the whole of India,"¹ an opinion on which most of the settlement officers connected with the Kumaon have agreed.² Meggar is rarely seen in the Himalayas. Almost every family has land with rights to build on and means to erect a substantial dwelling. Houses "are extremely well built and seldom require more than roofing and even if a new house is necessary the builder gets the timber free from the district forest and stones and slates from the village quarries; the labour will often be supplied out of neighbourly love by his clansmen".³

2. The Bhabar and Dun Type. The physical character of the Bhabar has remarkable influence on the typical rural dwelling of the area. Three important factors viz. (a) a friable soil consisting of a thin top layer of light alluvial matter overlying boulder and shingle. (b) abundance of building timber in the thick sal forests of the area where bamboos and

¹ *Ibid.* p. 107.

² D.G. Almora (1911) and Garhwal (1940) chapter III.

³ D.G. Garhwal (1910), p. 75.

thatching grass are plentiful, (c) the malarious and enervating climate during summer and a heavy rainfall (55 - 60") broadly determine the house type. With some differences conditions in the Duns are similar.

A considerable proportion of settlements in Eastern Bhabar (east of the Ramganga) consists of temporary huts of the migrants¹ from the Himalayas. Except the landowners these hill people known as 'Ghamtappas' (sunbaskers) reside in grass and wattle huts during the cold weather, the villages being enclosed in thorn fence, with huts at a considerable distance from each other.² Every migrant from the hills gets free of cost, every third year, poles and thatch for building his huts. These huts erected in forest clearings are true product of the forest environment. They are wholly built of wood and thatch and are temporary as the forests are sultry and malarious from May to October. As already noticed the Ghamtappas take to different occupations in Bhabar. One group works in forests cutting sal, bamboo, thatching grass, sawing and transporting timber to the road, or railway station. Thatched sheds of grass and bamboos are their temporary dwellings. Another class of migrants viz. cattle-breeders build large cattle sheds in forests after ascertaining fodder and water supply. These sheds are huge structures about³ 100 by 300 yards, tenanted both by cattle and their owners. Ghi-dealers as well as those working as labourers on cultivated fields also live in temporary thatched wattle-and-daub sheds. The landowners and tenants in the long settled villages of irrigated Bhabar have substantial dwellings with

¹ Please see ^{the} third chapter of this thesis, p. 101

² D.C. Naini Tal, (1904), p. 118.

³ Pant, S.D. (op.cit.), p. 180.

several huts; a threshing-floor, a garden and a grain store. (Fig. 506). The roof is universally of thatch but sometimes walls are of mud. Mud walls, however, are uncommon owing to the heavy rainfall and incohesive soil. Wattle walls with a thin plaster of mud are usual. Grass huts are also common in the forested portion of Bijnor and Garhwal Bhabar. The nature of the Bhabar soil exerts its influence on dwellings right up to the Jumna for even in Saharanpur "under the Siwalik hills people live principally in grass huts as mud of a sufficiently tenacious character to withstand the heavy rains of that tract is not procurable"¹

In the central portion of the Dun valley "the bulk of the tenantry live in substantially built mud-walled thatched houses while the poorer class are content with wattle-and-daub huts."² Richer people live in big masonry houses. In the Asan Valley and the more recently settled estates of the Eastern Dun (the Song and Suswa Valleys) wattle-and-daub huts (Fig. 50a) planted in the cultivator's holdings and adjoining the irrigation channel are the commonest³ form of dwellings. Substantial occupancy tenants and Gurkha pensioners occupy neat houses with compounds planted with fruit trees, cattle-sheds and hedges of flowering shrubs.

On the whole the common dwelling of the Bhabar and Dehra and Kotah Duns is a wattle-and-daub hut.

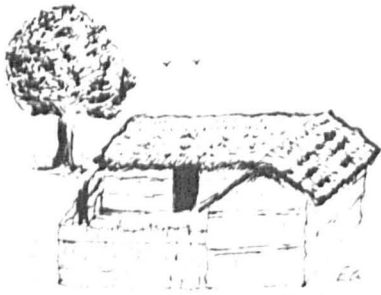
3. The North U.P. Type. (mud-wall and thatch-roof house.).

The typical house of the Trans-Gogra Plain (west of Gorakhpur

¹ D.G. Saharanpur (1909), p. 99.

² D.G. Dehra Dun (1911), p. 107.

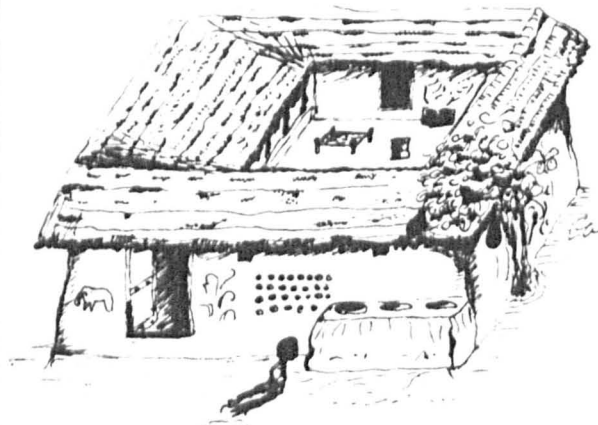
³ Ibid.



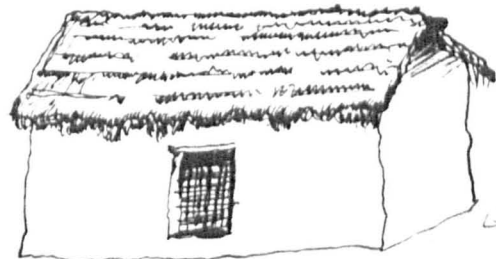
a. THE WATTLE-AND-DAUB TYPE OF THE DUN AND BHABAR ZONES



b. SUBSTANTIAL DWELLINGS IN LONG-SETTLED BHABAR VILLAGES

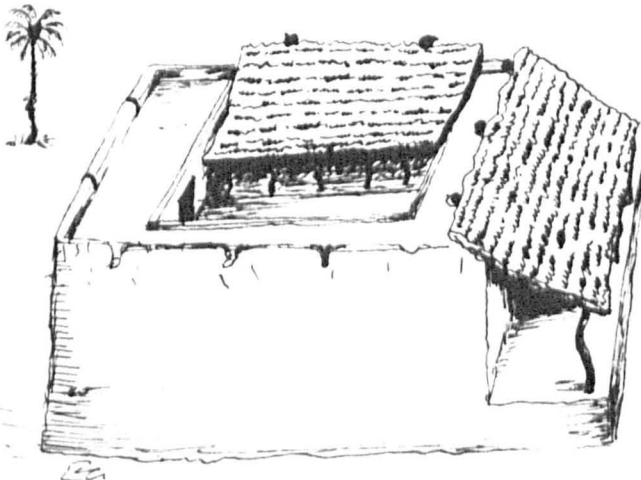


c. THE TYPICAL MUD-WALLED AND THATCHED DWELLING OF NORTH U.P.



d. THATCHED MUD-WALLED ONE-ROOM HUT OF LANDLESS LABOURER - Common in the Non-Himalayan part of the Province

e. FLAT MUD-ROOF, & MUD-WALL TYPE OF WESTERN U.P. (sheds are thatched)



f. THE TYPICAL DWELLING OF EAST U.P. - WITH MUD-WALLS & TILE-ROOFS



district), the upper Ganges-Cogra Doab and a small northern portion in the Doab (Fig. 42) is a mud-walled, thatched structure. In essentials of plan the dwelling is true to the type prevalent in the Ganges Plain i.e. consists of an inner courtyard surrounded by rooms on two or all sides. This type of house ranges from the poorer structure in which case only two rooms in the front and back of the dwelling with mud walls on the remaining sides form the angan, to the richer variety where rooms may be 5 or 6 in number. There may be a thatched verandah between one of the rooms and the courtyard or in front of the house (Fig. 5a). The outer verandah is used as a lounge, guests are received here, one of its corners is used as a tool shed, fodder is prepared here and cattle may be sheltered under this shed when it is raining, stormy or cold.

Apart from this common type of dwelling two other categories of houses viz. the single-room thatched hut of the poorest (Fig. 5d) and the larger, often masonry or two-storey house of landlords will be found in almost every village.

In this vast tract the predominance of the thatch roof is striking. The area is the wettest tract in the Ganges Plain receiving an annual rainfall of 35 to 55 inches. Growth of trees and grass is, therefore, more luxuriant than in other parts of the non-Himalayan U.P. Thatching grass is easily available from the flood-plains of streams or lowlying lands in the mauza. As the figure (9) shows this is the only tract in the Gangetic Valley which can claim to have some forests. Thus the easy availability of thatching grass is one of the main causes of thatched roofs. Moreover the crudely moulded country tiles held by mud cannot keep off the heavy monsoonal downpours. The thatched roof can be given a pitch as steep as can ensure a quick

run-off of rain water while tiles which are held in their place only by mud cannot remain intact on highly pitched roofs. Superstitious prejudice against the use of tiles is also a cause for the predominance of thatch roofs. Thatch usually consists of tamarisk and 'munj' (*saccharum munja*) and similar grasses.

Walls range usually from 7 to 10 feet in height at the eaves-line, and 2 to 3 feet in thickness. Ground dimensions of an average house are 30 and 40 feet. Tiled roofs become frequent in Rohilkhand and on the border of Gorakhpur. In Rohilkhand only the curved tile ('naria') about four inches long and three inches wide are in common use.

In the Tarai the use of sal timber is common owing to the nearness of forests. The average mud house of the Tarai differs¹ materially from that of Tharus and 'Bhukesas' who are semi-aboriginies of the tract. They build their dwellings in such a way as to avoid damp as far as possible and are consequently very much immune from malaria. Instead of using mud walls which get saturated during rains they build their walls of wattle with a thin coating of mud which dries soon after the monsoon is over. The eavesline of the thatched roof is left untrimmed and irregular so that rain water may not continue to fall in one place forming a ditch round the dwelling as in the case of mud houses.

The north-eastern part of Gorakhpur has certain physical peculiarities influencing the rural dwelling. The tract lying roughly east of a line drawn from Tharthibari on the Nepal border to Bhatpar railway station² is known as 'bhath' (friable) and consists of the alluvium deposited by the

1

D.G. Naini Tal (1904), p. 119.

2

D.G. Gorakhpur, (1909), p. 3.

Gandak, the distinguishing feature being an unusual proportion of lime in the soil. The soil is extremely retentive of moisture and friable. Walls of mud do not stand weathering and houses are mostly built of wattle with gatched roofs.

4. Flat-Mud-Roof Type of the West and South-West U.P.

The main feature which distinguishes this type from the remaining house types of the province is the flat mud roof (Fig. 50c). The typical dwelling is akin in ground plan to the average house of the non-Himalayan area. It is square or oblong and consists of an inner courtyard surrounded by 3 or 4 or less rooms according to the means of the occupants. Rooms are called 'Kothis' and usually vary in size from 7 by 10 to 9 by 16 feet. In ordinary dwellings on the side on which the main entrance is built the room is substituted by a mere wall. Between the angan and the rooms there are sloping sheds on one or more sides. In front of the house a sloping shed serves the purposes of a verandah. In this tract that hing grass is more plentiful than in the east where almost every cultivable plot has been brought under the plough. Its (verandah's) simple structure i.e. a mere shed with one end placed on the wall and the other on crooked wooden posts, without side walls makes it a far less costly structure than its superior analogue of the east. The functions of the verandah are the same throughout the provinces. The main object is to get a shady and airy place in the dwelling. The outer shed lies over a platform of earth equal to the length of the house, $\frac{1}{2}$ to 1 yard high and about 3 to 4 feet wide. Even when the shed is absent the platform serves as a lounge and a place where fodder is prepared.

Walls, are made of moistened earth about $1\frac{1}{2}$ to $2\frac{1}{2}$ feet thick and go up to a height of 12 to 20 feet. Beams of mango, Jaman (*Eugenia jambolana*) or nim (*Melia azadirachta*) etc. are placed on the top of the mud walls and overlain with boards, pieces of wood or coils of arhar (*Cajanus indicus*) stalks. A thick layer of well-kneaded mud is laid over and beaten well by wooden mallets and finally a top cover of mud-plaster is superadded. Wooden spouts placed over the roof project outside. Walls are raised a foot or so above the roof and are often protected by matting of arhar stalks or tamarisk. The flat mud roofs are not visible from outside. As a matter of fact the house in this area presents from without a roofless appearance - except for the outer shed and seen from a distance the village appears to be a heap of mud walls and much more depressing than ^{the} village of Eastern U.P. with sloping tiled roofs (fig. 51)

Flat mud roofs exhibit one of the most striking controls of climate on house types. As indicated by figures 7 and 48 the flat-roofed dwelling is a characteristic of the region of minimum annual rainfall and the eastern and northern limit of this house type roughly corresponds with the isohyet of 35 inches. The well-beaten clayey-mud roof is capable of standing the relatively low rainfall and may last upwards ¹ of 20 years. Very effectively it keeps off the heat of the sun. Such a roof in eastern or northern U.P. where rainfall is heavier and air more humid would evidently be out of the question. Tiled roofs are rare because the climatic conditions and the durability of mud roofs make the use of the former in drier west superfluous. The flat roof is utilized as a place for stacking fodder.

¹
Atkinson, E.T., Gazetteers, North-Western Provinces of India, Vol. IV, Etah District, (1874), p. 52.

Fig.51



A Village in the Doab (Aligarh district) showing the predominance of flat mud-roofs.



A Hamlet in Eastern U.P. (Gorakhpur district) showing the typical tile-roofed houses.

Poorer people e.g. Charars and other landless labourers reside in small and lowly dwellings - a two - or even one-room hut. Such huts usually have sloping thatched roofs (Figs 50d) as the flat roof is costlier to make. A rough beam that connects one gable-end to the other is overlaid with a framework of bamboos, and covered with a light thatch of grass. In the poorest type even the wooden door is absent, its place being taken by a screen of split bamboo. The most substantial houses, a few of which will be found almost in every village belong to the Zamindars, traders or other wealthy people. In essentials of plan such houses do not differ much from the typical dwelling and all surround a square or rectangular courtyard. Walls are higher, ground dimensions larger; the number of rooms increases and the 'chaupal' (or the large front room) is a regular feature. Below the well-thatched outer verandah, the platform, usually a yard high is large and often masonry. The size of rooms average about 20 by 10 feet. The outer verandah may often be replaced by two long narrow side-rooms and the main entrance is in the form of a covered gateway, the interval between the side-rooms being roofed over. The level of the gateway is identical with that of the lane so that carts loaded with grains or fodder may be taken in to the door. The side-rooms serve as a tool-shed, cattle stall and guest rooms. When the owner is very rich there may be two distinct units in the house for the use of males and females. The female quarter consists of the inner courtyard, verandahs and rooms and is separated by a partition wall from the 'mardana' (male quarter) which has the chaupal, and verandah. Rich landlords frequently build two-storey houses of burnt brick.

Often a dwelling is occupied by several commensal groups and the inner courtyard divided into two or three small enclosures.

Ventilation in all sorts of houses is very poor. The single door is usually the only opening to a room. Privacy, protection against thieves and the hot dusty winds of summer preclude the adoption of windows. Mud walls are quite suited to the climatic conditions. The mud house is the coolest during the infernal heat of the hot season. (The normal maximum temperature¹ in May at Cawnpore, Mainpuri and Agra is 106.2, 107.4 and 106.2 F respectively). The dry climate has negligible disintegrating influence on walls which, with frequent mud-coating, stand for generations.

Apart from the distinctions resulting from economic conditions of different classes of people there are variations according to the locality, ethnic factors and the nature of occupations.

Any variation from the usual mud walls is a question of expense but the choice of roof depends greatly on locality. Thus in the vicinity of the flood-plains of rivers where thatching grass grows near at hand the thatch is most often adopted. At the same time it is everywhere sufficiently plentiful for each village to contain some houses thus roofed. Ethnic differences are also apparent. Houses of Gujars are usually smaller with fewer rooms as compared to those of Jats and Ahirs. In the case of the former, bamboo gratings usually replace the wooden doors. Nomadic tribes like Nats (throughout the Ganges Valley) live in portable huts of 'sirki', a reedy grass. The average house in this region, though depressing in outer appearance is roomier, cleaner and more comfortable than in the rainier and poorer parts viz. North and East U.P.

¹ India Weather Review, 1944, Monthly Report, (May, (Government of India).
 feet and the length varying according to their function. Kitchens or store-rooms are smaller than residential rooms. The layout of rooms, therefore,

5. The Eastern U.P. Type. In the eastern part (Fig. 48) of the province roughly including the divisions of Benares and Gorakhpur (with the exception of Basti district, Terai and Bhath portions of Gorakhpur and Sonpur) and in parts of Eastern Oudh the typical rural dwelling is a mud-walled and tile-roofed structure. The average house, square or rectangular, consists of the angan and surrounding rooms. Tiled verandah in front of the house is quite frequent in this tract. The main entrance which usually lies on the northern or eastern side consists of a high and strong wooden door. Where cattle are kept apart separate thatched sheds are erected in front of the dwelling. Feeding stalls, in the absence of thatched cattle sheds are attached to the outer walls of houses ^{or} stand a few feet apart. Straw stack, a hollow cylinder of wattle with a conical umbrella-like roof, cart or plough stand in front or side of the dwelling.

Though each dwelling differs from the other in dimensions, height, plan and comfort according to the means of the family, considering only the recurrent items the tract has three main sub-types of rural houses. The most common type (Fig. 50f) is an almost square dwelling (when rectangular, the longer side is bigger only by a few feet). Care is taken that the courtyard is not oblong east-west. Such a layout is called 'surajbedhi' (penetrated by the sun). Such a shape of angan naturally enables a longer duration of sunlight in the courtyard and in a hot climate where shade and not the sun is more sought after such an expedient seems to have a climatic basis. A dimension 13 by 11 yards is often regarded auspicious. The courtyard is bordered on all sides by rooms whose width is usually uniform being 7 to 8 feet and the length varying according to their function. Kitchens or store-rooms are smaller than residential rooms. The length of room, therefore,

varies from about 8 to 12 feet. Each room has a door smaller than the main entrance about 3 by 5 feet, which open into the courtyard. In a culture where many things associated with secular life become objects of worship the use of doors lower than human heights have a purpose behind them. Those entering the rooms are compelled to bow, paying respects to the latter. There may be one verandah in front of the house or between the courtyard and one of the rooms, being of the full length ^{of the} angan and about 6 or 7 feet wide. People try to build a verandah in front of the house at the cost of one inside the house, for such a structure as noted earlier, has several advantages. On the two ends of the verandah there are side and front walls and one or both of these ends may be turned into small side rooms by erecting partition walls in the verandah. The main entrance of the house leads from the verandah into one of its rooms which opens direct into the courtyard or through an inner verandah.

Walls are made of clayey mud. The foundation is about 3 feet and the wall about 2 feet in thickness. Height of walls near eavesline is 8 to 12 feet while at the crest-line it is about 2 to 2½ feet greater. Considering the small height of walls their thickness is excessive but it helps to keep the inside cool during the scorching heat of hot season. Owing to the thickness of walls in spite of the wear and tear during the hot and humid periods of the year, mud dwellings are no shorter in age than masonry houses. A protection against weathering is effected by regularly plastering the walls with clay mixed with cowdung which renders the plaster cohesive.

The level of the floor is usually raised above the ground about one or two feet while in areas liable to inundation the plinth is 3 or 4 feet high.

Beams of palmyra, nini (*melia azadirachta*) mahu (*bassia latifolia*)

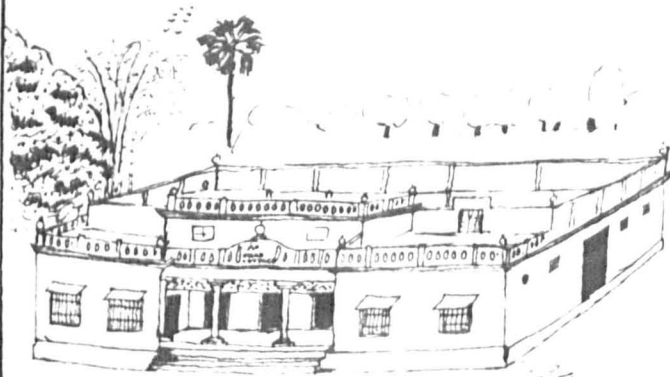
or some durable wood derived usually from the village grove runs from one gable-end to the other. The chief roofing timber used as rafters is the bamboo (which grows in most villages), laid from the beam to the walls. This framework is overlain with a layer of split bamboos or stalks of cotton, arhar or tamarisk and a lining of grass is super-added and finally burnt tiles are placed with the help of moistened earth. Tiles are of two types. Those forming ridges are short and curved while those forming channels are wide and flat. Tiled roofs are more durable than thatch whose top covering is worn out by weather and which, therefore, requires frequent linings. With tiled roofs hazards of fire are much less during the hot season when humidity is very low, and fires in thatched houses frequent. Tiled roof, however, has one great disadvantage. It is frequently damaged by monkeys, the permanent denizens of village groves. Light tiles held by mud are readily upturned or broken by monkeys when the latter visit houses in search for edibles. Such damage to the tiled roof makes dripping during rains very common and repairs are fairly costly to the poor villager.

(c) THE TYPICAL SLOPE OF ROOFS
BUNDELRKHAND PLAIN
Pitch
Eaveslines are always projecting ahead of walls about 1 to 2 feet.

This is essential for protecting walls from rain showers. The slope of tiled roofs ranges from one-fourth to one-third of a right angle.

Thatched roofs have a greater pitch. Roof drainage is half outside and half into the courtyard let out by a drain - a narrow hole often opening in front of the house.

Ventilation is awful. There may be a small aperture called 'jangla' in a room near the ceiling. It is small lest the thief should peep into the house and find a clue to belongings. These apertures are often half-closed by jars placed over them. Frequently there is no opening in a room other



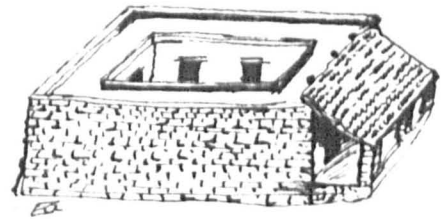
(a) A MODERN, MASONRY, RURAL HOUSE
IN EASTERN U.P.



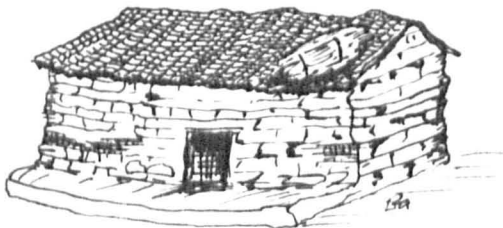
(b.) TILED AND MUD-WALLED HUT
OF THE POOREST CLASS IN EAST U.P.



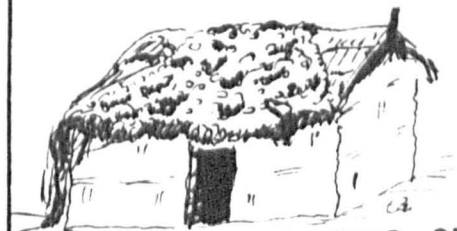
(c.) THE TYPICAL DWELLING IN
BUNDELKHAND PLAIN (walls of mud, low-
pitched roofs of flat tiles, verandah absent)



(d) STONE-WALLED, FLAT-ROOFED
HOUSE OF HILLY TRACTS IN
AGRA AND MUTTRA DISTRICTS



(e.) POOR MAN'S HUT IN HILLY BUNDELKHAND
(walls of stone boulders, roofs of flat tiles)



(f.) WATTLE-AND-DAUB TYPE OF SONPAR

than the single door. When a dwelling contains a shop it is housed in the front room or the verandah. Grains are kept either in 'kothis' (hollow cylindrical or rectangular structures of clay some six feet high) or in pits dug in front of the house and covered with bamboos, thatch and earth.

The house of the village zamindar or other moneyed people like high-salaried government servants or traders resembles in the essentials of plan the above-mentioned type, differing, of course, in size, build, colour and standard of comfort. One or more such houses may be found within the boundary of almost every mauza. A few of these are exotic types built on western architecture. They often exhibit a blend of modern with Islamic (Fig. 52a) or Hindu architecture. They are large substantial buildings with masonry walls and roofs - arched or slab; better ventilated with a high and large common room in front called 'dalan', side-rooms and verandah. They may frequently be two-storied. The inner courtyard, verandahs, and rooms are laid on a plan similar to that in the foregoing type.

Mud houses of rich people differ from the common type in size and outer big room but the angan and tiled roofs are persistent features. Both the masonry and non-masonry types may have out-houses which serve the purposes of guest-rooms.

Such substantial and usually whitewashed structures in the village or hamlet rising high above the rest of homesteads present a pleasing diversion to the eye.

The house of the poorest people viz. agricultural labourers or scheduled castes usually is a one-room hut roughly 10 by 15 by 7 feet. (Fig. 52b). Walls are of mud while the roof may be thatched or tiled.

They form the rural house slums being "a parlour, dormitory, kitchen, pantry and in many a case cattle shed combined into one".¹

In Eastern U.P. people are very particular about the direction which the dwelling should face. The most predominant aspect of the house is easterly. The next most frequent aspect is northerly. Those facing west are infrequent and those with a southerly aspect are very few, both these directions being deemed ominous. Though the avoidance of southerly aspect may be based on superstition, that of westerly may be due to the 'loo', the hot dusty west-wind which is a scourge during the period March to June.

6. The Bundelkhand Plain Type. The common rural dwelling in Bundelkhand Plain is akin to the Eastern U.P. type inasmuch as it is mid-walled and tile-roofed. It has, however, several distinctive features. Verandahs or outer sheds, are almost absent. While the entrance door in the house of East U.P. is imposing and high, here even in good houses doors are low and narrow. Another important difference is a lower slope of roofs. Tiles used here are usually flat (Fig. 52c).

The absence of verandahs is striking and is due probably to two causes. The general poverty of the tract indicated by the largest proportion of landless labourers (Fig. 19) as compared to other areas of the province precludes the construction of verandahs which are secondary in importance to the primary structure viz. rooms. The comparative insecurity of the tract during the past and particularly under the Maratha domination made the dwelling a shelter not only against the elements but also against marauders. Any outside structure was, therefore deemed unnecessary. Though the lowly house of the average peasant was rarely defensible the plan was derived from the better dwellings of landlords. The low pitch of the roof is indeed an index of a relatively low rainfall. The annual rainfall in

¹ Mathur, J.K. Pressure of Population. Its Effect on Rural Economy in Gorakhpur District.-(1931), p. 46.

Bundelkhand is lower than in northern or eastern U.P.

The tile is usually of a single flat type about five inches square. It is difficult to mould curved tiles out of maria (light soil) and rekar (gravelly soil of ravines). Curved tiles are sometimes made out of the clayey black soil but the flat tile, cheaper and easier to make, is predominant. The join of two rows of flat tiles is covered by another row laid with reverse side upward.

The front-room is called 'barotha'. The size of average room is 8 by 12 feet while the height ranges from 6 to 8 feet at the eaves. At the ridge pole its greater by about $1\frac{1}{2}$ to 2 feet. The average house has a pair of platforms one yard square, in front of the house and on either side of the entrance.

The dwellings of richer people are larger than the average type and often two-storied but the upper storey is ^{dark and} dingy and rarely used for residence. Walls may be made of small-sized bricks called 'lakhauri'. The poorest dwelling consists of a one-room hut about 8 by 15 feet, and 5 to 7 feet high at the eavesline.

7. The Trans-Jumna Stone-Walled Types.

Two areas in the Trans-Jumna tract viz. (a) the hilly portions of Muttra and Agra and (b) the southern portion of the hilly tract of Jhansi. The former is in the south of Allahabad District across the Yamuna river. Hamipur, Banda and South Allahabad have stone-walled houses.

(a) In the south west of Agra building stone is quarried in the Vindhyan Hills and stone-dwellings are common. (Fig. 52d). Even the poorer thatched hovels are built of stone roughly piled up without any cementing material. In Bah tahsil walls are built of kankar from the ravines of the Chambal. Dwellings near the Arsalali outliers in Muttra are stone-

walled.

The average dwelling of this tract (Fig. 52d) has all the characteristics of South Western U.P. type except that walls are of stone. Roofs are flat and of mud. Sometimes stone slabs may be used.

(b) The Bundelkhand Stone-Walled House, partakes all other characteristics of the Bundelkhand Plain Type. The typical house is made of boulders of stone picked up in the vicinity of hills. They are roughly hewn as the builder lays them in mud while erecting the wall. Even in those dwellings where stone does not form the whole of the wall it is at least used in the foundation and lower portions. The low-pitched tiled roofs and absence of verandahs of the Bundelkhand Plain house are common here also. The three types based on the economic condition of the people viz. the oblong one-room hut of the poorest class (Fig. 52e), the square or rectangular enclosure of the average peasant and the large, often two-storyed building of the landlord are visible in all settlements. In some villages of Jhansi houses of the richer class are roofed with Vindhyan sandstone split into slabs of a *half* inch thickness, while walls are of dressed stone. Sometimes even beams of stone are used.

8. The Sonpar Type. Probably the lowliest and most primitive dwellings of the province occur in the south of Mirzapur district across the Son river. The average dwelling is a single-room hut of small dimensions. The walls are of plaited grass plastered with a thin coating of mud while the pitched roofs are of thatch (Fig. 52f). The hut is usually overgrown with a dense mass of climbing vegetables usually *gourds*. The dwelling is a result of the forest environment, isolation of the tract and nomadic habits of the

PART III URBAN SETTLEMENTS.

CHAPTER VII.

Origin and Evolution of the Towns of the United Provinces.

In the subject of human geography towns occupy a place of great significance because of their important role in the political, social and economic life of a country. In a country with a long history they undergo vast changes in the course of time. Consequently, the towns as we see them today bear marks of their past history and act as records not only of past civilizations but also of the changing aspects of human geography. 'China excepted, no region of the world can boast of an ancient civilization so continuous and unbroken as that of India'.¹ This remark is most applicable to the United Provinces which comprises most of what was termed Madhya desha (the Middle-land) of ancient India. But in spite of the richness of Indian culture in the remote past, data for a study of urban geography are rarely available.

Towns in Pre-Historic Times:

As to what the character and distribution of towns was before the establishment of the kingdom of Magadha in the 7th century B.C. we have little or no authentic information. Certain riverside towns appear to have existed before that time as a result of the establishment of the Indo-Aryan civilization, Kashi (Benares) which is said to have antedated² the creation

¹ Smith, V.A., The Oxford History of India, (1919), p. 43.

² D.C. Benares, p. 183.

of the rest of the universe, Prayag which is associated with the horse-sacrifice of Brahma, Ajodhya intimately linked with the story of Rama, Hardwar associated with Shiva and Vishnu and Muttra, with Lord Krishna, are probably the oldest towns of the province. A few towns in the Doab whose origin and prosperity is associated with the Pandavas e.g. Garhmukteshwar, Bhagpat, Nakur and Deoband may have existed in the pre-Buddhist era.

With the establishment of the kingdom of Magadha about the middle of the 7th century B.C. and the rise of Buddhism and Jainism in the 6th century B.C., the development of monasteries which became the foci of the cultural life of the time probably induced to the growth of towns.

HINDU PERIOD. This result was more noticeable under the Mauryas (c. 322-185 B.C.), whose empire included most of Northern India, and whose patronage of Buddhism helped the growth of monastery towns. The Mauryas appear to have taken an interest in the development not only of municipal and trade organisation, but also in roads which favoured urban growth. 'The great highway, now represented by the Grand Trunk Road, connected Taxila and the north western frontier with Patali putra, the capital'.¹ Ancient remains show that a number of monastic towns had come into existence in the province. Such are probably the towns of Meerut, Sultanpur, (Kusapura), Aligarh (Koili) Sarnath and Saidpur (Ghazipur district).

During the first centuries of the Christian era the history of the province as of Northern India generally, is obscure and the curtain of

¹ Smith, V.A., (op.cit.), p. 91.

darkness does not rise till the establishment of the Guptas about 320 A.D. During the Gupta period (from 320 A.D. to about the middle of the 7th century) the cultural centres of Hinduism must have developed and probably new towns came into existence. Though the personal faith of the Guptas was Brahmanism, Buddhism continued to flourish in their time so that to Fa hien India, where he travelled from 401 to 410 A.D. 'was simply the Buddhist Holy Land.'¹ This shows that the towns which had grown under the Mauryas as aggregates of Buddhist monks probably revived under the Guptas, and according to Fa hien Muttra had twenty monasteries and some 3,000 priests.' A study, however, of the evidence² as to the origin of the existing towns of U.P. raises doubt as to the existence of any considerable number of towns at this period. Scanty references of the Chinese travellers throw light only on the more important of centres, Prayag, Kashi and Kanauj; while Bulandshahr where coins of Gupta period have been found 'is known to have been inhabited by Buddhists from about 400 to 600 A.D.'³

After the downfall of the Guptas owing to impact of the Huns who invaded India in the 5th and 6th centuries "a number of small principalities came into being"⁴ which probably led to the origin of a few local strongholds. When Harsha (606-647 A.D.) established his mighty empire he quitted

¹ Smith, V.A. (op.cit.), p.198.

² The District Gazetteers of the United Provinces give the origin of the majority (about 61%) of the existing towns based on archaeological discoveries, recorded history and traditional evidence. The towns shown on the maps accompanying this chapter, or discussed here account for nearly 61% of the existing towns. Most of the large centres have been accounted for. We are not in a position to tell about the origin of the remaining 39% of the towns, mostly small, many of which must have grown from villages.

³ D.C. Bulandshahr (1903), p. 206.

⁴ D.C. Farrukhabad, (1911), p. 119.

the town of Thaneshwar, north of Delhi, which was not centrally situated, in favour of Kanauj which during his rule was "beyond comparison the greatest and most important city in Northern India."¹ According² to Hiuen Tsang the city was about a mile broad and extended for more than three miles by the side of the Ganges. It was strongly fortified with high walls, lofty towers and a moat, and was an important centre of merchandise. After the death of Harsha "mists again gather over the history of Northern India, and are not lifted till the twelfth century, when the Rathors, having established another kingdom, ruled from Kanauj, which fell towards the end of the century"³ to the Muslims.

But in spite of its relative obscurity this transition period, extending from the middle of the 7th to the close of the 12th century, is important in another way. It is marked by the absorption of foreign hordes into the pre-existing body politic, the growth of numerous states and the "development of Rajput clans never heard of in earlier times."⁴ As the Rajput clans spread over the province they had to overcome the 'Bhars' who, according to tradition, had been prevalent in most parts of the province, had occupied Oudh and surrounding tracts, had lived in brick-built villages now represented by some of the ubiquitous mounds (which indicate old settlement sites) ^{and} had built several towns. The foundation of various towns in many districts of Oudh and in the Gorakhpur and Benares divisions are ascribed to these mysterious Bhars. Notable among these settlements are Bahraich,

¹ Ibid., p. 120.

² Ibid.

³ D.G. Eyzabad, (1905), p. 147.

⁴ Smith, V.A., (op.cit.), p. 172.

Bara Banki, Rae Bareilly and Jais, Saloni and Dalmau in the same district; Kakori in Lucknow and Budarpur in Gorakhpur.

From the viewpoint of the development of towns the transition period is rather important. In the absence of a strong imperial rule numerous towns came into existence as strongholds of various warring Rajput clans. The United Provinces, during this period, were the seat of two important states viz. the Kingdom of Kansu in the Ganges Valley and that of Chandela in Bundelkhand. While the celebrated fortress town of Kalinjar became the capital of the Chandela other towns like Kalpi and Mahoba attained strategic importance. Though the territory north of Bundelkhand appears to have remained under the nominal sway of the Kansu Kings, semi-independent chieftains rose in areas remote from the main routes (rivers) and some towns containing mud or brick-built forts became local Rajput strongholds. Owing to the protection afforded by such centres the local population flocked thither, while handicrafts and commerce probably found a chance of growth. Thus Meerut containing one of the celebrated forts of Hindustan, Chaupala (Moradabad), Koil (Aligarh), Hapur, Sardhana (Meerut district), Bulandshahr, Etawah, Budaun, Unao, Lalitpur, (Jhansi district) and several smaller towns appear to have had come into existence as Rajput strongholds before the advent of the Muslims (Fig. 53).

Though these Rajput towns built some thousand years ago have not survived to the present day, their sites are either adjacent to or incorporated within existing towns. That the number of such settlements is greater in the west especially in the Doab, is due to the fact that the Rajputs came from the west. The flourishing towns of earlier periods viz. Prayag, Kashi and Ajodhya had probably relapsed into insignificance. The Parihar Kings of Kansu had chosen Jhansi (east of Allahabad) and not Prayag as their provincial capital. After the invasion of Mahmud, of Ghazni (1018-19) and

U. P.

TOWNS THAT APPEAR
BEFORE THE
ESTABLISHMENT OF
DELHI SULTANATE (IN 1206 A.D.)

(BASED ON DISTRICT GAZETTEERS)



later of Mohammad Ghorī at whose hands the flourishing towns of Kanauj and Muttra suffered severely, dispersed Rajput clans came again from the west and established several principalities after the disintegration of the Kanauj kingdom. Towns which are ascribed to the Rajputs of this time include Kara (Allahabad district), Manikpur (Partabgarh district), Bachhraon (Moradabad district), Loni (Meerut District), Amroha and Chunar.

Towns in the Muslim Period

The Sultanate Period. Muslim influences might have penetrated the province in the wake of Mahmud's expeditions but conditions which contributed to the growth of towns probably did not arise until the establishment of the Delhi Sultanate in 1206. The newly established Sultans, in trying to hold their territory, built forts at strategic points, and appointed their deputies at these newly built or usurped centres, which formed the nuclei of future towns. The local Rajput clans, on the other hand, or those who came dispersed from the west, in order to resist the foreign yoke, built their strongholds in relatively out-of-the-way areas. Thus the towns which were probably built or developed under the Rajputs of this period are Etah, Jalesar (Etah district), Safipur (Saipur) and Purwa in Unao, Chhibramau in Farrukhabad, Biswan in Sitapur and Utraula in Gonda and most of these are of little importance today. "It appears that the ancient highway connecting the Punjab with the east passed through Saharanpur and Deoband to Meerut (and) it seems to be the case that whoever held Delhi held the Doab as far north as the Siwalik hills The case was different in Rohilkhand where local chieftains held sway, secure in their distance from the seat of Musalman garrisons and in their places of refuge in the forests, and mountains to the north." Thus there existed in Rohilkhand during the days of P. C. Saharanpur, (1909), pp. 178-79.

the early sultans various Katchris (Rajputs of Katehr, old name of Rohilkhand) strongholds, Such centres are said to have been Aonla, and Shishgarh in Bareilly and Lakhnaur in Rampur.

The second category of towns as indicated above, are those which became strategic and administrative centres of the Delhi Sultans. Budaun and Ajudhya became provincial capitals. Sambhal "almost immediately after the Muslim conquest became an important seat of Mohammadan power".¹ A number of small towns, like Shamshabad in Farrukhabad, Sakit in Etah

were founded in the Doab under the slave kings. During the brief rule of the Khiljis (1290-1321) few towns would seem to have been founded in the province. A number of towns, however, developed under the succeeding Tughlaks. Under them Saharanpur rose to some importance as one of "the garrisons located in the north to protect the Doab from the Lughal (Mongol) incursions."² Towns as widely spread as Khurja in Bulandshahr, Ambhta in Saharanpur, Bisauli in Budaun, Laharpur in Sitapur and Fatehpur in Bara Banki are known to have been founded by the Tughlak emperors (Fig. 54). The historic city of Jaunpur was built about 1359-64 by Firoz Shah who, while on expedition to Bengal was "struck with the suitability of the banks of the Gunti, for the position of one of the new cities which he had a mind to build."³

With the weakening of the Delhi Sultanate after Firoz Shah and the confusion that followed Timur's invasion (1399) there arose the Sharqi

¹ D.G. Moradabad, (1911), p. 257.

² D.G. Saharanpur, (1909), p. 320.

³ D.C. Jaunpur, (1908), p. 152.

dynasty of Jaunpur, which lasted for about a century (1389 - 1500). At their zenith the Sharqi kings held almost the whole of the province except the Himalayan area. Jaunpur, their capital, was probably the most flourishing city in the country and was "known as the Shirez of India."¹ Industries like the manufacture of perfumes, embroidered fabrics and carpets flourished in the city. Other towns which grew under the Jaunpur Kings are Fatehpur, Badshahpur and Kirakat in Jaunpur, and Daryabad in Bara Banki. With the revival of the Delhi Sultanate under the Lodis and the fall of the Jaunpur kingdom urban interests again shifted westwards. To suppress the frequent rebellions of the chiefs of Gwalior, Biana, and Dholpur, Sikandar Lodi felt the need of a forward capital on the Jumna and "built a fort and laid out a city"² which later developed as Agra. He made it a royal residence for some time, his name being preserved in the suburb of Sikandara. Another forward capital to subjugate the refractory Katehrias, was Sambhal³ where the emperor resided for four years till the completion of the palace and the new city of Agra. Other towns e.g. Sikandara Rao in Aligarh, Sikandarabad and Shikarpur in Bulandshahr and Kiratpur in Bijnor are known to have been founded by the Lodis. Outlying tracts were not entirely neglected, and distant settlements like Sikandarpur in Ballia, Mohamadabad in Ghazipur and Saraimir in Azamgarh are ascribed to the Lodis.

Towns During the Mughal Period. Between the crash of the Delhi Sultanate in 1526 and the accession of Akbar in 1556, except during the brief reign of Humayun, the Mughals were not able to establish a permanent capital. The Mughals, however, did not neglect the development of the towns. They built new towns and repaired old ones. The Mughals also built new towns and repaired old ones. The Mughals also built new towns and repaired old ones.

¹ Ibid., p. 238.

² D.C. Agra (1905), p. 142.

³ D.C. Moradabad, (1911), p. 257.

of Sher Shah, the confused state of the country impeded the growth of towns. During Akbar's reign, however, when we have a rather clear picture of the economic and administrative condition of the province, the growth or revival of towns was probably at the maximum, never surpassed until the establishment of British rule.

Under the systematic territorial division of the empire the present province except small portions in the east and Bundelkhand, fell under the four sabhas (provinces) of Delhi, Agra, Allahabad and Oudh. These provinces were divided into sarkars (divisions) which again were subdivided into disturs (districts) and these latter were aggregates of parganas - the basic administrative divisions - a large number of which correspond with the parganas under the existing administration. Such a systematic organisation of the territory resulted in the establishment of administrative centres throughout the area, except in the inaccessible Himalayan region and forested sub-montane tracts. Each pargana contributed to the imperial army a certain number of infantry and cavalry, part of which were stationed at the pargana headquarters. A large number of these pargana capitals had brick or mud forts and developed as administrative as well as garrison towns. The hierarchy of towns ranged from pargana headquarters to the provincial capitals, and the importance of these towns depended on the size of the administrative division, strength of the garrison, status of the local magnate and his retinue, location in relation to the imperial routes and the agricultural fertility of the area. Though it is clear that a large number of the parganas and other administrative divisions as well as their capitals had existed under the preceding rulers of Delhi, neither do we know much of them nor did their full development take place before the peaceful reign of Akbar. Thus we

know from the Ain-i-Akbari ¹ that the majority of the towns which exist to-day as headquarters of parganas, tahsils, districts and divisions were in existence in the time of Akbar, and a relatively small number were left to come into being under the later Mughals, Oudh rulers, Marathas or the British.

Akbar's tolerant rule also favoured a revival of the old religious and cultural centres like Benares, Haridwar, Muttra and Ajodhya. More towns were founded by or under him than in the reign of any other individual ruler. Thus the towns of Fatehpur Sikri, Itmadpur and Firozabad in Agra, Farrah in Muttra, ^{Jalalabad} Faridnagar in Meerut and Tilhar in Shahjahanpur, Akbarpur and Jalalpur in Fyzabad, Kishanpur in Fatehpur district and ^{Lughay} Sarai on the imperial route were built by him or his officers (Fig. 55). Agra rose to its real greatness under Akbar who built the fort and made the city his capital. In his days "the city was perhaps the first in India."² It continued as the imperial capital of the Mughals for the greater part of Jahangir's and Shah Jahan's reigns. West of the ancient city of Prayag, realising the strategic value of the confluence, Akbar built about 1572 A.D. the fort and city of Allahabad which quickly rose as the capital of a province. ^(Lucknow) Lucknow, for which the emperor is said to have had a liking, rose to importance as the capital of a sarkar, and some parts of the city were built by him.

To be able to realize the relative importance of the various towns of Akbar's days we may briefly examine the chief means of communication of the time. The large rivers continued to be the main

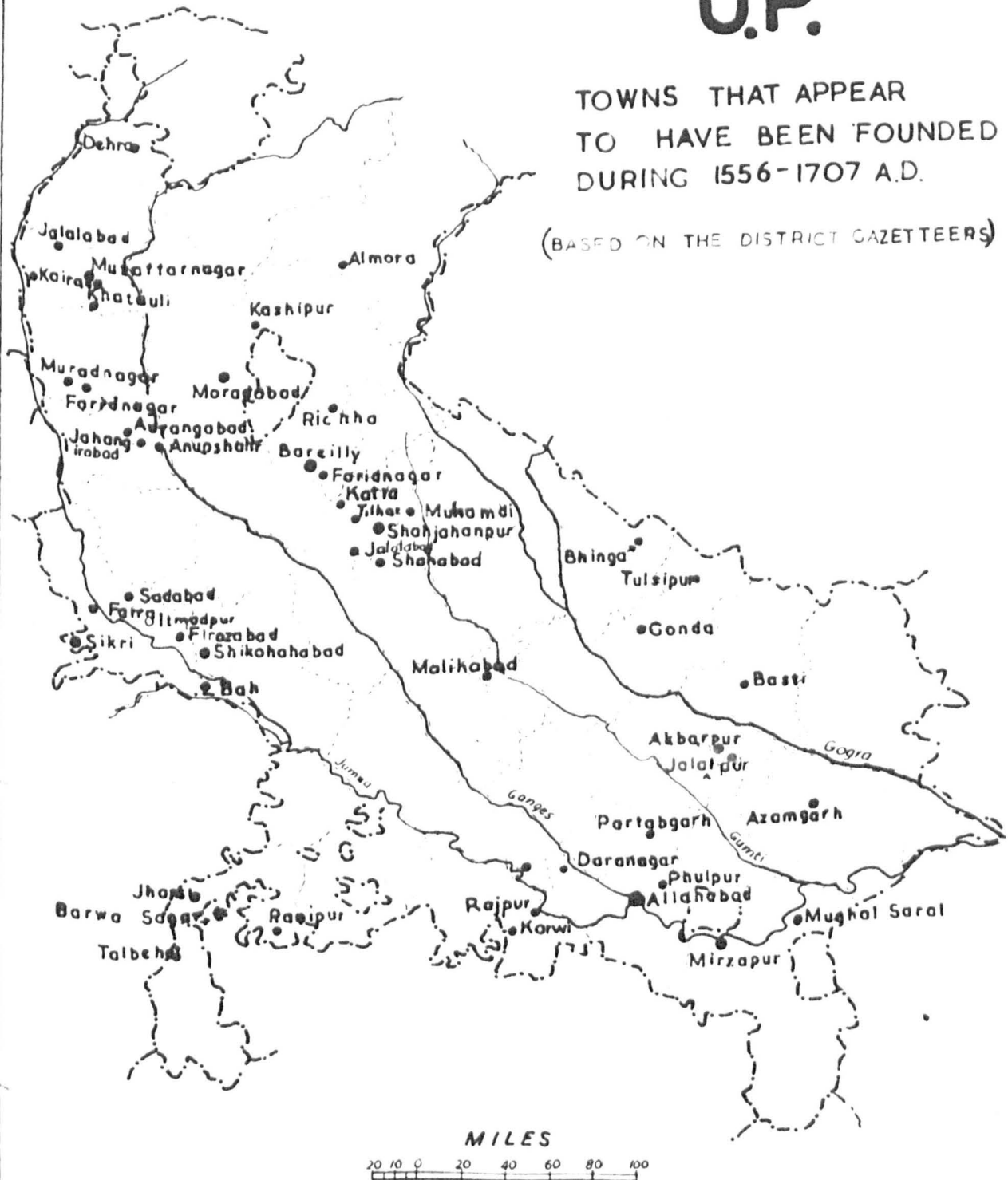
¹ See District Gazetteers, Chapter V, (General Reference.).

² D.G. Agra (1905), p. 191.

U.P.

TOWNS THAT APPEAR
TO HAVE BEEN FOUNDED
DURING 1556-1707 A.D.

(BASED ON THE DISTRICT GAZETTEERS)



lines* of communication, and the majority of the important towns, viz. Agra, Etawah, Kalpi, Kanauj, Manikpur, Kara, Allahabad, Benares, Chazipur, Jaunpur, Ajodhya, Lakhnau (Lucknow), and ^{except Gwalior} Gorakhpur all sarak capitals, lay on navigable rivers. "Of the internal highways the chief was the Mughal road or Badshahi sarak,¹ passing through Delhi, Muttra, Agra, Etawah, Allahabad, Benares, Patna and other important places in Bihar and Bengal (Fig. 56). Other recognised highways are shown on the map. There was almost no recognised route in the Trans-Gogra Plain, nor in the submontane tracts now constituting the districts of Bijnor, Kheri and Pilibhit, nor in the sarak of Munson, most of which areas were under forests. Bundelkhand, too, suffered from want of land routes.² The relation between the highways and divisional capitals of the time is evident from the map. The growing traffic and commerce on the main routes during a reign of comparative peace must have added to the importance of the towns. The 'sarais'* or inns built in towns along the routes afforded resting places for travellers and merchants, contributing gradually to the importance of road-side settlements. Certain

According to Moreland "the river systems of the Ganges and the Indus certainly carried a much heavier traffic than they carry now ... vessels fit for the coasting trade were built at Allahabad", see Moreland, "H. India at the Death of Akbar, (1920), p. 167.

¹ D.C. Cawnpore (1909), p. 86.

² The roads of those days were unmetalled and another main defect was the absence of bridges. The only bridge on a large river, within U.P. that existed in the 16th century was that over the Gumti at Jaunpur built during the years 1564-68 (D.C. Jaunpur, p. 234).

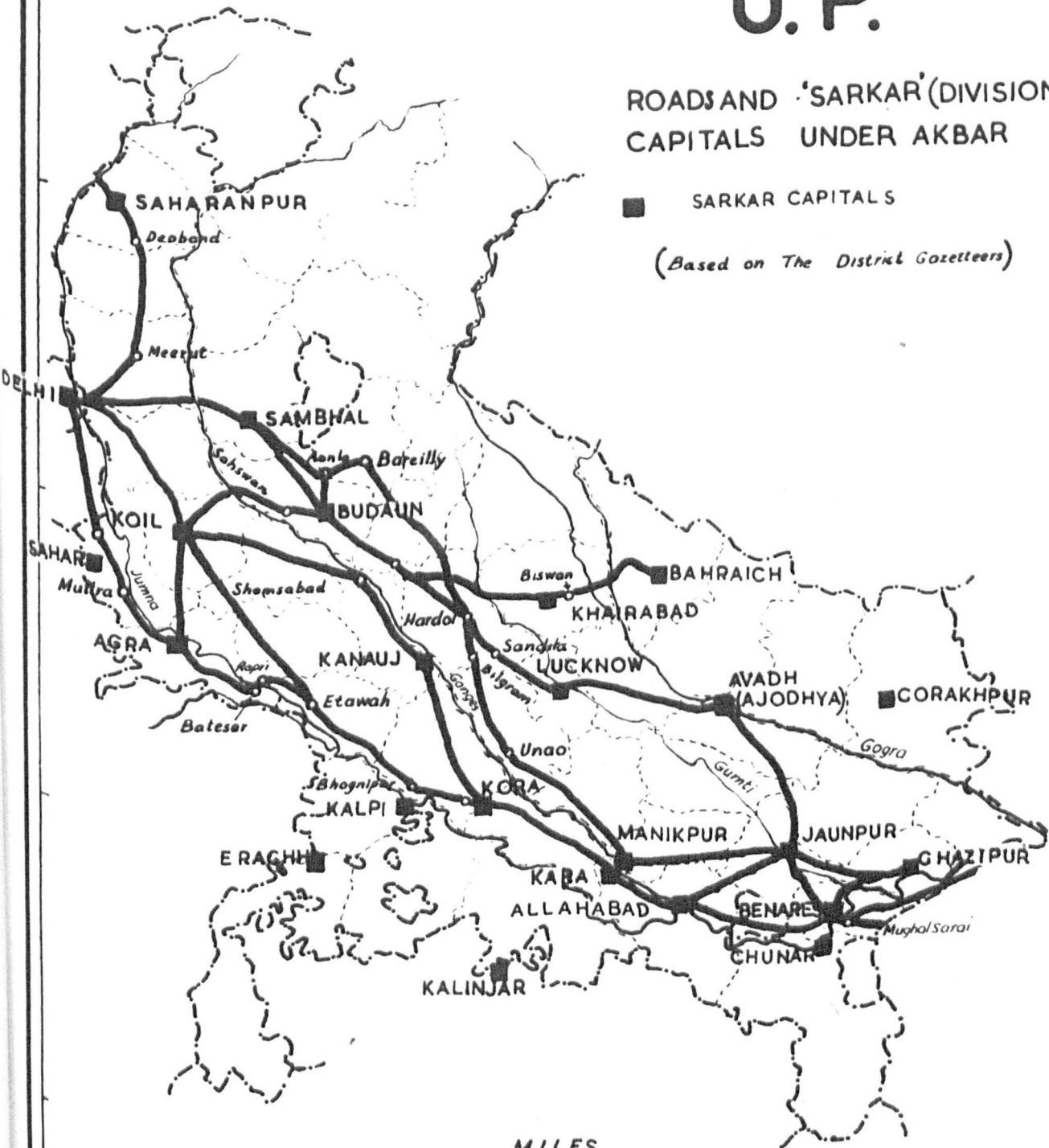
*"There were no metalled roads, though the main routes of land travel were clearly defined, in some cases by avenues of trees, and more generally by walled enclosures, known as sarais, in which travellers and merchants could pass the night in comparative security. In Northern India these routes were, in some cases at least, suitable for wheeled traffic, and long lines of cart might occasionally be seen". (Moreland, "H. (op.cit.) pp. 6 - 7.

U.P.

ROADS AND 'SARKAR' (DIVISION)
CAPITALS UNDER AKBAR

■ SARKAR CAPITALS

(Based on The District Gazetteers)



towns became centres of the industries of those days viz. manufacture of textiles, metal ware, swords, and arms, jewellery, perfumes etc. "In Ain-i-Akbari, Mau (Azamgarh district) is said to be famous, along with Jalalabad and Benares, among the towns of the subah of Allahabad (Allahabad) for the manufacture of certain kinds of cotton cloth."¹ Agra was an important seat of cotton, wollen-carpet and silk weaving. These towns are only a few of the numerous centres where cotton cloth was manufactured. Moreland says, "It is reasonable to conclude that the organisation of which the remains are still visible, was at this period in full operation, and that all towns and most large villages produced the bulk of the cloth worn in the locality".² The comparative peace and economic prosperity which had existed under Akbar continued to a great extent under his two successors in the 17th century, and the towns which had been built or received under the great monarch probably continued to grow. Under Jahangir there came into existence Anupshahr and Jahangirabad in Bulandshahr, Gonda founded by a local Rajput, and Jhansi,² (where a humble village had existed on the Bangra hill since the middle of the 16th century and a fort was built by the raja of Orchha in 1613,). The province was rather fortunate in the days of Shahjahan (1628-1659) when several important towns were founded. The towns that came into being at this period were Shahjahanpur (named after the emperor), Moradabad on the site of Chaupala (named after Murad Bakhsh, the emperor's son), Muzaffarnagar, Bareilly, Daranagar (in Allahabad, named after Dara Shikoh), Kairana, Khatauli in Muzaffarnagar, Sadabad in Muttra and Shahabad in Hardoi and

1

D.G. Azamgarh (1911) p. 254.

2

Moreland, W.H. (op.cit.), p. 182.

2

D.G. Jhansi (1909), p. 269.

L.S. Jhansi (1911), p. 211.

probably¹ the important city of Mirzapur. The ancient town of Sambhel, which had held an important position till the days of Akbar, was given up in favour of Bareilly, which became the capital of Fateh (Rohilkhand). Few towns were founded during the reign of ^{Aurangzeb} (1659-1707) and probably several suffered from his intolerant policy. The only new towns that came into existence in his time were Azamgarh, Dehra Dun, Aurangabad (Bulandshahr district), Muhendi in Kheri and Miranpur Katra in Shahjahanpur.

Towns in the Eighteenth Century. During the eighteenth century considerable changes took place in the urban geography of the area, occasioned by the dismemberment of the Mughal Empire. Instead of a general development of the towns throughout the area which marked the reign of the great Mughals, urban interests became localised (Fig. 57) with the growing power of several regional authorities, viz. the Nawabs in Oudh, Rohillas in Rohilkhand, Bundelas and Marathas in Bundelkhand, Bangash rulers in the Middle Doab and the British in the province of Benares.

Under the Oudh rulers the most important town that came into existence was Fyzabad, founded about 1739, and enlarged and patronised by Shujauddaulah who shifted his capital from Ajodhya to this site after his defeat at Buxar in 1764. "He built the now dismantled fort known as Chhota (small) Calcutta; beyond this were the outer defences which enclosed a large area, embracing nineteen villages with a ditch extending for some two miles to the east, south and west of the fort."² Fyzabad had risen to a height of unparalleled prosperity under Shujauddaulah and almost rivalled Delhi in magnificence; it was full of merchants from Persia, China

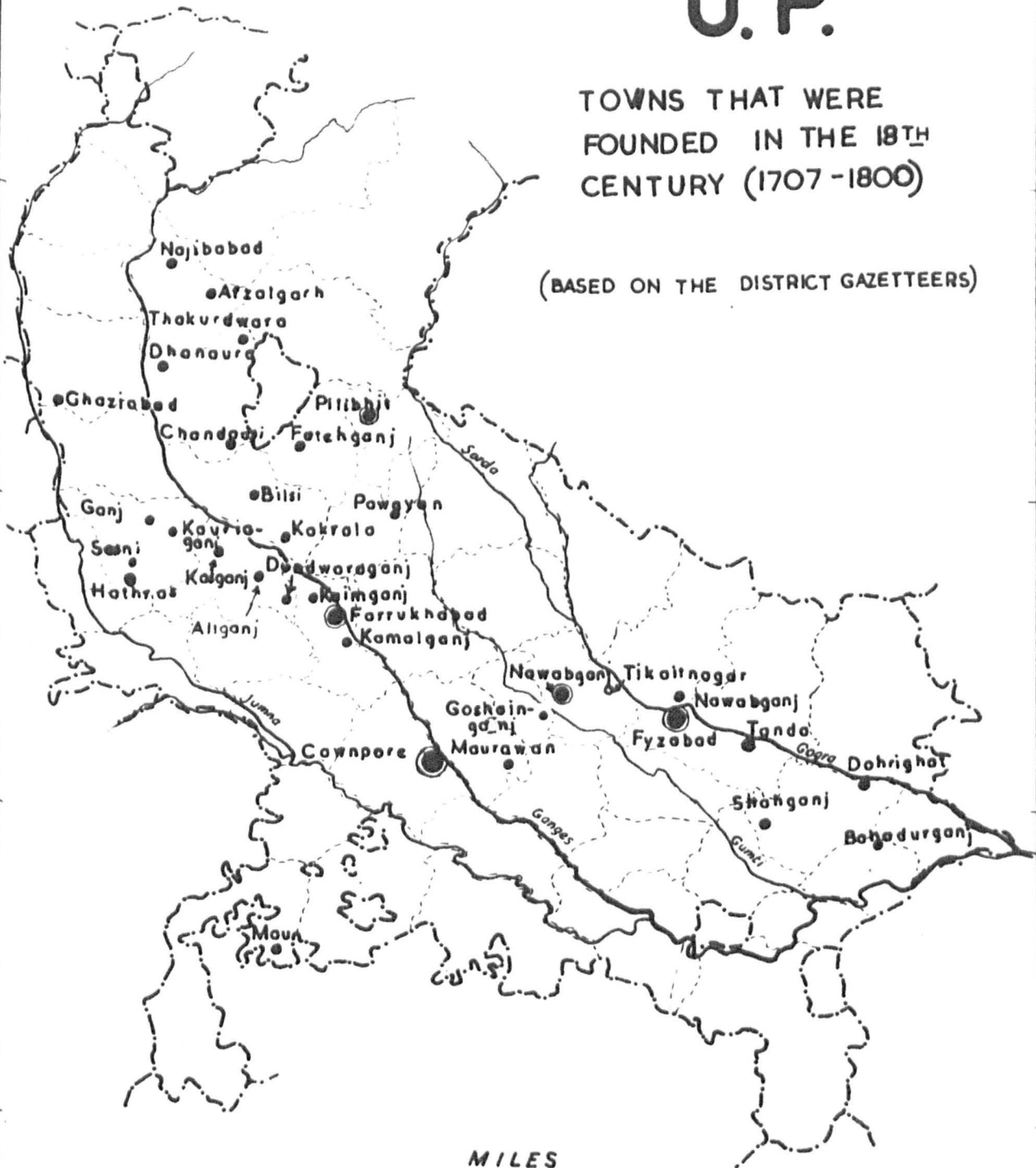
¹ D.C. Mirzapur (1911), p. 351.

² D.C. Fyzabad (1905), p. 214.

U.P.

TOWNS THAT WERE
FOUNDED IN THE 18TH
CENTURY (1707-1800)

(BASED ON THE DISTRICT GAZETTEERS)



MILES
0 20 40 60 80 100

and Europe ... population had increased enormously ^{and} spread beyond the fortifications."¹

Though Lucknow had continued to grow under Akbar and his immediate successors, being described as a 'magnum emporium' by De laet in Jahangir's time, it did not assume its outstanding importance until Asafuddaulah made it the capital of Oudh in place of Fyzabad. "During this reign great extensions were made; all the central parts of the city were built and fifty-two villages are said to have been taken up."² The bridge built by Asafuddaulah over the Gumti linked the capital with Sitapur and Fyzabad. Other towns that were founded by the Oudh rulers during this period were Nawabganj and Tikaitnagar in Bara Banki, Shahganj in Jaunpur, Goshainganj in Lucknow, Kakrala and Bilsa in Budaun, Kauriganj in Aligarh Fatehganj in Bareilly Dhaneura in Moradabad and Nawabganj in Gonda.

Few towns seem to have grown under the titular Mughal emperors, their hold over the empire being nominal. Tanda in Fyzabad, and Ghaziabad in Meerut and Thakurdwara in Moradabad appear to be the three lonely examples.

Certain important towns originated under the Bangash Nawabs (1713-1801 A.D.) of Farrukhabad. The greatest chief of this house founded in 1714 the city of Farrukhabad and made it the capital of his territory, which included the Doab from Aligarh to Fatehpur. The description of the city by the Jesuit father Tieffenthaler is of some geographical interest. "It is surrounded by a lime-cemented wall, with battlements, and enriched by a

1

D.G. Fyzabad p. 216.

2 D.G. Lucknow (1904), p. 148.

fosse, and has twelve gatesFour are main gates; one towards the Ganges, and another towards Mau, a third towards Kansuj, a fourth towards Agra... The high street, which is inhabited by merchants and tradesmen, extends half a mile from the Red gate to the fort; and another street, from the Red gate to that towards Mau, is a full mile long. The circuit of the town is, according to some, six miles; ¹ according to others nine. It is the emporium for all commodities for this part of India, for Delhi, Kashmir, Bengal and Surat. The fort in which is the residence of the governor, is about a mile in circumferenceThe site is elevated."² Owing to its situation on the Ganges the usual course of the trade was to import from Calcutta and re-export westwards. Other towns founded by the Bangash Nawabs are Kainganj, Kamalganj in Farrukhabad, Kasganj, Aiganj and Dundwaraganj in Etah.

Under the Rohillas (1720-1774), who at their zenith held almost the whole of the present Rohilkhand, the towns that came into existence are Pilibhit, Chandausi (Moradabad district), Najibabad and Afzalgarh in Bijnor. Under Bundela rulers (1680-1791) who held most of Bundelkhand in the 18th century, the country became dotted with numerous forts, while towns like Banda, and Kalinjar rose considerably in importance. After 1731 the western third of Bundelkhand passed to the Marathas. The only town that seems to have been founded by them was Mau in Jhansi district. Jhansi, which had existed since the days of Jahangir, developed³ after 1772 into a large town

¹ This is an exaggeration, the length of the three sides of the fortifying walls measured along straight lines connecting the angles of the triangle (the fortification is triangular) is about 3.6 miles. (D.G. Farrukhabad, p. 193).

² D.G. Farrukhabad (1911), p. 198.

³ D.G. Jhansi (1909), p. 269.

under the Marathas. "Hunter, who visited the place in 1792, says, : 'It is frequented by the caravans from the Deccan, which go to Frrukhabad and other cities of the Doab. Hence an afflux of wealth, which is augmented by a c onsiderable trade in the cloths of Chanderi, and by the manufacture of bows, arrows and spears, the principal weapons of the Bundela tribes."¹

In the early British period, between the cession to the East India company of the 'Benares province' (corresponding practically with the present Benares division) in 1775 and of the rest of the Agra province about 1801 evidence of town development is lacking.

The origin of Cawnpore, however, is worthy of notice. About the time of the session of the Benares province the 'unimportant village of Kanhpur' was selected as the site of a trading factory by the c ompany.

" Its favourable situation led to the rapid developpment of commerce, and it was felt that a military force was neccessary for the protection of the European traders and business houses".² Consequently it was selected as a cantonment for the Oudh local forces. Thus came into existence the embryo of what at present is the largest city of the province and the fourth largest in the Indo-Gangetic Plain.

Owing to the slackening of imperial control certain areas of the province ~~certain areas of the provinces~~ in the 18th century, particularly Bundelkhand, Doab and Rohilkhand had become cockpits of internecine warfare which ravaged several towns. Towns in the Doab and Rohilkhand suffered all the more owing to the rec urrent raids of Marathas, Sikhs and Jats.

¹ O. G. Ihansi (1904) p. 275.

² D. G. Cawnpore (1909), p. 262 - 263.

1002 and 1003. The Imperial Department of India. (1904), pp. 233-235 and the District Gazetteer of the U.P.).

The Period 1801-1858. In the years 1801 - 1803 most of the Agra Province except the Himalayan area and the parts of Bundelkhand came under the Company. Since then the province entered a new economic order. We can picture the United Provinces of 1801 without any metalled road outside the large cities, with only two bridges on large rivers (on the Gunti), without any town in the Himalayan region except Almora and a village with a Sikh monastery at the site of Dehra Dun. The unmetalled roads that existed at that time were "not only few but absolutely neglected; to such an extent indeed that for rapid progress it was necessary to avoid the roads altogether."¹ The large rivers formed the easiest and most expeditious routes.² There was no irrigation canal in the Ganges Plain except a prototype (a short channel with faulty alignment) of the Eastern Jumna Canal constructed probably in the days of Mohammad Shah.³ Much of the country was in a state of anarchy and was harried by Marathas, Sikhs, Jats, Pindaris and the notorious Thugs. A large number of towns and villages contained mud or brick forts affording protection from marauders. The population of the province must have been much less than what it is to-day. We have no figures for 1801 but at least in 1772 the population was three-fourths of that in 1941.

Although soon after the first land settlements⁴ roads had begun

1

D. G. Caupore (1909) p. 87.

2

D. G. Allahabad (1911), p. 74.

3

D. G. Saharanpur (1909), p. 58.

4

Summary land settlements (usually for a year or so) started in all the districts soon after the occupation of North-Western Provinces (1801-1803). A decade or so after the occupation the periods of settlement increased to three or five years. The first regular settlement followed 1833 when a regulation was passed fixing the period of settlements for approximately thirty years. In Oudh the first regular settlement took place between 1860 and 1878. (See 'Imperial Gazetteer of India, U.P.I.' (1908), pp. 113-115 and the District Gazetteers of the U.P.).

to be constructed, owing to the menace of the Thugs (whose systematic destruction did not take place until 1831-37), roads were still insecure and rivers remained the chief trade routes. The interest of the company in commerce led to the development of riverside marts like Mirzapur, Ghazipur, Kalpi and Farrukhabad.

In the beginning of the 19th century Mirzapur was an entrepot of inland trade. The city reached its zenith "about 1840 when, from its position at the head of steam navigation on the Ganges it attracted a large share of the cotton trade from the south"¹ which mostly came along the great Deccan Road. "The traders of Mirzapur had their agents scattered all over Bundelkhand, then the main cotton producing portion of the province The boats that in those days plied over the Jumna returned to Rajapur (in Banda), Kalpi, Agra, and other marts in Upper India, freighted with sugar, rice and cloth in exchange for the cotton and grain which they had bought down"². "The subsequent history of Mirzapur was one of continual commercial prosperity until 1864, the year in which the East Indian railway was opened to the Jumna bank at Allahabad Gradually the railway tapped the up country trade and Mirzapur ceased to be the great emporium of trade for Upper India."³

Ghazipur, from its position on the Ganges, enjoyed a more or less similar commercial status, but Benares suffered from a heavy import⁴ duty, which had driven its merchants to Mirzapur.

¹ D.C. Mirzapur (1911), p. 76.

² Ibid.

³ Ibid, pp. 352 - 353.

⁴ Ibid, p. 352.

At the beginning of the 19th century Kalpi and Kunch in Jalaun enjoyed high commercial prosperity. The former was one of the largest ¹ marts in Northern India, the chief articles of trade being cotton and ghi exported by river to Mirzapur, Patna and other places. The Company maintained² here a cotton agency till 1830. "As late as 1840 Kunch is said to have been an emporium so flourishing as to be celebrated throughout Bundelkhand and to have possessed 52 banking houses."³ Writing about the importance of Jhansi in 1854 Captain F.D. Gordon says "The traffic of every description is enormous. Grain from the south and from the fertile districts of Bhilsa, Bhopal and Malwa, to the southwest, transported on thousands of banjaras, bullocks, and where roads permit, on large carts, passes daily towards the north. From the west large trade in cotton is carried on, all of which is conveyed to Kalpi ... in exchange for which the carts, etc. return laden with sugar, 'kirana', etc. intended for Indore and the country to the west. From the west the traffic in salt is enormous"⁴ Farrukhabad, in spite of the downfall of the Bangash Nawabs, still retained its commercial prosperity owing to its situation on the Ganges and on the frontier of the British territory (in relation to Oudh).

Though the Company received as legacy the anarchy and economic irregularities which had prevailed through the 18th century certain forces came into play in the 'Ceded Districts' leading to the revival of towns.

¹ D.G. Jalaun, (1909), p. 45.

² Ibid, p. 160.

³ Ibid, p. 45

⁴ D.G. Jhansi (1909), p. 276.

Improvement in agriculture as a result of land settlement, possibilities of commerce and industries owing to relative peace and security, establishment of district and tahsil headquarters and cantonments at a large number of towns, rapid extension of roads which were needed to connect the administrative and strategic centres led to a quick revival of the towns.

After the Gurkha war (1814-16) the Kumaon Division and Dehra Dun district passed to the Company. The British, coming from a cool temperate zone, were in search for health resorts on the Himalayas, where they could escape from the summer inferno of the plains. Before long suitable sites were discovered on the Outer Himalayas. Mussoorie¹ (1823), Landour² (1830) and Naini Tal³ (1841) came into existence^(+9.58) on sites which had been wildernesses till the dates noted against each and became flourishing settlements within

1 "A few years after the British occupation in 1814 the advantages of Mussoorie as a sanitarium were recognised both by the Government and by private persons. Mussoorie proper may be said to have first come into existence in the year 1823, when the first house, a small hut on the Emel's Back was built as a shooting box." (D.G. Dehra Dun, (1911), p. 249.)

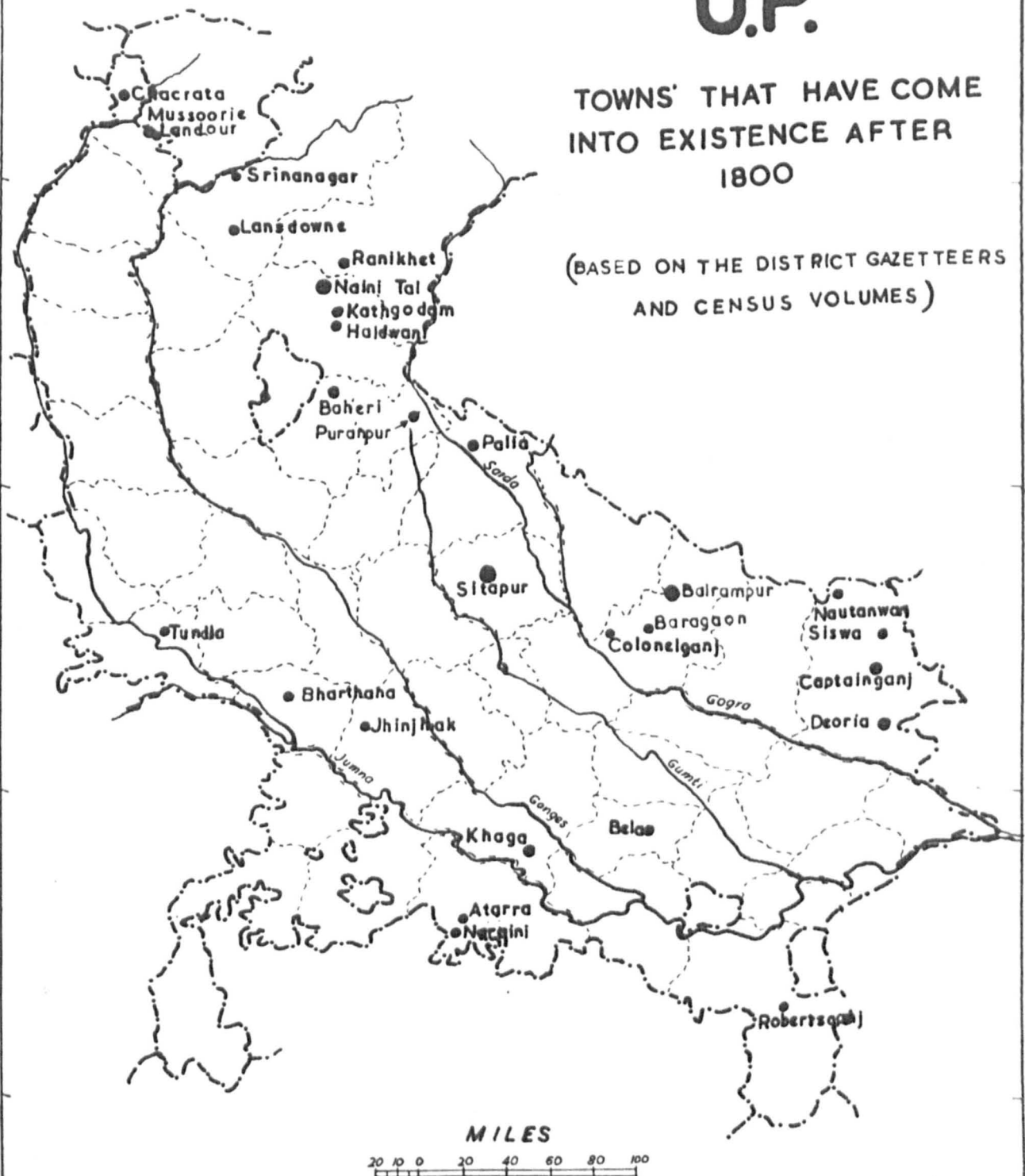
2 Landour, or more correctly Landhaur, was selected as a site for a convalescent depot for British troops in 1830.

3 "In 1841 an issue of the Calcutta 'Englishman' announced the 'discovery of a lake in the vicinity of Almora'. A subsequent description of Naini Tal and its environs in the Agra Akhbar appeared thus: "An undulating lawn with a great deal of level ground interspersed with occasional clumps of oak, cypresses and other beautiful trees, continuous from the margin of the lake for upwards of a mile to the base of a magnificent mountain standing at the further extreme of this vast amphitheatre on the undulating ground between the highest level and the margin of the lake, there are capabilities for a race-course, cricket ground, etc., and building sites in every direction for a large town". D.G. Naini Tal. (1904), pp. 307-308.

U.P.

TOWNS' THAT HAVE COME
INTO EXISTENCE AFTER
1800

(BASED ON THE DISTRICT GAZETTEERS
AND CENSUS VOLUMES)



a few decades. Dehra Dun dates from 1699 when a dissentient Sikh Guru built there a temple and attracted devotees. A 'flourishing town' grew round his dwelling, but it soon declined owing to the incursions of Sikhs and Gajars. In 1808 it was found to be an 'extensive village'. Modern Dehra Dun dates from 1823 whence under a zealous collector it began to grow as a district capital and resort town. Haldwani was founded in 1834 as a mart for the hill population living during winter in the Bhabar. (Fig. 58).

direct

Oudh remained out of British control till its cession in 1856, and this may be one of the reasons for the relatively small number of towns in that territory. The period under consideration (1801 - 1858) ended with immense destruction to the towns of U.P. during the Mutiny. The province was one of the hotbeds of that rising and many towns, especially the largest centres, suffered. Most of the pre-existing forts which were found in or near the towns were destroyed lest they should afford strongholds to the rebels.

Towns in the Period After 1858. Difficulties encountered during the Mutiny

brought to the forefront the question of suitable means of transport. With the assumption of control by the British crown in 1858 and the establishment of a more responsible government the construction of metalled roads progressed at a rapid pace. The influences of roads on the towns had begun to be felt in the first half of the 19th century, but they became more conspicuous after the Mutiny. The development of roads modified the trade routes. Formerly riverside towns were the chief emporia of the province. Moreover, various smaller centres in the interior served as collecting and distributing centres for smaller tributary areas. With the development of roads some of the commerce concentrated in riverside towns was diverted to those

on the new highways, while owing to facilities of transport afforded by metalled roads smaller market towns lost their importance, the general tendency being towards the concentration of trade in large towns.

Growth¹ of Railways and their Influence on Towns.

The only railway that existed in the province before the Mutiny was that between Allahabad and Barwari (some 20 miles westward). The subsequent development (Fig. 15) was fairly rapid, and most of the existing railways had come into existence by 1920. During the period 1859-1870) the main agricultural tracts of the province viz. the Doab and the Ganges - Gogra Interfluvium along with the chief cities of these two zones were connected with the port of Calcutta. (The Doab and the south Ganges-side east of Allahabad, however, received their railway connection earlier (1859-1870) than the Ganges-Gogra Doab, owing probably to the occurrence in or near the former zones, of the important cities of Mirzapur, Allahabad, Cawnpore, Agra, Aligarh, Delhi, Meerut and Saharanpur, and to the need of communication links with the hitherto turbulent Doab and the Punjab). The relatively outlying areas of the Trans-Gogra Plain and much of Bundelkhand were tapped during the next 20 years (1881-1900).

Railways brought in their wake the decline of river-side emporia owing to the insecurity and slowness of water transport. They also diverted the commerce, which had formerly been concentrated in large roadside centres, to smaller railway towns. "Facilities for emigration, the equalization of prices in different markets, and a constant demand for labour with a resultant

¹ For the history of the growth of railways in the U.P. see chapter II of the District Gazetteers and Census of India, 1911. U.P., Report (1912) pp. 22-23; Census of India, 1931. U.P. Report (1933), p. 54.

rise in wages"¹ were some of the reasons that led to a rapid growth of the towns along railways.

Towns like Mirzapur, Ghazipur, Kalpi, Farrukhabad, and Fyzabad Ajudhya and Jaunpur began to decline with the advent of the railway. The population of Mirzapur ^{fell} from over 70,000 in 1881 to about 32,000 in ² 1911. The population of Farrukhabad decreased in the same period from 79,761 to 59,647. The cotton trade of Kalpi was absorbed by Cawnpore owing to its growing nodality especially after the opening of the Bombay-Cawnpore line in the decade 1881-90. The formerly flourishing trade between Farrukhabad and Calcutta was intercepted by Cawnpore and other railway towns. Though the main line of E.I.R., opened during the period 1859-70, had diminished the value of the Ganges as an artery of traffic, Ghazipur still continued to be a collecting and distributing centre for the country north of the river, especially the districts of Ghazipur, Azamgarh, Gorakhpur, Basti and part of Nepal. "The opening of the main line of the Bengal and North-Western Railway (1881-90) however, deprived the city of the whole of the trans-Gogra trade, while its importance has been further reduced by the completion of the various branches which have left the place almost isolated. It has now no advantages over half-a-dozen small towns in the district in the matter of easy transport"³. What was true of Ghazipur was true also of a considerable number of other marts on rivers.

¹ D.G. Jaunpur, (1908), p. 67.

² The decrease of population in the case of Mirzapur, however, was exaggerated owing to exodus from the city because of plague at the time of the census of 1911. A second census was taken in June and July of that year and the population was found to be about 55,000. (See Turner, A.C., Census of India, 1931, U.P., Vol. XVIII, Pt. I, Report (1933), p. 124.).

³ D.G. Ghazipur (1909), p. 66.

It appears that those towns which became railway nodes at an early date have, generally, maintained a remarkable growth. Notable among these are Cawnpore, Allahabad, Benares, Agra, Lucknow, Moradabad, Bareilly, Shahjahanpur, Gorakhpur, Saharanpur, Mathras and Jhansi. The only railway junctions in the province before 1870 were Cawnpore, Allahabad, Tundla and Ghaziabad. The important junctions that came into existence in the next decade were Lucknow, Chandausi, Aligarh, Agra, Benares and Mathras. In the succeeding decade (1881-90) Gorakhpur, Bareilly, Saharanpur emerged as important junctions, while those already existing particularly Cawnpore, Lucknow, Agra and Jhansi became foci of a greater number of rail routes. The object of mentioning these facts, is to show that various towns in the race for urban growth did not get a simultaneous start.

Railways have also resulted in the growth of some villages into towns. Such towns¹ appear to be Deoria, Captainganj, Siswa, Nautanwan in Gorakhpur, Baragson Bazar in Gonda, Palia in Kheri, Purenpur in Pilibhit, Baheri in Bareilly, Tundla in Agra, Bharthana in Etawah, Jhirhak in Cawnpore, Khaga in Fatehpur, Atarra and Naraini in Banda.

The final picture of towns that emerges in 1941 with reference² to the year 1881 is as follows:-

(1) About 73% of the towns of the province including most of the large ones, have increased in population since 1881 mainly owing to nodality

1

These appear to have been mere villages before the advent of railways (see Census Tables of U.P., 1921, 1931 and District Gazetteers.).

2

Sahay, B., Census of India, 1941, V., United Provinces, Tables, Turner, A.C., Census of India, 1931, United Provinces, Vol. XVIII, Part II, Tables.

administrative function, commerce and industries. Their progress since 1921 ^{of the larger ones} has been more marked, and we have noted the causes of the growth in the second chapter.

(2) About 27% of the towns, mostly small, were less populous⁴ in 1941 than they were in 1881 (Fig. 59). Naturally there must be strong factors, non-existent in the case of most of the large towns, which have offset the natural growth of population over a period of 60 years. These causes operative together or severally are the decline of old industries not compensated by new ones, loss of past administrative, cultural or religious importance, diversion of river traffic, increase of malaria, owing to water-logged surroundings as a result of rising water tables in canal areas, and emigration of population as a result of all these factors.

Till the end of the 19th century the manufacture of indigenous sugar and country cloth was flourishing in a large number of the country towns. The growth of factory industries has given a blow to these industries. Now the rule is more or less true for the province that towns without commerce or administrative function are stagnant or declining if they are not supported by factory industries.

Then there is the group of small towns which were strategic or administrative centres in the past and have declined with the advent of a new order e.g. Chunar, Murehra and Aliganj in Etah, Kaimganj in Farrukhabad, Khairabad in Sitapur and Fatehpur in Bara Banki. The ^{at} most invariable decline of religious towns, except the large ones which now combine several

1

To do not consider here the towns which have relapsed into villages and do not appear in the list of towns in 1941.

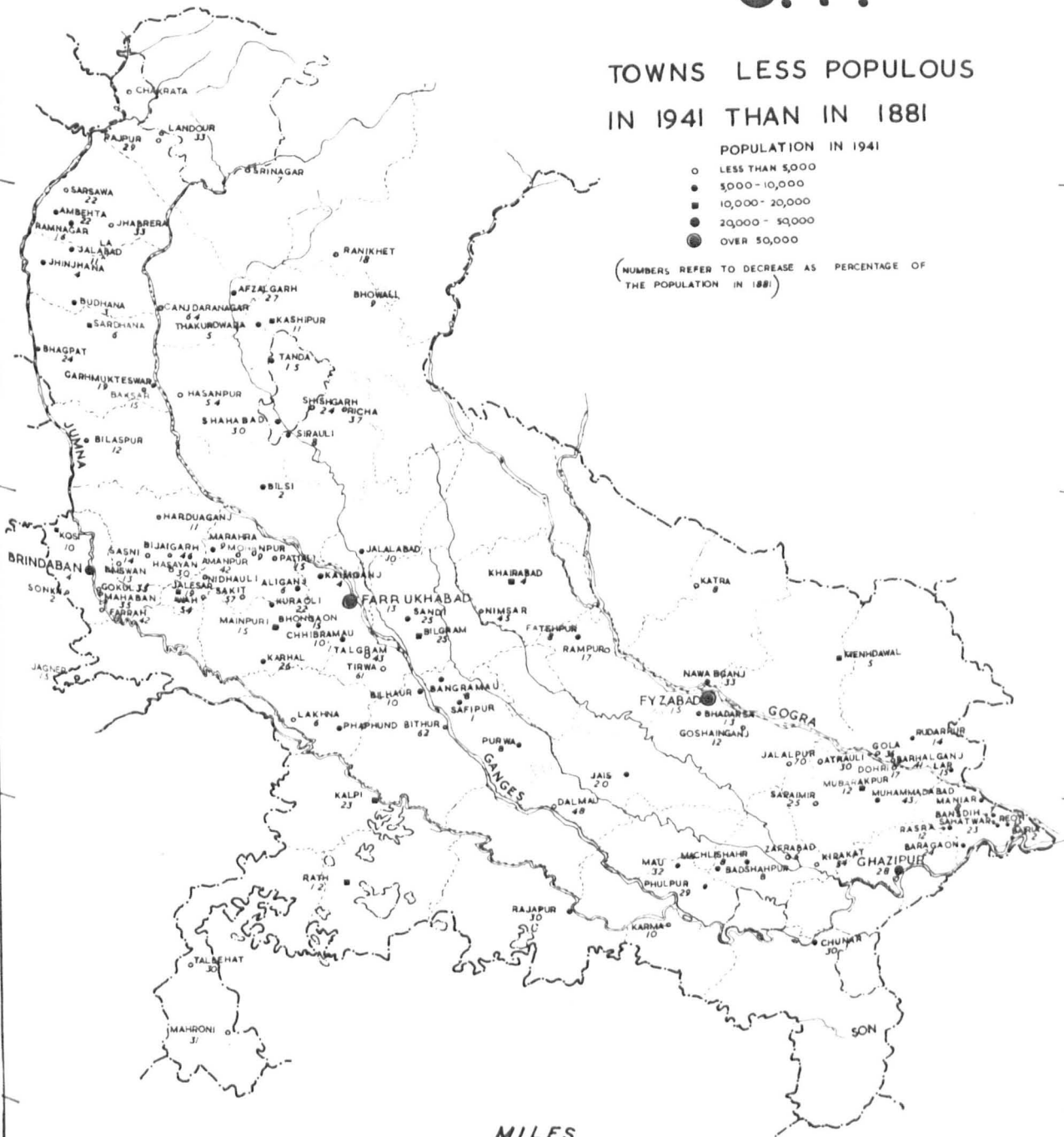
U. P.

TOWNS LESS POPULOUS IN 1941 THAN IN 1881

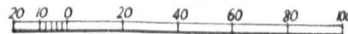
POPULATION IN 1941

- LESS THAN 5,000
- 5,000 - 10,000
- 10,000 - 20,000
- 20,000 - 50,000
- OVER 50,000

(NUMBERS REFER TO DECREASE AS PERCENTAGE OF
THE POPULATION IN 1881)



MILES



other functions, shows a definite change in the religious attitude of the people. The decrease of population in such centres is also due to the decline of the cottage industries, the workers having been attracted by towns with factory industries. The various towns with a religious raison d'être e.g. Ajohya, Mahaban and Gokul in Muttira, Garhmukteshwar and Bhagpat in Meerut, Bithur in Cawnpore, Goshalinganj in Fyzabad, Phaphund in Etawah, Saraimir in Azamgarh, Sandi in Hardoi and Rajapur in Banda have declined since 1881.

The influence of railways on large and small river-side towns has been noted earlier. Two main zones of declining small towns viz. the Eastern Ganges-Cogra interfluvium and the Doab are noticeable on the map (Fig. 59). In the former tract outstanding districts are Fyzabad, Jaunpur, Azamgarh and Ballia. Here the decay is partly due to the decline of river-side marts e.g. Bendsih, Sikandarpur and Maniar in Ballia, Mohammadabad and Dohrighat in Azamgarh and Kerakat in Jaunpur, and partly to the decline of the handloom industry which had flourished in a large number of the towns of this area for centuries, but could not hold its own before machine-made goods. Consequently a large proportion of the weaving population has migrated to the textile centres like Cawnpore, Ahmadabad and Bombay. This factor is also operative in the case of the Doab. Moreover, the county towns of the latter region situated in close proximity to canals and natural depressions particularly in the ill-drained Middle Doab, suffer from waterlogged environs and endemic malaria, and unless there is a counter-acting force like industry or commerce the towns have usually declined. A few examples of such towns which have suffered depopulation due to waterlogged surroundings are Rampur, in Saharanpur, Sardhana in Meerut, Harduaganj in Aligarh, Jalesar in Etah

and Bhongaon in Mainpuri.

Types of Origin.

In the foregoing pages we have seen that the towns were founded or rose to prominence at different periods in history. Now we are in a position to lay down the main types of origins of the towns of the United Provinces.

1. Political Origin. The majority of the cities and towns of the area had a political origin. Since times immemorial rajas or their chiefs built towns on defensible sites, usually river banks. Conditions for a rapid growth of towns, however, probably did not arise until after the 7th century A.D. when the absence of any imperial rule, supplemented by the arrival of several martial clans of Rajputs from the west, led to the development of several principalities in the area. These local chiefs built forts or walled residences on commanding situations usually on the sites of older settlements or riverain bluffs. Round these gathered the residences of professional warriors and kinsmen of the chiefs. Such centres, having the advantages of defence and protection, facilities for marketing and trade and of entertainment, attracted settlers especially artisans and traders. Such settlements continued to multiply during the period of the early Muslim incursions and the early Delhi Sultanate, when the Rajput clans tried to hold their own in areas remote from the imperial routes. After the establishment of a stable Sultanate, towns as strategic or administrative centres built either by the emperors, local potentates or Muslim settlers began to grow on new or pre-existing sites. Obviously the establishment of a hierarchy of administrative divisions with their garrisoned capitals led to a general development of towns. This process of urban growth improved under the peaceful and organised government of Akbar and later Mughals, when most of the towns

contained a fort and garrison. Some towns originated as the fortified centres of the several regional powers that emerged in the province after the decline of the Mughal empire. When the British came administrative function was superimposed on the pre-existing towns. Thus the majority of the towns of the province came into existence as fortified settlements of some ruler or his magnates. Their original function was control over the neighbouring territory. Additional functions like handi-crafts and trade naturally were attracted to these centres, where both money and market was available.

2. Village Origin. A considerable number of small country towns are overgrown villages and most of the small towns not accounted for on the maps (Fig. 53-58) probably belong to this category. This kind of origin is very well illustrated in recent times by the several villages which have been included in the list of towns at successive censuses. In the case of large mauzas, if the central site is adhered to and hamlets do not grow, the village will continue to expand in extent and population and become a convenient centre for itinerant merchants and rural artisans. This leads to further growth and it is brought under the Village Sanitation Act. The dividing line begins to be passed where, when owing to the increase of traders and manufacturers not dependent on village lands, the cess for the payment of village watchmen, charged on the land revenue, and therefore proportionate to the area of the village lands, becomes insufficient to provide for watch and ward. It then becomes necessary to apply the special Act which allows the imposition of a house tax for payment of watchmen in trading towns and bazars.¹

¹ Baillie, D.C., Census of India, 1891, Vol. XVI, N.W.P. & Oudh, Part I, Report (1894), p. 93.

"As such a tax is never levied from a merely agricultural population its existence is evidence that the place is more or less urban in character."¹

3. Religious Origin. Some towns had a religious origin. We do not know the exact nature of the origin of a large number of towns in this category, but the predominantly religious character of many of them, their association with various deities and the existence of a large number of temples and shrines do not leave much doubt as to its religious nature. The birth of most of the religious towns is supposed to antedate recorded history. Some towns probably came into existence, as noted earlier, as Buddhist monasteries and some sacred to Hindus appeared in later times. Some towns associated with men of religious importance cropped up in the Muslim period. Fatehpur Sikri associated with the Saint Salim Shah Chishti, Rajapur in Banda, where the famous Tulsi Das resided, Gorakhpur as the shrine of Gorakh Nath and Dehra Dun as the 'Gurudwara' of a Sikh guru are such towns whose origin is known with tolerable accuracy. Obviously the towns with a religious origin have never remained mere centres of worship. Traders and artisans have flocked to these centres because of ample scope for commerce and industry offered by the presence of a large number of worshippers, and periodic visits of numerous pilgrims.

4. Origin due to Communication, Commerce or Industries. Although these economic factors have largely contributed to the development of the towns of the U.P. notably since the advent of the British rule, towns whose origin can definitely be ascribed to any of these factors are not numerous

¹ Blunt, E.A.H., Census of India, 1911, Vol. XV, United Provinces, Pt. I, Report (1912), p. 23.

Prominent among the towns of this category are Cawnpore, Tundla and Colotehganj (in Gonda). Examples of towns which had been insignificant before they became important commercial, industrial or communication centres are Chandausi, Mathras and Ghaziabad. These factors have led to the addition of non-agricultural population in a number of villages along railways thus raising them to the status of towns. The difference between towns growing out of villages by a relatively slow increase of a mercantile or industrial community (see the second type of origin above) and those which rather quickly attain urban status because of the cropping up of industry and trade from communication facilities, is one of degree rather than of kind.

5. Hill Stations. There is another class of towns in the province with quite a different type of origin. There are the health resorts or military sanitariums of the Himalayan region. We have mentioned that Mussoorie, Landour and Naini Tal came into existence on sites that were previously waste ground, as hill stations or convalescent depots for British troops. Ranikhet (1869) Lansdowne (1887), and Chakrata (1866) also were founded as military sanitariums in the years noted against each.

6. Origin of Towns due to Whims of Rulers. The poet's saying has it that "God made the country, and man made the town" but in the U.P. "usually it was not so much man as a man".¹ We have, already seen that different rulers or local potentates built towns for political or strategical reasons. In some cases they built towns merely to suit their pleasure or to satisfy a passing whim. Thus, as noted earlier, Jaunpur came into existence because Firoz Shah was struck by the pleasantness of the Gumti bank. Lucknow rose to its real importance because Asafuddaulah quarrelled with his mother, and

left Fyzabad. Farrukhabad originated because Farrukh Siyar wanted one of his Nawabs to name a city after him. Such examples could be multiplied. Thus we see that in old autocratic days some cities were founded to satisfy the whim of a ruler. But even behind this 'whim' factor we see the significance of geography. Jaunpur or Farrukhabad grew in the fertile Ganges Valley, on navigable rivers which were the most important routes in those days, at commanding sites on banks which offered a water frontage and a defensible situation. In fact man is sometimes too familiar with geographical forces to notice them. They nevertheless have been operative at all times.

CHAPTER VIII.

Distribution of Towns
in the United Provinces.

"Geography is so deeply concerned with the distribution of things that an interest in town distribution seems to be an obvious consideration."¹

In this chapter our concern is to see how the towns are distributed in the province and as far as possible to offer an interpretation. The existing distribution seems (as brought out in the preceding chapter), to a great extent, to be a legacy of the past. But whatever, the time and type of origin of the towns the influence of the more or less permanent physical features on their distribution is unmistakable.

Fig. 60 shows the distribution of all the towns² of the province. The number of towns in this map, however, is only 427 as against 456 given in the Census tables of 1941. This is because we have not considered a civil station, cantonment, railway colony etc. as a town separate from the main settlement, all these component parts being 'conglomerate into one contiguous town in the landscape.'

In order to understand the present picture let us first examine briefly the distribution of the towns which came into existence at successive periods in history. Fig. 53 shows the towns that appear to have been in existence before the establishment of Muslim rule in India i.e. before the end of the twelfth century. The main area with a considerable frequency of towns,

¹ Auroousseau, M. 'Recent Contributions to Urban Geography: A Review' Geographical Review, Vol. 14, (1924), pp. 444-455.

² As given in the Census of India: 1941. V. United Provinces Tables.

OVER 100,000 POPULATION

50,000-100,000	"
20,000-50,000	"
10,000-20,000	"
5,000-10,000	"
BELOW 5,000	"

MILES

is the Upper Doab and the Ramganga-Ganges interfluvium. Another area of appreciable frequency is the Ganges-Cogra Doab south of Rohilkhand. Towns occurring outside these two tracts are mostly those which lie along the Jumna and Ganges. While the important centres of these large rivers and some towns in the Doab probably date back to the days of early Indo-Aryan civilisation the frequency of towns in the Upper Doab and the Ramganga - Ganges interfluvium appears to be due mainly to the Rajput clans who dispersed from the west, came and founded their principalities and strategic towns. A considerable number of the towns in the Ganges-Cogra Doab are ascribed to Bhara. Fig. 54 giving the towns that appeared in the early Muslim period (1206-1556) shows a rather different distribution. The chief urbanised zones of the period appear to be (1) The eastern tongue of the Ganges-Cogra Doab where a number of towns grew round Jaunpur, the capital of an extensive kingdom, (ii) the four districts of the Central Ganges-Cogra Doab viz. Hardoi, Sitapur, Rae Bareilly and Unao, which lay on the main routes between Ajudhya (Avadh), the capital of Oudh, and the eastern subahs on the one hand, and the imperial capital of Delhi on the other, (iii) Rohilkhand, which received special attention from the Delhi Sultans owing to the presence here of the refractory Rajput chieftains, where more garrison towns were built and where the growth of smaller towns round the important provincial capitals of Sambhal and Budoun was but natural (iv) the Middle Doab which lay 'in the shadow of the imperial city of Delhi' and on the main routes to eastern subahs, (v) and Saharanpur and other surrounding garrisons which served as advanced bases in the north-west against the incursions of the Mongols.

Fig. 55 showing the towns that were founded in the latter half of the 16th and 17th centuries presents yet another distribution.

Apart¹ from the numerous towns that revived during this period, the newly founded towns of the time show an uneven distribution. There is a group of towns near the imperial capital of Agra; another on the route from Delhi via the Upper Doab to the Punjab; a cluster in Rohilkhand on the main routes of Akbar's times (Fig. 56), round Bareilly which replaced in the time of Shahjahan Sambhal as the capital of this province; a number of towns round the important provincial capital of the newly founded strategic town of Allahabad and some in western Bundelkhand which probably lay on the routes to Deccan.

Fig. 57 shows three regional groups of towns founded during the eighteenth century under three different powers. The group of towns in the Middle Doab grew round the regional capital of Farrukhabad and along the main route to Delhi, that in Rohilkhand was founded by the Rohilla chiefs and that in Oudh was built by Oudh rulers round the political and cultural focus first of Fyzabad and later of Lucknow.

During the period after 1800 (Fig. 58) towns (intended to serve as health resorts and sanatoria for British troops) appeared in the hitherto blank Himalayan area. Villages which seem to have grown into towns during the nineteenth and twentieth centuries as a result particularly of railways are relatively frequent in the comparatively outlying area of the Trans-Gogra Plain.

The final picture of distribution, augmented successively by towns appearing at different periods in the past, is presented by Fig. 60

¹
The maps (Figs. ⁵⁴ 54, 55, 57 & 58) show only those towns that appear to have been founded during the various periods and do not take into consideration pre-existing towns.

Rivers and Distribution of the Towns.

If we view the area as a whole the map reveals the important influence of rivers on the location of the towns. Of the twelve cities with a population over one lakh eight are located on large rivers. Of the remaining eleven cities with a population of 50 to 100 thousand only two viz. Sambhal and Amroha are not on rivers. If we take into consideration the district capitals of the province out of 48 only a quarter viz. Fauri, Naini Tal, Almora, Bijnor, Meerut, Aligarh, Etah, Hardoi, Fatepur, Unao, Nawabganj (Bera Banki) and Jhansi are not on rivers. The remaining thirty-six are located on or close to riverbanks.* This influence of rivers is noticeable

*The district capitals on the Jumna are Muttra, Agra, Etawah and Hamirpur, those on the Ganges are Furrukhabad, Cawnpore, Allahabad, Mirzapur, Benares, Ghazipur and Ballia, those on the Ramganga are Moradabad and Bareilly, while such towns on the Gunti are Lucknow, Sultanpur and Jaunpur. The district headquarters on the Sai are Rae Bareilly and Partabgarh. Dehra on the Suswa, Saharanpur on the Dhamola, a tributary of the Hindan, Muzaffarnagar on the Kali west, Bulandshahr on the Kali, Mainpuri on the Isan, Shahjahanpur on the Garra, Pilibhit on the Deoha, Budaun on the Sot, Sitapur on the Sarayan, a tributary of the Gunti, Lakhimpur on the Ul, an affluent of the Saran, Fyzabad on the Cogra, Azamgarh on the Tons, Bahraich and Conda on the Terhi, Basti on the Kuano, Gorakhpur on the Rapti, Banda on the Ken and Orai on the Gohani are the other remaining district headquarters.

in the distribution of small towns also. The frequency of riverside towns is obviously due to one or more of the following reasons:-

- (a) Rivers have for human beings always been a source of watersupply. They were in the past almost essential for a large agglomeration of population.
- (b) The rivers have had a religious importance because their banks were haunts of sages in the past or because of the sanctity with which they endowed.
- (c) The immigrant hordes who successively poured into the Ganges Valley came from drier Central Asiatic or North-Western countries. All of them, consequently, right from the Aryans to the Muslim, were obsessed with the necessity for waterfrontages.
- (d) We have seen in the preceding chapter the high proportion of towns with a political and strategic origin. The problem of defence in earlier days was an important consideration in the location of towns. The deluvial bluffs or eminent levees, in an otherwise featureless plain, provided commanding sites for forts and towns, while the protection afforded by streams at least on one side of the town was considered an important advantage.
- (e) Before the advent of metalled roads and railways in the 19th century, the rivers were the main highways of transport and commerce.
- (f) But rivers, also presented an effective natural impediment to the old routes and tracks which crossed them. Such crossings began to be used as ferries and villages or towns frequently came into existence at such points.

Railways and Town Distribution.

When railways began to appear most of the towns of the area were already in existence and generally railways were attracted by towns and not vice versa. It is, however, an obvious fact that the railways, by bring-

ing in their wake facilities for commerce and industries, have remarkably fostered the growth of the towns along their routes, particularly the centres on railway junctions. As noted in the preceding chapter railways have also created some towns in the sense that certain villages along rail routes have risen to the status of towns.

Several towns lying on river and land routes enjoyed a nodality of some degree in the past. Saharanpur, Koil, Agra, Farrukhabad, Allahabad, Benares, Chazipur, Jaunpur, Budaun, Fyzabad, Lucknow, Shahjahanpur, Bareilly and Moradabad appear to have been such towns. When metalled roads and railways passed through these places they imparted true nodal function to them and to several others, prominent among which are Meerut, Ghaziabad, Hapur, Bulandshahr, Hathras, Tundla, Shikohabad and Cawnpore in the Doab; Jhansi and Banda in the Foreland, Mughal Sarai in the Trans-Ganges Plain; Najibabad, Chandausi, Pilibhit, Sitapur, Rae Bareil, Dara Banki, Unao, Sultanpur and Partabgarh in the Ganges-Cogra Doab and Gonda and Gorakhpur in the Trans-Cogra Plain.

At present all towns with a population over 20,000 except Sahaswan in Budaun and Kairana in Muzaffarnagar district; 48 out of the 68 towns with a population of 10,000 to 20,000 and 55% (163 out of 294) of the smaller towns i.e. with a population below 10,000 are served by rail routes.

Zonal Distribution

The concentration or paucity of towns in the various tracts of the province is brought out by Fig. 60. As a whole one notices a more or less gradual decrease in the number of towns from west to east in the Ganges Valley. The Upper and Middle Doab and most of Rohilkhand, however,

stand out as the most urbanised zone of the province. For facility in description we have called the western (relatively) urbanized part of the province as 'Western Urban zone'. The zone includes Meerut Division except ^{Dun district, Agra Division, Rohilkhand Division west of the Ganga river,} Behra an affluent of the Ganga and the districts of Farrukhabad and Etawah. (The zone is roughly included within a circle drawn with its centre on the Jumna midway between the imperial cities of Delhi and Agra and radius extending to Shahjahanpur city). We find 214 or half of all the towns of the U.P. concentrated within this relatively small western zone whose area is about one-fourth of that ^{of the} province.

The reasons for this remarkable concentration are as follows:-

- (a) The favourable location of this area in respect of the Rajput clans who immigrated from the west and built their several strongholds here.
- (b) Nearness to the imperial capitals of Delhi and Agra, which seems to have contributed to the growth of towns in this area.
- (c) The relative frequency of the old routes which converged through this tract upon the cities of Delhi and Agra.
- (d) The development in the 18th century of important regional powers in Rohilkhand and Farrukhabad.
- (e) A fairly early development, at least in the Doab, of roads, railways and canals.
- (f) Tolerable industrialization at present (and added prosperity due to the hydro-electric power, the urbanizing influence of which is still mainly to be felt).
- (g) A type of rural economy which counts much on surplus agricultural produce and needs numerous market towns to act as collecting and exporting centres.

(h) and a nucleated type of rural settlements capable of growing easily into towns.

These points need some elaboration. The growth of towns due to the Rajput clans (who came dispersed from the west earlier due to internal strifes and later due to impact of Muslims and founded their principalities and strongholds) has been mentioned in the preceding chapter.

The zone under consideration lay nearest to the imperial capitals of Delhi and Agra. The Muslim colonists, saints and magnates of the emperors probably were attracted to the neighbourhood of the imperial seats by the relative security of the area and the normal magnetism of a capital city. Owing to the slowness of transport in those days the frequency of the towns built by deputies of the emperors or ordinary settlers decreased with the distance from the imperial capitals which were the principal cultural and political centres. A large number of ordinary settlers, apart from the magnates who were in charge of administrative units and enjoyed military ranks, received 'jagirs' (grants of land) during the rule of their co-religionist and were economically better off than the native population. They built towns to accommodate their retinue and followers and enjoyed the cultural and recreational advantages which followed. Probably the poorer people of the Muslim community also flocked to these urban centres preferring arts and crafts to cultivation and their work was patronized both by the local and imperial courts. These conditions seem to have characterised not only the rule of the Delhi Sultans but also the succeeding one and a half centuries when a major part of the zone under discussion "formed part

D. P. Sathyanarayana (1969), p. 51.

ibid. p. 51.

ibid. (1969), p. 51.

of the home countries of the Mughal Empire¹. Even after the break-up of the Mughal Empire the Rohillas and Bangash Nawabs built several towns in their respective territories (Fig. 57).

As we have seen the Doab (along with the Ganges southbank east of Allahabad) was the earliest tract to be tapped by railways. Construction of roads also started soon after the occupation of the area by the British Government in the beginning of the 19th century. The agricultural prosperity of the area was guaranteed to a great extent by the opening of irrigation canals at early dates. The Eastern Jumna canal was opened in² 1830, the Upper Ganges canal in³ 1854 and the Lower Ganges canal in⁴ 1879. While the railways and roads gave some commercial impetus to the existing towns and created some new ones, the increased agricultural productivity due to the advent of canals necessarily led to the continuance and growth of market towns. A large number of towns in the Doab are of large ancient villages. As have

been in Fig. (17) shows the relative concentration of large-scale industries in this urbanised zone. Though industries in this urbanised zone have not yet created towns except few like Bahjor (in Morena) they have resulted in the growth of many. Owing to the recent construction of the Hydro-electric Grid in this area it can be assumed that this zone has a greater chance of further urbanization in the near future than any other area of the province.

The Upper and Middle Doab as well as Rohilkhand are the main wheat

¹ Blunt, E.A.H. Census of India, 1911, Vol. XV, United Provinces of Agra and Oudh, Part I, Report, p. 27.

² D.C. Saharanpur (1909), p. 59.

³ Ibid, p. 64.

⁴ D.C. Aligarh, (1909), p. 14.

growing areas of the province. Owing to relatively large holdings¹ (the result of less dense population) especially in the Doab and an assured supply of water from canals, there is a considerable surplus of this (wheat) and other crops available to the agriculturist for sale. Large quantities of gurr and khand are also produced. This zone, therefore, needs small and large collecting centres. In the rice zone where, owing to small holdings and a greater dependence on monsoon which is characterised by freaks of several types, a relatively small surplus is available to the cultivator the need for a large number of local markets is lessened. As evidence of a comparatively large trade in agricultural produce we have in the (western) zone the flourishing mandis, or grain marts, of Harthas, Chandausi, Ghaziabad and Hapur - among the largest of their kind in Northern India.

It is but natural, if other urbanizing factors are existent, to expect a large number of towns in an area of large compact villages. We have seen in an earlier chapter the agglomerated nature of rural settlements in the Doab and Rohilkhand. In Meerut and Agra divisions the density per 100 square miles, of 'villages' (and towns) with a population over 1,000 persons is 19 and 15 respectively, the highest² among the divisions of the province. Large clustered villages in fertile areas afford convenient centres

¹ See Report of the United Provinces Provincial Banking Enquiry Committee, 1929-30 Vol. I. (pp. 22-24). According to this report the average holding per cultivator in the 'Western Tract' (Saharanpur, Bijnor, Muzaffarnagar, Meerut, Bulandshahr, Aligarh, Muttra and Agra) was between 8 and 10½ acres. The figure for the relatively infertile Bundelkhand was higher (12 acres) but for other areas viz. 'North Central Tract' (comprising Rohilkhand and the northern districts of Oudh), 'South Central division, South Oudh and Mirzapur) and 'Eastern tract' (comprising roughly the divisions of Benares and Gorakhpur) it was 6 to 7, 5 to 5½ and 3½ to 4½ acres respectively.

² Calculated from B. Satay, Census of India, 1941 V. United Provinces Tables, pp. 22-23.

for the homes of traders and artisans where a permanent market is available at the hands of a concentrated population. The growth of non-agricultural (industrial or mercantile) communities, however, in settlements which consist of scattered hamlets is relatively impeded. Large compact villages, ^{there-}fore, and not small hamletted settlements have chances of rising to the status of towns.

If we again cast a glance at the map (Fig. 60) we notice certain interesting points in the distribution of towns within this zone. The influence of the lowlying khadar (often waterlogged and liable to inundation) of the Jumna and Ganges is striking. There is a longitudinal strip devoid of towns along the Jumna in Saharanpur and Muzaffarnagar. This strip is the wider belt of khadar along the river (Fig. 2). Again the relatively wide belt of the khadar along the Ganges in Saharanpur, Muzaffarnagar and Meerut does not contain any town. Similar is the case in Etah where the khadar again widens out. East of the Ganges in Moradabad, Budaun, Shahjahanpur and Hardoi a strip of the khadar as well as of the bhur has prevented the growth of towns. The blank in northern Saharanpur (and Bijnor) is due to the wooded Bhabar. As a whole towns are a little more numerous in the western half of the Upper Doab than in its eastern half due partly to the narrower khadar of the Jumna as compared to that of the Ganges and partly to the relative nearness of the western portion to the Imperial city of Delhi. The presence of bhur has resulted in a noticeable empty area in the north-west of Aligarh district.

The Ganges-Side — Eastern Urban Zone.

After the western urbanized zone the only other area with a tolerable concentration of towns is a narrow curvilinear strip comprising

the banks of the Ganges from Allahabad to its confluence with the Gogra. Besides the important centres of Allahabad, Mirzapur, Chunar, Benares, Saidpur, Ghazipur and Ballia there are sixteen smaller towns. A good number of these centres viz. Ballia, Zamania, Saidpur, Chunar, Kashi, Bindhachal, Prayag and Jhansi appear to have been in existence in the pre-Muslim period owing partly to the prescence here of continuous stretches of uplands bordering the river, partly to the proximity of this tract to the ancient capital of Pataliputra and possibly to the passage through this zone of the ancient land route under the Mauryas. The strategic and commercial importance of the river was maintained throughout the early Muslim period when Ghazipur and Mohammadabad (in Ghazipur district) appear to have been built. The importance of the tract under Akbar is brought out by figure 56 which shows that the zone contained the four markar capitals of Allahabad, Chunar, Benares and Ghazipur, the strategic importance of the Ganges being enhanced by the construction of the fort and city of Allahabad. The routes of the time coming from the Doab and Ganges-Gogra Interfluvium on the one hand and Bihar and Bengal on the other converged at Benares and Mughal Sarai respectively. Subsequently owing to an early occupation of this tract by the British the importance of the Ganges as a highway of commerce increased all the more and apart from Mirzapur and Ghazipur which became important emporia some villages of this strip developed into towns owing to the river-borne trade. This zone, especially the south bank, was among those areas which first received road and railway connection with Calcutta. As in the past so even today routes coming from Peninsular India, Bundelkhand, the Doab and Ganges-Gogra Interfluvium converge in this zone owing partly to the barrier of the Vindhyan Upland to the south and partly to the tapering

shape of the Doabs.

The Remaining Areas. There is no remarkable concentration of towns in any other area of the province outside the two zones considered above. The distribution of the towns, nevertheless, in the various physical divisions is rather uneven and thought-provoking.

The Doab. In the Lower Doab (outside the western zone) including Cawnpore, Fatehpur and the interfluvial portion of Allahabad districts, besides the city of Cawnpore, there is a line of small towns including Fatehpur, through the middle of the Doab, coinciding with the old imperial route (Fig. 56), later aligned into the Grand Trunk Road parallel and close to which runs the main line of the East Indian Railway.

Ganges-Gogra Doab. In this tract we notice the following distributional arrangements :-

(1) There is a line of towns from Hardoi through Bilgram and Unao to Manikpur on the east of the Ganges and parallel to it. The explanation of this distribution can be obtained if we refer back to figures 153 and 154. Some of these towns existed in the pre-Muslim period and some appeared during the 13th to 16th centuries. They also mark the course of the old road of the Ganges valley, joined through this tract, parallel to and at short intervals from the old route connecting Budaun and Hardoi with Manikpur. At present these towns lie on the Sandi-Unao-Phaphamau railway.

(2) There is a number of towns on the middle course of the Sai. They are ancient settlements. Only Partabgarh (Bela) is a growth of the 18th century. There is a small but continuous chain of towns on the edge of the

(3) We notice another small chain of towns between Lucknow and Hardoi. They are Kakori and Malihabad in Lucknow and Sandila and Beniganj in Hardoi

marking a route which existed during Mughal days. (Fig. 56).

(4) That some towns should exist on the banks of the Gunti, the largest navigable stream passing through the heart of Oudh is but natural.

(5) There is a strikingly regular line of towns. extending from Lakhimpur to Ballia. This line is parallel to the courses of the Sarda and Gogra up to Rudauli (in Bara Banki) and thence downwards all the towns in this chain are on the Tons river. The interesting regularity of the chain of towns from Lakhimpur to Rudauli is due to their having avoided the low lying khadar of these rivers (Fig. 2). They are all located where the edge of the upland meets the flood plain. The Tons is the only considerable stream in the dosh between the Gunti and Gogra. It is a perennial and navigable river. Most of the towns on its course grew during the Muslim period (Figs. 54 and 55) when rivers still formed the main arteries of communication.

(6) There is a cluster of towns in Bara Banki forming part of a larger nucleation in the triangle formed by the towns of Fyzabad, Lucknow and Sitapur. (Most of the towns of this group have been mentioned above (4) and (5). This tract lay between the sarkar capitals of Ajudhya, Lucknow and Khairabad under Akbar. Later under the Oudh Nawabs the tract between Lucknow and Fyzabad formed what may be called the hub of the Oudh territory. The 'old Nawabi road of Shujaudaulah'¹ passed through this tract. Parallel to and at places identical with the old route now runs the Oudh trunk road from Fyzabad to Bara-Banki, Lucknow and Cawnpore. The area is now served by double railway lines between Lucknow and the *Gogra side* station of Bahraighat.

(7) There is a small but continuous chain of towns on the edge of the Gogra Khadar in Ballia.

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D.G. Fyzabad, (1905), p. 49.

Trans-Gogra Plain. There are some towns of ancient origin near the Gogra in Gorakhpur, the khadar being narrowest here (Figs. 2 and 60). Most of the towns in Northern Gorakhpur viz. Pipraic h, Captainganj, Siswa Bazar and Nantawan owe their growth to railways and sugar factories and their importance as centres collecting and transporting forest produce. Westwards except in Gonda, towns get fewer. Gorakhpur and Bahraich were sarkar capitals and advanced military bases under Akbar. All the other towns except Utraula in Gonda seem to have appeared later. The lack of towns in the Gogra khadar of Basti, Gonda and Bahraich is striking, while except for Palia the khadar between the Sarda and Gogra is also completely devoid of towns.

Bundelkhand. In Bundelkhand we notice a general lack of towns which, however, increase in number westwards. That the ancient town of Kalpi "became the 'gate of the west,' under Akbar and the starting point for expeditions to Central India"¹ indicates that routes from the Ganges Valley to the Deccan passed through Western Bundelkhand. It was in this strategic zone that several towns appeared during the 16th and 17th centuries (Fig. 55

). The tract really forms a zone of contact between the physically different units of the Ganges Valley and the Central Indian Uplands. Eastern Bundelkhand is, and has been, less important, as it borders less fertile tracts to the south. Western Bundelkhand on the other hand, adjoined the important subah of Malwa under Mughals and probably lay on the routes to the south-western seaboard especially to the important port of Surat.

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¹ D.G. Jalaun (1909), p. 162.

Figures given in this book of towns represent their situation in 1901 and have been taken from the District Gazetteers.

Later it was the western third of Bundelkhand which came first under the Marathas and the strategic importance of the tract was maintained. Jalaun, Orai and Kunch were important emporia in the first half of the 19th century carrying on considerable trade¹ between the border states of Samthar, Datia and Gwalior on the one hand, and the Doab on the other. Now the tract is served by Cawnpore - Sanger Trunk road, the Bombay-Cawnpore railway and the Betwa canals.

South-Eastern Uplands. Owing to its relative poverty and remoteness this tract has few towns. Robertganj, a British creation,² and Chorawal are located in the fertile paddy-producing valley of the Belan. The ancient town of Ahraura just below the edge of the Vindhyan Upland "was formerly a very important entrepot of trade, being the most southerly limit of cart traffic on the road between the railway, the south of the district and the state of Surguja".³

The Himalayan Region. In the Himalayan area there are only thirteen towns none of them north of the Lesser Himalayan Zone. The relatively recent origin of most of them has been mentioned in the preceding chapter. From the viewpoint of distribution and location they fall into three groups viz. (i) the three towns of Dehra⁴ (2,300), Rikhikesh (c. 2,000) and Rajpur (3,000) lying in the Dun valley; (ii) a line of towns situated on the breastworks

¹ D.C. Jalaun (1909), p. 45.

² D.G. Mirzapur (1911), p. 367.

³ Ibid., pp. 258-59.

⁴ Figures against the name of towns represent their elevation in feet above sea level (District Gazetteers).

of the Lesser Himalayas facing the Gangetic Plain - Chakrata (6,885), Mussoorie (6,935) including Landour (7,459), Lansdowne (6,060), Naini Tal (6,400) and Bhowali (c. 5,000); and (iii) five inner towns situated further north viz. Srinagar (1,706), Pauri (5,390), Ranikhet (5,980), Almora (5,494) and Pithorgarh (5,464).

The growth of these towns is obviously due mainly to the cool climate of the Himalayan region. All the Himalayan towns except those of the Dun Valley and Srinagar near the bed of the Alakhnanda, lie approximately between an elevation of 5,000 and 7,500 feet above sea level. During May and June the hottest months of summer, the normal maximum temperature of these hill stations is about 25 to 30 degrees lower than that of the Gangetic Plain below the foot hills. The figures for Mussoorie and Muktesar (a small settlement between Naini Tal and Almora, with a meteorological observatory and at an elevation of 7,592 feet) representative of the hill stations, are compared with those of Roorkee, a sub-montane town, in the following table¹:-

Stations	Height of Barometric Cistern above mean sea level in feet.	Maximum Temperature °F.			
		May (Normal)	Highest for May, 1944.	June (Normal)	Highest for June, 1944.
Mussoorie	6,940	76.5	90.0	75.1	82.0
Muktesar	7,592	73.1	85.0	73.2	79.0
Roorkee	899	102.2	114.0	100.2	109.0

¹ Based on, A Weather Review, 1944, Monthly Weather Report, May and June.

Dehra is located on a small plateau, in the Dun Valley, bounded on the east and west by two mountain torrents. Rajpur occupies the foot of the Mussoorie Range and Rikhikesh lies on the alluvial flats of the Ganges. The Dun towns have good communication links with the Ganges Valley, the barrier of the Siwaliks being made ineffective owing to the gaps along the Jumna and the Ganges and the existence of the Mohan pass. While the Saharanpur-Chakrata road enters the Dun through the gap formed by the Jumna, the Roorkee-Dehra-Mussoorie road does so by the Mohan pass and the railway and road from Hardwar to Dehra follow the gap along the Ganges. Rikhikesh is also served by railway. Mussoorie and Landour lie on the Mussoorie Range, the first range of the Himalayas parallel to the Siwalik Range. Lansdowne similarly occupies a ridge of the Outer Himalayan Range. Naini Tal is located in one of the Valleys of the Gagar Range "which forms the southern brow of the Himalayan system."¹ Chakrata is situated on a range of the Lesser Himalayan which gradually slopes south towards the Jumna Valley. With no high range intervening between these southerly Himalayan stations and the Ganges Plain they are much more easily accessible than the towns lying behind the outer ranges. Naini Tal is twelve miles from Kathgodam a railway terminus (although the cart road is more than double the distance), Lansdowne is 28 miles² by cart road from Kotdwara railway station, Mussoorie is 14 miles³ from Dehra Dun and Chakrata 25 miles⁴ from Kalsi, a foothill village.

¹ D.G. Naini Tal (1904), p. 2.

² D.G. Garhwal, (1910), p. 179.

³ D.G. Dehra Dun (1911), p. 243.

⁴ Ibid., p. 209.

Of the inner towns Pithoragarh is too far in the north being cut off from the plains by several ranges and the deep gorge of the Sarju river. Almora and Ranikhet are separated from the south not only by the Gagar Range and the Kosi gorge but also by another great ridge stretching halfway across the district of Almora and forming the northern boundary of the Kosi basin. Pauri is cut off from the south by two ranges and the gorge of the Nayar river. Consequently the hill-roads leading to these inner towns follow a rather circuitous route.

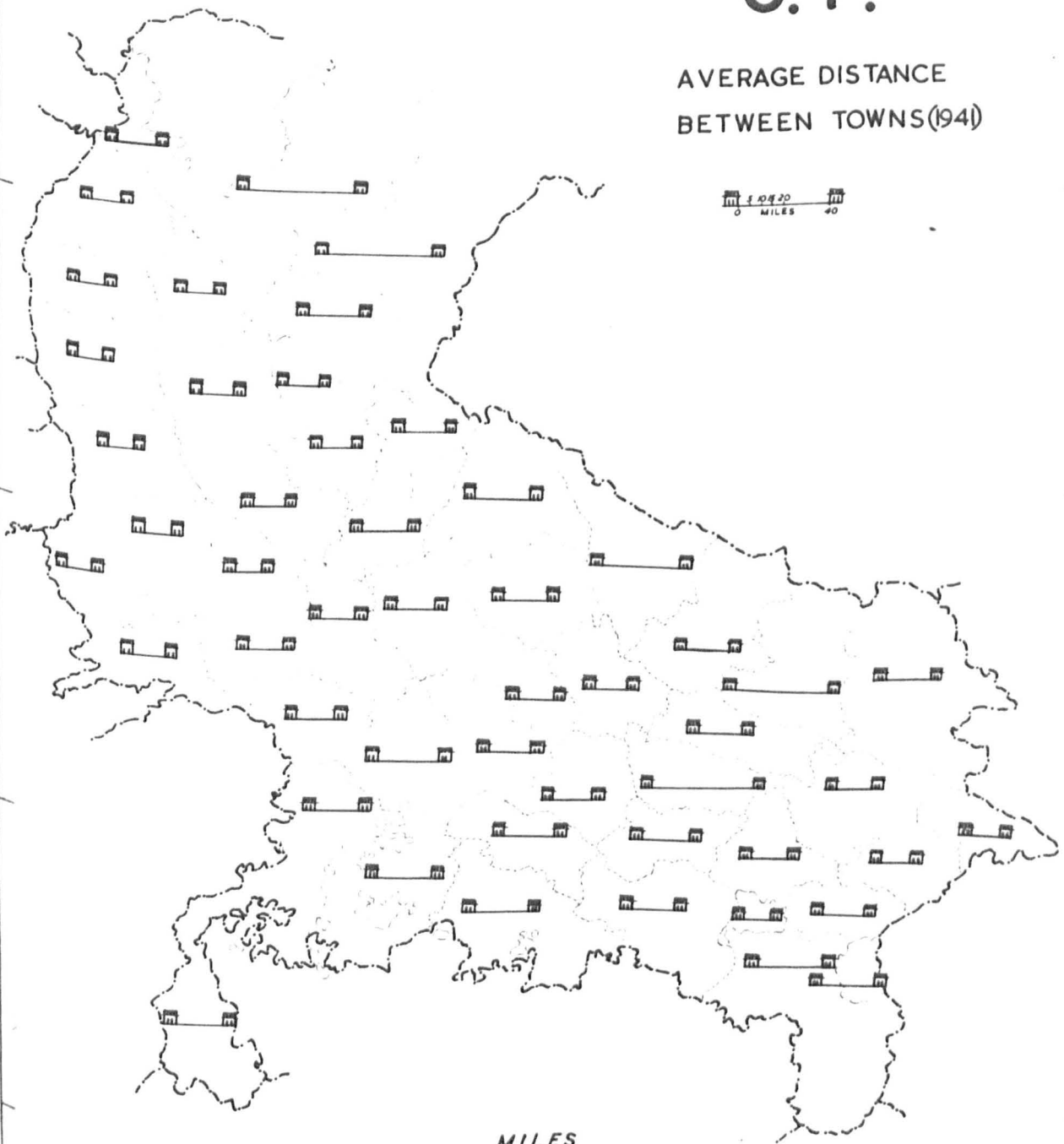
The sub-Himalayan railway terminus towns of Ramnagar and Haldwani-Kathgodam-Ranibagh (along with the large villages of Kotdwara and Tanakpur at railway termini) very regularly spaced between the Ganges and Sarada are zone-of-contact towns. They occupy the foot of the Siwalik Range at the mouth of river gorges. Apart from affording halting stations to those proceeding up hill, they act as 'break-of-bulk' towns. They are collecting centres for forest produce and important markets in the Bhabar where the goods from the Himalayan Region and the Ganges Valley are exchanged.

INTER-URBAN DISTANCES.

From the foregoing discussion based on the town distribution map (Fig. 60) we get an idea of the frequency of towns in different areas of the province. The idea becomes more tangible when we represent cartographically (Fig. 61) the inter-urban distances in the various districts. Though these average distances¹ do not show the actual condition as towns are not

¹ See Winid, W., 'The Scope of Urban Geography', Comptes Rendus, International Geographical Congress, Warsaw, 1934, Vol. 3, Sec. 3, pp. 171-218.

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AVERAGE DISTANCE
BETWEEN TOWNS (1941)0 10 20 40
MILES20 10 0 20 40 60 80 100
MILES

distributed with geometrical evenness¹ they present a result (not directly brought out by the distributional map) which affords approximate idea of the frequency of the towns, their average radii of influence or the extent of the 'rural sea' in which they occur as 'islands'. Being related both to the area and to the number of towns the inter-urban distances form a sort of regional and economic index. They are related in varying degrees, to the physical conditions, historical antecedents, present prosperity and the density of population of the various tracts. In the western urban zone (avoiding the less urbanised districts) of the province the inter-urban distances range from a minimum of ~~10.5~~ 10.5 miles in Meerut to a maximum of 14.5 in Mainpuri [the figures for the peripheral districts are Etawah (16.4), Farrukhabad, (15.3), Shahjahanpur (20.3), and Pilibhit (17.6)], giving roughly the radius of influence of the average town as 5 and 7 miles respectively.

1

To arrive at the average distance between towns they were assumed to be evenly distributed over the district and the distance between them was calculated. Apparently units are most evenly spaced when arranged in a hexagonal system, (hexagons and equilateral triangles being the only geometrical figures which do not leave a space uncovered between them.). The lengths arrived at represent the distances from one town to the six nearest ones. The area of a district is divided by the number of its towns, the quotient being the area of the hexagon round an average town. Double the length of the perpendicular from the centre of the hexagon to one of its sides represents the average distance between two adjacent towns. (The idea has been taken from Barnes, J.A., and Robinson, A.H., 'A New Method for the Representation of Dispersed Rural Population'. Geographical Review (30) pp. 143-137.

In the Himalayan area the distance ranges from 16.6 and 22.4 miles for Dehra Dun and Naini Tal to 45.8 and 46.3 miles for Almora and Garhwal districts respectively. In the Ganges Valley, outside the western zone, the districts of Lucknow, Bara Banki and Hardoi have an appreciably smaller inter-urban distance (c. 14 miles) than the surrounding districts. A similar distance occurs in the eastern districts of Ballia, Ghazipur, Jaunpur, Benares and Bhadohi (Benares) State.

The inter-urban distance in Jalaun and Jhansi is smaller than in Hamirpur, Banda and Mirzapur. In the Trans-Gogra Plain in Gonda and Gorakhpur a much smaller inter-urban distance exists than in Basti and Bahraich.

The inter-urban distance in the various districts of the United Provinces is not uniform. It is smaller in the districts of the western zone than in the districts of the eastern zone. It is smaller in the districts of the Trans-Gogra Plain than in the districts of the Ganges Valley. It is smaller in the districts of the Ganges Valley than in the districts of the Himalayan area. The inter-urban distance is smaller in the districts of the western zone than in the districts of the eastern zone. It is smaller in the districts of the Trans-Gogra Plain than in the districts of the Ganges Valley. It is smaller in the districts of the Ganges Valley than in the districts of the Himalayan area. The inter-urban distance is smaller in the districts of the western zone than in the districts of the eastern zone. It is smaller in the districts of the Trans-Gogra Plain than in the districts of the Ganges Valley. It is smaller in the districts of the Ganges Valley than in the districts of the Himalayan area.

The inter-urban distance in the various districts of the United Provinces is not uniform. It is smaller in the districts of the western zone than in the districts of the eastern zone. It is smaller in the districts of the Trans-Gogra Plain than in the districts of the Ganges Valley. It is smaller in the districts of the Ganges Valley than in the districts of the Himalayan area. The inter-urban distance is smaller in the districts of the western zone than in the districts of the eastern zone. It is smaller in the districts of the Trans-Gogra Plain than in the districts of the Ganges Valley. It is smaller in the districts of the Ganges Valley than in the districts of the Himalayan area.

CHAPTER IX

Size and Functions of the Towns - Cities.

The inter-related facts of size and function of the towns may profitably be studied side by side. The number and variety of functions, the proportion of 'urban' or non-agricultural population and the 'service area' of the towns vary to a great extent with their size. For a study of functions, therefore, the towns of the area have been considered here according to their size. We recognise the following main groups viz. :-

- (i) Cities (population over 50,000), (ii) large towns (20,000-50,000 persons), (iii) medium sized towns (10,000 - 20,000 persons) and (iv) small towns (less than 10,000 persons).

The possibility of the alternative approach to a functional classification of the towns, by analysing the census data of occupations does not exist in our case. Such figures except in the case of cities are not available and even for the cities they are available only for 1931 and earlier years.

Before examining ⁱⁿ the size and functions of the towns in the various groups we may indicate briefly the nature of the relations that exist between the towns of the area and the country around. A town usually depends for its prosperity on the surrounding rural area of which it is a local focus in respect of one or more of such functions as commerce, industry, administration, religion and education.

This surrounding area which serves and is served by, a town has been variously termed 'unland', 'service area', 'tributary area', 'sphere of influence' or 'urban field' and depends in its extent and inter-relations with the town on the stage of material progress which a country has attained,

the size and functional character of the town, the nature of communications as well as the relief of the country.

In the U.P. or for that matter, in India generally, the villager does not visit the town as frequently as do rural folk in advanced countries. The causes are obvious. The village, as indicated earlier, is still a self-sufficient unit in respect of many primary needs. The standard of living, and the purchasing power of the villager is very low. Away from the areas served by railways the connection between the village and town is by means of roads, mostly unmetalled, on which the predominant means of transport are animal-drawn vehicles, mainly bullock-carts. For the majority of the rural population, however, a journey to the neighbouring town is usually performed on foot. Conservatism and lack of enterprise also make the rural population relatively indifferent to the towns.

Yet even in the U.P. the town "does not function in a vacuum; it utilizes in more or less degree the district around it." * Commerce and administration are the functions of towns that are most important in establishing a link between themselves and the countryside in the U.P.

The commercial connection between the town and the tributary area is the strongest. The town acts as a collecting, marketing and exporting centre of the agricultural or industrial products (if any e.g. handwoven cloth) of the country around. It imports from other towns, districts, provinces or abroad the commodities and goods not produced locally, along with the goods produced in the town itself and distributes these to the countryside usually not directly except within a small radius, but through smaller

* Dickinson, Robert, E., City, Region and Regionalism, (1947), p. 40.

towns, permanent village shops or by means of the weekly & biweekly village market. It may also act as a centre of through traffic which may not have much to do with the local tributary area. The process of collecting goods from rural areas is a complex one. The produce may either be carried by the cultivator to the local 'mandi' (i.e. wholesale market usually applied to a grain market which may be in a town or a large village) or by the itinerant dealer. From there the commodities may be sent to the trade centre of the district or bigger towns or cities enjoying a higher commercial status.

"Broadly speaking, wholesale markets in tracts having good communications draw their supplies from within a radius of 10 to 20 miles"¹, and the commonest means of transport within such a radius is the bullock cart. Over longer distances the bulk of goods are transported by rail.² The process of distributing goods from the city to the town or village takes a more or less similar course in the reverse order. Thus the hierarchy of towns ranging from the smallest country town to the largest city acts as a continuous chain in the process of collecting and distributing goods.

The other principal urban function which connects the town with countryside is administration. As will be noted subsequently, in the U.P. unlike in Bihar or Bengal there is an unusual concentration of administrative functions in the district capitals at the cost of tahsil headquarters which deal only with petty cases. The rural population seeking administration of justice (litigation is a prevalent habit among the rural folk of this province and probably of other provinces as well) have to go to the

¹ Report on Fairs, Markets and Produce Exchanges in India, Marketing Series No. 45, (New Delhi, 1943), p. 37 : hereafter cited as 'Report on Fairs, Markets, etc.'

² Ibid., p. 42.

sadar (district town) from all parts of the district. Probably in any year more people from rural areas will be brought to the district town by litigation than by any other activity. Incidentally they may do some marketing and paurchasing. After 10 a.m. one may see ^{within} the premises of the district courts a considerable number of clients squatting under the banyan or some other shady trees round their favourite yakil (lawyer) or his 'taeed' (clerk) discussing the crucial points of their case, bargaining about the fees and additional tips or chatting on similar matters with their witnesses and friends. This considerable gathering of villagers with their wearied faces, dust-covered legs, small bundles containing essentials - often rations for a few days, and sticks with the help of which they have trudged fairly long distances tells eloquently of the important pull of the district town (because of its administration function) on the rural interior.

Another basis of connection between the town and countryside is the employment offered in the former to the rural population in public administration, the police force, cantonments and particularly in factories.

Religion forms another link between the country and those towns which are important centres of pilgrimage. In the towns are also centralised such institutions as schools and hospitals. But the 'pull' they exercise on the countryside is limited. Pupils seeking secondary or higher education usually go and stay in the towns with such facilities. Some of the pupils reside in villages and the service area of the town in this respect is determined by the distance which students can cover usually on foot, before and after school hours (10 a.m. to 4 p.m.), which does not exceed 2 to 4 miles. A town with a dispensary or hospital may attract people from the villages within a radius not exceeding ten miles. The recreational services

which attract the village folk in advanced countries are relatively scarce except in large towns and cities of the province and even in the latter case they fail to attract the rural folk who lack both the money and the quick transport necessary to encourage such visits.

After this general consideration of the types of relations existing between the town and countryside of the province we pass on to a detailed discussion of the size and functions of the towns the various groups.

Both this and the succeeding chapter form parts of the same essay.

CITIES.¹

Size.² The twenty-four cities of the province contained in 1941 nearly half (49%) of the urban population which was 12.42% of the total population of the area. Of these cities there are two categories - one with a population over one lakh (see Fig. 60) and the other below this figure. The 12 towns in the first group, contain more than one-third (37.5%) of the persons living in towns - a concentration which is the result of historical factors as well as of the growing commercial and industrial centralisation of modern times. The five largest cities (Cawnpore (487)³, Lucknow (387), Agra (284), Benares (263) and Allahabad (261) each with a population over two and a half lakhs, alone account for one-fourth (24%) of the provincial urban population. The second category viz. of the cities with a population below one lakh contains 11.5% of the urban population. All these cities except Mathras (47) fall in the range of 50,000 to 100,000 population.

¹ For the definition of a city see Chapter II. p. 39

² All the figures of population of the towns and cities of the U.P. in 1941 in this and the following chapters are based on Census of India, 1941, V, United Provinces, Tables.

³ Figures in brackets given against the name of towns in this and the following chapters represent, unless otherwise stated, their population in thousands according to the Census of 1941.

Let us see how these cities stand in respect of size¹ when viewed in relation to the wider area of the whole ^{sub-}continent (excluding Burma). Cawnpore occupies the 8th place among the Indian² cities, Lucknow tenth, Agra fourteenth, Benares fifteenth and Allahabad sixteenth. Our next largest city Bareilly lies much lower in the list - 24th. The position is altered if we exclude peninsular India. In that case Cawnpore, Lucknow, Agra, Benares and Allahabad are respectively the fourth, 6th, 10th, 11th and 12th in Northern India. The three cities of Agra, Benares and Allahabad follow each other in size and this is interesting for considered both in relation to India as a whole or to the Indo-Gangetic Plain only, their relative position remains undisturbed.

Among the first three large cities viz. Cawnpore, Lucknow and Agra there is a very regular grading in size, Agra being smaller than Lucknow and the latter than Cawnpore by nearly one lakh of population. In 1931, however, the position was different. Then Lucknow was the largest city with 275 thousand persons, Cawnpore (with 244 thousand) occupying a fairly distant second place and not much greater than Agra with 230 thousand persons. The phenomenal growth of Cawnpore during the decade 1931-41, due mainly to the expansion of the already existing industries and the addition of new ones occasioned by the war has given it a pre-eminence in size which is not likely to be disturbed in the near future.

¹and ²According to the Census of 1941. has the most central location. Lucknow has not

²When the name of Allahabad as the provincial capital became the proper Refers to India before partition.

is rather too far north in respect to the provinces as a whole. Allahabad

is indeed, much more from the centre of the division of which it is the

headquarters. Of the other 'top' cities all except Lucknow and Benares are

Of the remaining seven cities in the 1 - 2 lakh group, Bareilly (193), Meerut (169) and Moradabad (142), are relatively close together in size and stand rather apart from the remaining four viz. Aligarh (113), Shahjahanpur (110), Saharanpur (108) and Jhansi (103) which ranging from a population of 103 to 113 thousands show a greater nearness to one another in respect of size.

Among the cities with a population below one lakh Gorakhpur (99) will probably soon cross the lakh limit and is greater than Rampur (89) by about ten thousands while the latter is larger than Muttra (81) and Dehra Dun (78) by a similar population and again the difference between Dehra Dun and the cities of Mirzapur (71) and Farrukhabad (69) is almost the same. The cities of Fyzabad (58), Amroha (56), Sambhal (54), Etawah (53) and Budaun (52) all in the 50-60,000 scale are roughly equal to one another. Mathura (47) is not much smaller.

We have examined the regional distribution of the towns in the preceding chapter but there are certain ~~difficulties~~ important aspects in the distribution of the cities which need to be reiterated or elaborated here. We have seen that the western urban zone (Fig. 60) contains 15 out of 24 cities of the province. Of the rest ~~seven~~ ^{one in the Dun} are in the remaining portion of the Ganges Valley and the ninth in Bundelkhand. Cawnpore the biggest city occupies a fairly central position in the province though the second largest, Lucknow, has the most central location. Lucknow has now taken the place of Allahabad as the provincial capital because the latter is rather too far south in respect to the province as a whole. Allahabad is indeed, much away from the centre of the division of which it is the headquarters. Of the other 'lakh' cities all except Jhansi and Benares are

located in the western urban zone. Probably they will continue to suffer, to some extent, in their growth, from their mutual proximity. Jhansi, though not central in respect of the division of which it is the headquarters, has not even a distant competitor in the region. Mirzapur suffers to some extent from being near to both Allahabad and Benares. Gorakhpur (99) being much larger than Bahraich (46) the second largest town in the Trans-Gogra Plain dominates the region. The declining city of Fyzabad, the capital of the most rural division in the Ganges Plain is located a little out-of-the-way in respect of the main routes.

It appears that outside the western urban zone the cities of the province maintain a respectable distance from their neighbours. They do not usually seem to brook even smaller rivals in their immediate vicinity. Throughout the district of Cawnpore there is, besides the city, only one town with a population of about 5,000. Within a radius of 50 miles round Allahabad there is only one town in the 10 to 20 thousand scale. Within thirty miles round Lucknow there is no town with a population over 20,000. Similarly, with Fyzabad and Gorakhpur. Jhansi is much lonelier in its situation. Benares and Mirzapur are the most closely-located cities outside the western urban zone (but the distance by rail, 45 miles, is greater than that between Cawnpore and Lucknow which is 41 miles).

In the western zone, however, the cities are located more closely and their nearness to one another seems to have retarded their growth so that only one of the five biggest cities of the province viz. Agra is located in the western zone and the remaining four in the relatively un-urbanised parts of the U.P. Maybe there is a struggle for existence and a lot of 'cities' and small towns inhibit the growth of master towns and vice versa.

Functions.

Fig. 62 based on the census¹ of 1931 shows the occupations in the cities of the province in that year. Unfortunately, such figures are not given in the census tables of 1941 with the result that recent data on the proportion of the various types of occupations in the cities is difficult to obtain. The map, however, brings out the relative importance of various functions which does not appear to have changed very greatly. The 'pies' are proportionate to the working² population (in 1931) and incidentally convey an idea of the relative size of the cities in that year. Lucknow was then bigger than Cawnpore and Dehra Dun with a much smaller population than in 1941 was not regarded as a 'city'.

The map on closer examination brings out certain important points. Firstly, the five cities of Eastern U.P. viz. Gorakhpur, Fyzabad, Benares, Mirzapur and Allahabad were to a considerable extent 'agricultural', about 20 to 30% of their working population depending on 'the exploitation of animals and vegetation.'³ The cities of Rohilkhand, except Bareilly and Moradabad where the proportion of agricultural occupations was low, also had a considerable agricultural community, the percentage of the working population engaged in agriculture to that of the total of the city being 29.7, 22.4, 22.2, 17.1 and 13.0 for Sambhal, Rampur, Ayroha, Budaun and Shahjahanpur respectively. No other city except Farrukhabad and Mattra had such a

¹ Turner, A.C. Census of India, 1931. United Provinces of Agra and Oudh, Vol. XVIII, Pt. II, Tables, (1933), pp. 382-435: hereafter cited as 'Turner, A.C., Census, 1931, U.P. Tables'

² Earners and working dependents.

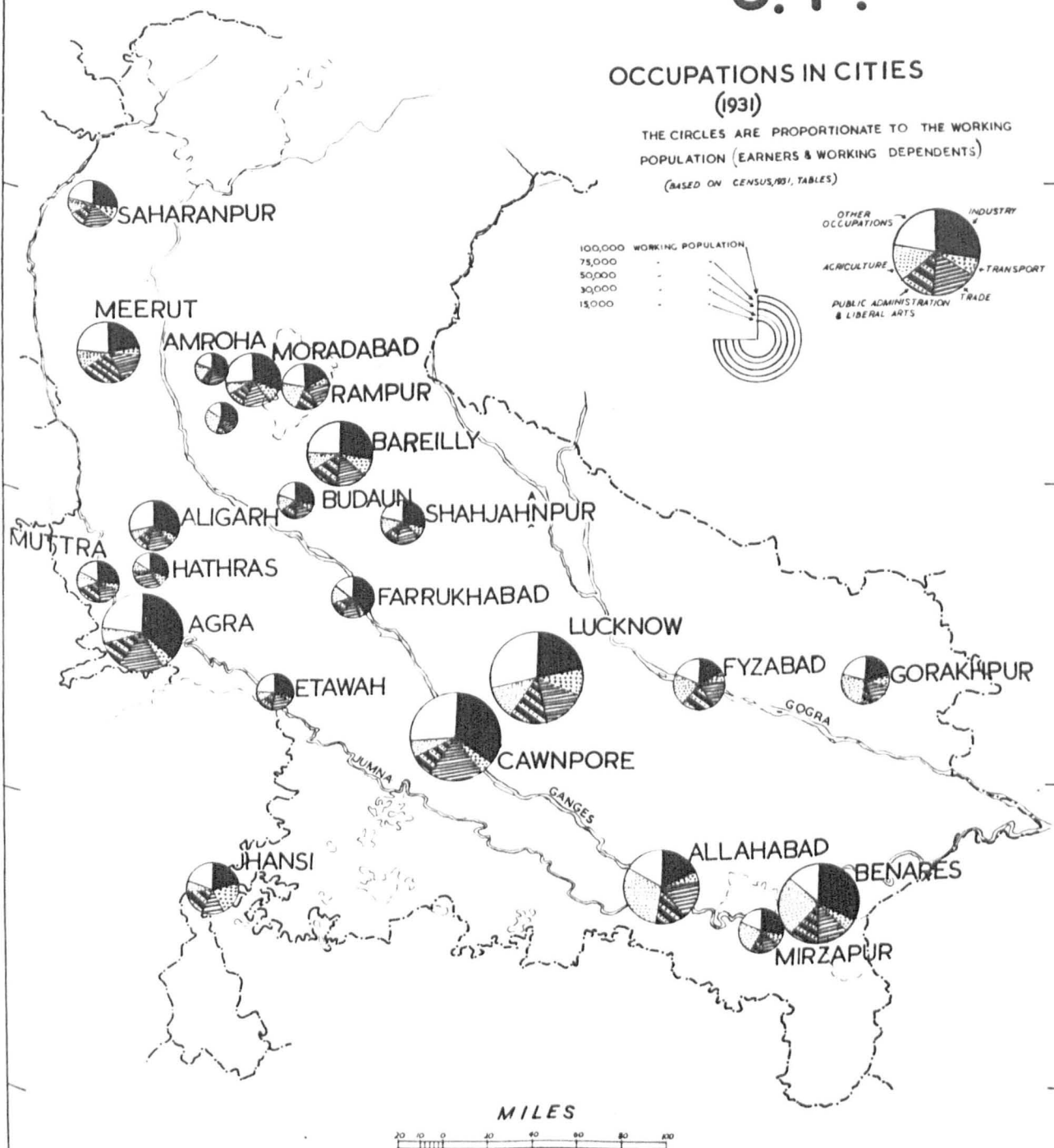
³ This census heading included ordinary cultivation (engaging in 1931, 86% of those occupied in the exploitation of animals and vegetation); cultivation of special crops, fruit, etc, forestry, stockraising and fishing and hunting.

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OCCUPATIONS IN CITIES (1931)

THE CIRCLES ARE PROPORTIONATE TO THE WORKING
POPULATION (EARNERS & WORKING DEPENDENTS)

(BASED ON CENSUS, 1931, TABLES)



percentage higher than 12. In the multifunctional city of Lucknow this figure reached 11.6%, but in the industrial city of Cawnpore it was the minimum (5.7) while it ranged roughly between 6 and 10 in the industrial and commercial centres of Agra, Aligarh, Bareilly, Meerut, Moradabad, Hathras, Etawah and Jhansi. We may generalise and say that the cities of the province north and east of the Ganges were in 1931 more 'agricultural' in their function than those (except Allahabad and Mirzapur) to the west and south of it.

Coming to the main occupation of the cities viz. industry, the map may appear misleading. The impression that it gives is that cities like Farrukhabad, Benares, Aligarh or Etawah were respectively to their size as much industrial as Cawnpore. The reason is that the figure for population engaged in factory industries is not given separately from those engaged in cottage or small scale industries. Thus while the percentage of industrial population to the total working population was a little less in Cawnpore than in Farrukhabad, most of the industries of the former were large scale factory type while almost the entire industries of the latter were non-factory type. From the detailed functional description of the cities that is to follow and from a comparison of the figures (62 and 63) it will become clear that the industries of the majority of the cities at least in respect of workers are ^{to a great extent} non-factory type. These are either those small scale and cottage industries the products of which are exported from the centre of production or such local industries as barely meet the needs of the city population. The word industry according to the census ~~includes~~ includes such varied processes as textile manufacture, engineering, working in hides, and skins, wood, stone, and metals; pottery, all the food industries, chemical industries, industries connected with dress and toilet, and building etc.

The map brings out the leading place of industrial occupation in most of the cities, the only exceptions being Allahabad, Gorakhpur, Rampur, and Sambhal where agricultural occupations led and Meerut and Fyzabad where the proportion of the population occupied in 'public administration and liberal arts' was slightly higher than that in industry.

The proportion of those engaged in transport was exceptionally high in Jhansi owing to the presence of the railway colony. Similar was the cause of a considerable proportion of such persons in Lucknow.

The striking feature about the commercial function was that the proportion of the working population engaged in trade in the different cities was rather uniform roughly ranging between 15 and 20 per cent. Hathras presented an outstanding departure from the rule - with 28.3%. The percentage of commercial occupations in the important trading cities of Cawnpore, Agra, Aligarh, Saharanpur, Etawah and Shahjahanpur was near about 20.

'Public administration and liberal arts' include varied occupations e.g. military, police and administrative services and religious, legal, medical and educational professions etc. That the proportion of such occupations should be high in important administrative cities like Lucknow, Allahabad, and the 'princely' city of Rampur was but natural. The high proportion of this category of occupations in Meerut, Jhansi and Bareilly was, however, due to the presence of large cantonments. But the notably high share of such occupations in Fyzabad (Fyzabad-cum-Ajodhya), Mittra and Benares was due to the presence in these cities of a considerable number of the priestly castes¹

¹ Turner, A.C., Census, 1931, U.P., Tables, (op. cit.), p. 424.

'Other' occupations include miscellaneous non-agricultural activities of undefined nature. Most important in the group were those engaged in domestic service, or the labourers and workmen otherwise unspecified. The proportion in such occupations was higher in the bigger cities than in the smaller ones.

This examination of the functional character of the cities in 1931 (in the absence of any other later data for a quantitative analysis of functions) has given us a general background from which we can proceed to a detailed study of the cities as centres of urban functions and to an indication, as far as is possible, of the way they serve and are served by the surrounding areas.

Cawnpore (487) the largest but the youngest among the cities of the province, is pre-eminent in respect of industries and commerce. Its tributary area covers, and even extends beyond the confines of the province. Out of a total of 670 factories¹ in the U.P. during the year 1941, engaging 230,859 persons 129, employing 82,732 persons were located at Cawnpore alone. The growing concentration of large scale industries in the city has been a feature of recent years for out of 959 factories² engaging 275,413 workers in 1945 Cawnpore had 177 employing 116,198 workers. Thus 35 and 42% of the entire factory workers of the province were concentrated at Cawnpore in 1941

¹ Large Industrial Establishments in India, 1942, (Delhi, 1946).

² Labour Bulletin (U.P.), No. 3, July - Sept. 1946, (Cawnpore), pp. 76-95; hereafter cited as Labour Bulletin No. 3, (1946).

* All the facts and figures in this chapter regarding factory industries of the cities in 1941 are based on this publication.

and 1945 respectively. In 1931 the percentage of those engaged in industries (both factory and non-factory type) to the total population of the city was 14.3. This figure must have subsequently gone much higher for in 1941 the percentage of only those engaged in factories to the total population of the city was 17. In 1941, 37 out of 67 textile mills and 61.6% of workers in such factories were concentrated in Cawnpore. In respect of tanning and leather manufactures also the city is unequalled in the province ⁽¹⁹⁶³⁾ and in 1941 out of a total of 23 such works in the province Cawnpore had 14 engaging 88.7% of the workers in this industry. During the last (1939-45) war Cawnpore became an important centre of ordnance factories. The already existing Harness and Saddlery factory engaged 10,338 workers in 1941. Various factories connected with requirements for the war came into existence subsequently, and among the largest of these were the Government Ordnance (Gun) factory and the aeroplane (fitting and repairs) works. The city is also one of the most important flour-milling centres of the U.P. Thus in a predominantly rural country Cawnpore enjoys a remarkable industrial status and a rather unusual concentration of large-scale industries.

As a consequence of its industrial importance Cawnpore is probably the largest centre of employment in the province. An appreciable proportion of those (especially the landless labourers) who are unable to earn a subsistence from the land, are attracted by Cawnpore. According to the census¹ of the birthplace of workers in 1931, 51.7% of the operatives were born in Cawnpore district (48.8% in the municipality itself), 22.2% came from the

1

Turner, A.C., Census of India, 1931, United Provinces of Agra and Oudh, Vol. XVIII, Part I, Report (Allahabad, 1933), pp. 421-422.

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DISTRIBUTION OF FACTORY INDUSTRIES IN TOWNS WITH 500 AND MORE WORKERS

(1941)

WORKERS	10,000	5,000	1,000	500	100
TEXTILE					
ENGINEERING					
HIDES & SKINS					
FOOD					
OTHER INDUSTRIES					



MILES
20 10 0 20 40 60 80 100

contiguous districts of Unao, Fatehpur, Hamirpur, Jalaun, Etawah, Farrukhabad, Hardoi and 26.5% from the outer districts of the province mostly from Oudh and the eastern districts. The subsequent industrial growth of Cawnpore has attracted to an appreciable extent the labourers who, as a result of excessive pressure of population especially in Eastern U.P. previously emigrated to the industrial and plantation areas outside this province.

On account of its¹ fairly central location and nodality (the city lies on the Grand Trunk Road, the Saugor-Jhansi-Oudh trunk road, the main line of the East India Railway, and is a focus of several other railways and roads) and its large-scale manufactures, the commercial function of Cawnpore is second only to its industrial activities. It is one of the main wholesale assembling markets (Fig. 65)² of Northern India for several commodities, the more notable among which are wheat (from³ the Punjab, C.P., Eastern U.P.), rice (from Burma, Trans-Gogra Plain and Nepal), gram (from Bundelkhand and Eastern U.P.), 'arhar' (from Bundelkhand and Eastern U.P.),

1. Cawnpore is a distributing market of all the surrounding, if not all-India. It is nearer to Calcutta than Bombay by 156 miles, the respective distance from the two ports by rail being 684 and 840 miles. All the distances between towns refer to those by rail.

2. The whole of the province with the exception of a few districts served by the map is based on:-

by which the whole of the province with the exception of a few districts served by the map is based on:-

(a) Report on Fairs, Markets etc. (1943) pp. 123-24.
(b) Report on the Marketing of Sugar in India and Burma, Marketing Series No. 39, (Delhi, 1943), pp. 339-344: hereafter cited as 'Marketing of Sugar'.

(c) Report on the Marketing of Wheat in India, Marketing Series No. 1, (Delhi, 1937), pp. 400-401.

(d) Report on the Marketing of Barley in India, Marketing Series No. 51, (Delhi, 1945), p. 65.

(e) Report on the Marketing of Linseed in India, Marketing Series No. 8, (Delhi, 1938), p. 302.

(f) Report on the Marketing of Hides in India and Burma " " " 36 (Delhi, 1943)

3. Vatal, J.S., Report on the Industrial Survey of the Cawnpore District of the United Provinces, (1924), hereafter cited as 'Industrial Survey, Cawnpore District'.

oilseeds (from all over the U.P. but mostly from the submontane districts), cotton (from the U.P. and Central Indian States) and hides and skins (from almost every district of the province as well as from the Punjab). Cawnpore, handling 9,000 hides daily, is indeed the largest¹ hide market in India after Calcutta. While distant areas are tapped by railways agricultural produce of the marts in the surrounding districts viz. Lucknow, Farrukhabad, Unao, Aunija (Etawah), Bindki (Fatehpur) and Kalpi (Jalaun) arrive by bullock cart. In 1923 'about one lakh carts, each containing 20 maunds of grain on an average, arrived annually in Collectorganj mandi'². It is a centre for the hand woven cloth from important producing towns e.g. Benares, Tanda and Mau. Cawnpore is a big market for gold and silver importing the metals from Calcutta and Bombay.³ Ornaments manufactured at Shahjahanpur, Jubbulpore Katni, Delhi, Agra and Lucknow⁴ are sent there as are also metal utensils⁵ from Benares, Farrukhabad and Hathras.

The distributing role of Cawnpore is consequently very important. "Cawnpore is a distributing centre of cloth of provincial, if not all-India repute. It supplies foreign, Indian mill-made and hand-woven cloth to almost the whole of the provinces with the exception of a few districts served by Delhi"⁶. Some cloth is also supplied by Cawnpore to the adjoining

¹ Report on the Marketing of Hides in India (Delhi, 1943), p. 205.

² Industrial Survey, Cawnpore District, (op. cit.), p. 23.

³ Ibid., p. 15.

⁴ Ibid.

⁵ Ibid.

⁶ Ibid., p. 26.

⁷ Industrial Survey, Cawnpore District, (ibid.), p. 62.

provinces and states especially C.P., Bihar and Nepal A...B. Hides are exported from the Cawnpore market to Bundelkhand, Agra, Delhi, the Doab, Rajputana, Central India and to the sea-ports of Madras and Calcutta, whence they are shipped to foreign countries.¹ Tanned leather is exported to all the districts of the U.P. Large quantities of boots, shoes, handbags, harness etc. are distributed to the province and outside. Cawnpore distributes² wheat flour to the cantonment cities of Lucknow, Jhansi, Farrukhabad, and Bareilly while 'dal' (husked pulses) of gram and arhar is exported³ to the province, Calcutta, Bombay, and places in Rajputana. Rice from Nepal and Trans-Gogra plain is exported⁴ to Bundelkhand, the Doab and Rajputana.

The localisation of industries at Cawnpore is to a great extent associated with the growth of the town as an important commercial centre at a fairly early date. The history of trading at Cawnpore begins⁵ with the establishment A. ~~The City is one of the most important~~ of an agency of the East India Company there and the selection of the place as a cantonment in 1773 for the dual purpose of affording protection to the European business men and guarding the Oudh territory against Marathas. Owing to its location on the Ganges, which was then the main artery of trade in the province, and later on the Grand Trunk road (completed about the forties of the nineteenth century) it began to function as an important trade centre exporting the agricultural products of the North-Western Provinces to the port

A. The city is one of the most important distributing centres of yarn (manufactured locally or imported from other centres) for the handloom industry of the province. B.

¹ Ibid. p. 31.

² Ibid. p. 22.

³ Ibid.

⁴ Ibid.

⁵ D.G. Cawnpore, (1909), p. 75.

of Calcutta and importing and distributing foreign goods from the latter. With the growing concentration of European and native business men it absorbed the commerce of the surrounding emporia. Thus it intercepted the trade that formerly passed between the Doab through Farrukhabad and Etawah on the one hand and Calcutta on the other. Similarly it absorbed the trade passing between Bundelkhand and Oudh. As early as some years before the mutiny it had become a great collecting centre of grain, hides and skins and country cloth. Subsequently the construction of the metalled roads to Oudh and Bundelkhand, and the railway from Calcutta to Delhi and later from Cawnpore to Bombay and also the excavation of the Ganges canal gave added impetus to its trade. The railway connected it to the cotton-growing districts of the Western U.P., Bundelkhand and Central India and the cotton that formerly passed along the Jumna towards Mirzapur and Calcutta, or was collected at smaller towns in the cotton zones of the province, was diverted to Cawnpore.

The cotton textile, sugar and milling industries of the city are, therefore, due to its early growth as an important collecting centre of the raw materials of these industries and to European enterprise and initiative. The location of the tanning and leather industry is associated with the initial fact that Cawnpore was an important cantonment town and the presence of a government arsenal and ordnance dept created a large demand for leather goods needed for the army. "As the supply was obtained solely from the bazars, there soon sprang up a large native industry in boots, harness and accoutrements, which were exported to all parts of India. All the saddlery and the like required for the Company's forces was obtained from Cawnpore contractors."* The presence of a large number of Chamars in the district

* D.G. Cawnpore (1909), p. 77.

helped the growth of the industry. The numerous dealers in hides and skins who were attracted to Cawnpore began to tap these commodities from almost all the districts of the province through their local agents.

The industrial and commercial importance of Cawnpore is indicated also by the map (Fig. 64) showing the distribution of banks¹ in the towns. The city with 13 banks was equalled only by Benares. In respect of administration functions Cawnpore is nothing more than a district capital while its sphere of influence in the educational and medical services is also very restricted. The city is an important military station, the population of the cantonment being c. 35,000 in 1941, second only to that of the cantonment at Meerut.

Lucknow (387), the second largest city, is 41 miles north-east of Cawnpore, and is one of the most important road and railway junctions of the province. Its functions are very different from those of Cawnpore. As a factory town Lucknow is insignificant compared with Cawnpore. In 1941 53% of the factory workers of Lucknow were engaged in railway workshops which do not impart any industrial status to the city. As the map^(49.63) shows in respect of textile

¹ The remark of the Provincial Banking Enquiry Committee, 1929-30 viz. "nothing resembling the banking habit which exists in England at present exists in India" is still very largely applicable. The primary reason is the lack of education resulting in a want of 'that confidence which is so essential to any banking system'. Moreover owing to the fact that a considerable amount of financing is done by the indigenous bankers of the country called 'sarrafs' (shroffs) the number of banks is small. Of late, however, banks have been growing in number and the map is a fair index of the commercial and industrial importance of the various cities and towns. The figures of banks have been taken from 'Statistical Tables relating to banks in India and Burma for the years 1942-43' (Bombay, 1944), pp. 64-85.

U. P.

DISTRIBUTION OF SCHEDULED BANKS IN TOWNS

EACH DOT REPRESENTS ONE BANK

(BASED ON STATISTICAL TABLES RELATING TO
BANKS IN INDIA AND BURMA FOR THE YEARS 1942 & 1943)



or food industries too the city enjoys no notable position. While there was an increase between 1941 and 1945¹ of 40% in the factory workers of Cawnpore, in the case of Lucknow it was only 19%. It is, however, an important centre for printing and book-binding and contains a large paper factory. The non-factory industries of Lucknow are of some importance. Since the days when the Nawabs of Oudh ruled, it has been the home of certain art industries² e.g. 'chikan' embroidery (embroidery with white thread on white transparent, thin material like linen or silk), gold and silver lace making, jewellery, gold and silver wire industries and the manufacture of silver and gold leaf. Other industries for the disposal of whose products Lucknow commands an extensive market are calico-printing, the manufacture of chewing and smoking tobacco and perfumes the origin of all of which can be traced to the Nawabi days when the patronage of the court and gentry encouraged the growth of these industries.

The commercial importance of Lucknow, can in no way be compared to that of Cawnpore, but it is probably greater than that of other eastern cities viz. Allahabad and Benares. It is an important assembling market for wheat, rice, tobacco, potatoes, sugar, hides, and skins (Fig. 65). The products of the art industries are exported to all parts of India while the gold and silver manufacturers (ornaments etc.) are imported by all the districts of Oudh.³ The paper mill commands a wide market, there being no

¹ 'Labour Bulletin, No. 3,' (1946), pp. 89-95.

² Ghoshal, B.K. Report on the Industrial Survey of the Lucknow District of the United Provinces. (1923): hereafter cited as 'Industrial Survey, Lucknow District.'

³ 'Industrial Survey, Lucknow District' (1923), pp. 59-62.

other paper factories in the province except in the Doab cities of Saharanpur and Meerut. Lucknow tobacco is popular in an extensive area of Northern India especially in the U.P., Bihar and Benagal.¹ The printed calico for which cotton cloth imported from Bombay and Cawnpore, and satin from Azamgarh is used is distributed to all parts of India.² In the number of banks Lucknow is now next only to Benares and Cawnpore.

In administrative and cultural importance, Lucknow is probably unrivalled by any other city of the province. It serves as the capital of the U.P. and as the headquarters of the Oudh province and the Division and district of Lucknow in respect of all of which it is centrally situated.

Interspersed with gardens and palaces, with ample facilities for entertainments, rich in the cultural refinements of Nawabi days (which have hardly died out), with a pervading touch of nicety about every thing and with a comparative absence of factories and slums, Lucknow exercises a strong centripetal force non-existent in the case of most cities of the province. The

residential function of Lucknow, therefore, is significant and probably more so than in any other city of the province. It is probable that the city has been built on a site where people will be found merely 'living' in it than in any other city of the Ganges Plain. Lucknow is the most important educational centre of Oudh, containing one of the residential universities of the U.P. and several colleges and schools. It is pre-eminent in the whole province in respect of medical services. Two of the four English daily newspapers published in the U.P. come from Lucknow and serve a wide area, particularly Oudh. So

¹ Ibid., p. 71.

² Ibid., p. 73.

while industrially and commercially Cawnpore dominates the province, culturally Lucknow remains unrivalled and eclipses the former.

The city of Agra (284) almost equidistant from Bombay and Calcutta (839 and 843 miles respectively), and next to Lucknow in size, is industrially akin to Cawnpore. Agra is the second largest centre of textile and leather industry (Fig. 63) in the province. It almost doubled the number of its factory workers between 1941 and 1945. It is noted for several cottage industries¹ and the city has retained some of the industries which flourished in it when it was the imperial capital of the Mughals. Notable among these are the making of gold and silver lace, silk embroidered felt caps, jewellery, woollen pile carpets, durries (cotton carpets) and stone carving. The most important cottage industry is that of the manufacture of shoes of a European style. The shoe-makers' shops are "so numerous that there is hardly any mohalla (ward), street or lane where one does not find a shoe factory as the shoemaker's shop is called."

There are various factors which have contributed to the location of cotton textile industry at Agra. Since Mughal days the city has been one of the main centres of cotton, silk and carpet weaving in the province. There was consequently a considerable number of cottage workers who provided labour to the modern mills. Agra is located in the midst of the cotton zone of the U.P. and surrounding areas and it became an important centre of the cotton trade after the advent of metalled roads and railways. Another important factor, as elsewhere, was the influx of European capital

¹ Zia-ur-rub, M., Report on the Industrial Survey of the Agra District of the United Provinces (1924), hereafter cited as 'Industrial Survey, Agra District'.

2. Ibid. p. 58.

and initiative. The origin of the leather industry can be traced to Mughal days when embroidered and otherwise decorated shoes were made in the city for the court and the aristocracy. The manufacture of modern shoes on iron lasts is relatively recent and the art was imported from Cawnpore about the eighties of the last century. Two large factories were established de-

living much of their raw materials from the slaughter houses in the local cantonment and city, and labour from the numerous members of the Chamar community. The factories, however, closed subsequently. "On the closing of these factories the unemployed artisans began to make shoes on iron lasts at Agra. Their shops served the purpose of technical schools for the training of a number of local Chamars and some Muslim shoemakers."† It is owing

to the presence of trained leather working communities and the growth of the city as a centre of trade in skins and hides that the modern tanning and leather factories have come to be located here.

With its frontier location (near the tract where the Ganges Valley merges with the Central Indian tableland in the south and Aravalli region to the west and where there is a consequent exchange of the products of the two regions) and a high degree of nodality, Agra is an important trade centre. It is a considerable assembling market for wheat, barley, hides and skins (from the Doab). It is also an important collecting centre for other food grains (from the Doab), cotton (from the Middle Doab and Gwalior) and stone (from adjoining Vindhyan and Aravalli areas). It re-exports food grains to

† Industrial Survey, Agra District, (1924), p. 56.

Ibid, p. 61.

Ziaurrah, M., "Report on the Industrial Survey, Agra District, p. 211-211.2). The information given refers only to rail-borne trade of the city.

areas outside the province e.g. Gujrat. It is an important distributing¹ market for gur the bulk probably going to the non-sugar producing area of Rajputana. Cotton cloth and yarn are supplied to the Middle Doab. Stone too is usually distributed to the same tract. Agra is one of the largest centres of the shoe-trade in India.² The industry serves areas even outside the province.

Agra, a university city, is the capital of the district and the division while its sphere of influence in respect of educational and medical services is extensive. It attracts tourists from all parts of India and even abroad their chief interest being the Taj Mahal (whose beauty baffles judgment) and Fatehpur Sikri, the abandoned Mughal city not far away.

The ancient city of Benares (263) lying on the Grand Trunk Road and a focus of several railway lines and roads is functionally very different from the cities described above. Here non-factory industries predominate and factory industries do not occupy more than an insignificant position. In 1941 the factory workers numbered 3,972 persons about half of whom were engaged in textile manufacture (by the 'Benares cotton and Silk Mills'). The industrial importance of Benares consists in its handloom weaving industry. About 1940 the city contained³ nearly 2,5000 looms and 50,000 weavers. Though the proportion of weavers engaged in cotton spinning and weaving is slightly larger than those in the manufacture of silken fabrics and cognate crafts, it is for the latter that Benares is famous. "All the

¹ 'Marketing of Sugar', (1943), p. 344.

² Industrial Survey, Agra District, (op. cit.), p. 58.

³ Report of the Fact-Finding Committee (Handloom and Mills), (Calcutta, 1942), pp. 66 and 313.

raw material is imported and the origin of the silk trade at Benares seems to be due to the advantages of the place as a market consequent on the perpetual influx of pilgrims to the sacred city".¹ The fabrics produced at Benares consist of every variety² of silk ranging from the coarsest 'tassar' (cloth made of the tassar silk or a mixture of silk and cotton) to the most elaborate brocade. The latter under the name of 'kamkhwab' (Kincob), has wide celebrity. Other noted products are seris and 'sanjafs' (borders) etc. The work is carried on in several hundred small manufactories. Benares is also noted for embroidery in silk, satin, gold and silver thread, and for jewellery. These silk manufactures of Benares command a favourable market not only in the U.P. but also throughout the length and breadth of India. Another important industry serving wide areas is the manufacture of brassware. The growth of the industry at a religious city like Benares is natural. The articles manufactured consist mainly of the images of deities and ordinary vessels required for Hindu domestic use (some sanctity is attached to brassware by the community) and ceremonial observances.

The export trade of Benares consists mainly of the articles it manufactures. In respect of imported goods it does not serve an extensive area. The city is an assembling market for wheat, linseed, gum, tobacco and hides and skins (Fig. 65). The bulk of the imported food grains, however, is consumed locally. Of the gum it collects from the surrounding country, part is sent to Central India and Calcutta.³

¹ Review of the Silk Industry in India, p. 10.

² D.C. Benares (1909), p. 59.

³ Report of the Fact-Finding Committee. (Handloom and Mills) (1942), p. 142.

⁴ Marketing of Sugar, op. cit., (1943), p. 341.

The religious function of Benares may be regarded as one of the main causes of its prosperity. The sanctity of the place, also known as Kashi (luminous) is due to its being regarded as the first spot on the earth created by the god Vishnu. The ancient boundary is still religiously preserved by an unmetalled road called Panchkosi (of five (panc h) kos, a kos being about two miles), the scene of many festivals and processions in commemoration of the story. The road encloses a roughly circular area about ten miles in diameter lying west of the Ganges.

"The influence of Kashi is strongly felt from the Himalayan to Cape Comorin : princes from even the most distant parts have residences within the sacred precincts, and the population is in consequence of a most cosmopolitan character".¹ Pilgrims from every nook and corner of India visit Benares at all seasons of the year. The city, especially the riverside is studded with temples and 'akharas' (monasteries). According to the census of 1931 about 3,600 persons¹ were occupied in priestly service there. The gathering of pilgrims is especially large on occasions of festivals or eclipses. The constant influx of pilgrims affords an opportunity for business to traders, manufacturers, and priests alike. Benares, besides being the capital of the district and division is an important educational centre with a university and several colleges and schools. East of Allahabad, Benares is the most important administrative, educational and cultural focus in the province while its eminence in respect of silk fabrics and as a pilgrim centre is of a national character.

¹ A.C. Turner, 'Census 1931, U.P. - Tables' p. 424.

D.G. Benares (1909) p. 238.

Allahabad (261), another ancient city (the existing settlement and fort however, only dating back to Akbar's time), situated on the celebrated confluence of the Ganges and Jumna, an important focus of routes, till recently the capital of the province, and still the seat of the High Court, is industrially rather unimportant. In 1941 there were some 7,000 factory workers in the city, 62% of whom were employed by the arsenal (in the fort) which owes its origin to the fact that Allahabad became the seat of a large cantonment since the inception of British government; and another 28% by the printing and book-binding establishments. Among the cottage industries none enjoys a noteworthy position.

Allahabad is not a trade centre of any great note, though its position on the main routes gives rise to a heavy through traffic.¹ As a commercial city it lags far behind Cawnpore, Lucknow or Agra and can hardly compare even with Benares². The commodities assembled in the city are largely meant for local consumption. Foodgrains from the wholesale marts scattered³ over the districts of Allahabad and Partabgarh are collected here. The exports of the city include the famous tiles and glass products (of the local and Maini glass factories) which are distributed all over the province. In the number of banks Allahabad ^{almost} equals Lucknow which may partly be due to the relatively large proportion of literate population (the percentage³ of literates to the total population aged five years and over in 1931 in the cities of Allahabad, Benares, Lucknow, Cawnpore, and Agra was 29, 23, 19,

¹ D.G. Allahabad, (1911), p. 65.

² Vatal, J.S., Report on the Industrial Survey of the Allahabad District of the United Provinces, (1923), p. 23.

³ Turner, A.C. Census, 1931, U.P. Report, (op. cit.), p. 455.

D.G. Allahabad, (1911), p. 65.

18 and 17 respectively). Allahabad is the pre-eminent educational centre of the province with a residential university (the oldest in the U.P.) and several colleges and schools, making the educational function one of the chief distinctions of the city. Its importance as a centre of legal activity is great and after Lucknow it contained the largest number of lawyers¹ in 1931. The concentration of educational and administrative functions has naturally resulted in the growth of the large number of printing and book-binding establishments, the most important of which is the Government press (employing 1,273 persons in 1941) - the biggest establishment of its kind in the province. The cantonment at Allahabad ranked fifth in 1941 in respect of population.

The religious function of Allahabad is probably surpassed by no centre except Benares, its number of priestly population in 1931 being second only to that of Benares and Ajothya.² "It ~~contains~~ claims to be the tirath-raj or foremost of holy spots."³ It is the seat of one of the largest melas (fairs) in the province, held in the month of 'Magh' (Dec. - Jan.). "Every tenth year, occurs a kumbh (mela) and on such occasions a vastly greater concourse assembles The Kumbh of 1906 was attended by about three million people, whereas in ordinary years the total ranges from 300,000 to 500,000..... Between the Jumna bank and Daraganj a small town springs up, with shops, huts, a tahsil, police stations, preaching booths and places of entertainment. A large amount of trade is carried on not only in food-stuffs for the pilgrims, but also in piece goods, brass vessels

¹ Turner, A.C., 'Census, 1931, U.P. Tables' (op. cit.), p. 426.

² Ibid, p. 424.

³ D.G. Allahabad, (1911), p. 67.

and images, embroidered caps, jewellery, books, rosaries, and other sacred objects, and in all manner of articles, traders flocking hither for the fair from all parts of India."¹

The other cities of the U.P., all with a population below two lakhs do not appear to make their influence so much widely felt as the foregoing five cities. The smaller cities, though of provincial importance in certain respects, are regional foci of urban functions.

Of the remaining Doab cities Meerut (169) is the premier city of the Upper Doab. Industrially, however, Meerut is relatively unimportant and cannot compare with Aligarh or Saharanpur. It had ten factories in 1941 (engaging about 2,400 persons) notable among which were the sugar works and the paper mills, deriving their raw materials from the canefields of the district and grass and bamboo of the Bhabar forests. Among the non-factory industries Meerut is noted² for coarse cotton cloth, soaps and scissors. Owing to its location in the heart of the richest part of the province Meerut enjoys great commercial importance. It is one of the chief assembling markets in the Upper Doab, for food grains, 'gur', potatoes, cotton and tobacco (Fig. 65). It is the second largest wheat-assembling centre in the district and third in the division (the first two being Hapur and Muzaffarnagar³). Meerut, again, is the second⁴ most important gur assembling centre in the province. It redistributes wheat to the other trade-centres of the province (especially Cawnpore, Agra and Allahabad) and to Delhi.⁵ It

¹ D.C. Allahabad (1911), pp. 69-70.

² Zia-ur-Rub, M., Report of the Industrial Survey of the Meerut District of the United Provinces, (Allahabad), (1923).

³ Report on Fairs, Markets etc. (1943), p. 123.

⁴ 'Marketing of Sugar' (op. cit.), p. 339.

⁵ Industrial Survey, Meerut District, p. 15

exports gur to Delhi, the Punjab and Rajputana. The grain warehouse at Kaisarganj (Meerut) is one of the largest of its kind in the province. Besides being the headquarters of the district and Division, Meerut is the only centre with a college teaching to degree standard between the Siwaliks and Aligarh. Under the British regime the city was the headquarters of the Meerut military district which comprised the garrisons at Meerut, Roorkee, Landour, Chakrata and Delhi.¹ According to the census of 1941 Meerut was the seat of the largest cantonment in the province, with a population of 52,000. We may mention here that the present distribution and size of cantonments in the province are related (i) to the political significance of a town before the advent of the British rule and (ii) to the extent of the notoriety it gained during the Mutiny. Soon after the Cession garrisons were established at such centres which had been the seats of native rulers e.g. Benares, Farrukhabad, Bareilly or such strategic towns as Agra, and Allahabad. The garrisons were subsequently enlarged at the main seats of the Mutiny and the present size of the cantonment is, except Dehra, to a great extent degree an index of the extent of disturbance at the various centres. Meerut, where the Mutiny started, has today the largest cantonment while the other main centres of the trouble viz. Cawnpore, Agra, Lucknow, Allahabad, Bareilly and Jhansi came next in order of size.

THE DISTRICT OF MEERUT IN THE PROVINCE OF UP

1. D.G. Meerut, (1904), p. 275.

Aligarh (113) on the Grand Trunk road and 49 and 80 miles from Agra and Delhi respectively, the largest city of the Middle Doab and more than half as large again as the second largest city of the area viz. Farrukhabad (69) enjoys considerable industrial and commercial importance. Located in the cotton zone it is noted for its several cotton gins and presses and a cotton mill. Aligarh is also an important centre of handloom weaving.¹ The most important industry of Aligarh, however, is the manufacture of locks on a non-factory basis. "There is hardly any street in the town which does not have a few houses where locks are manufactured and a large quantity of locks are made in the villages and brought to the city for sale."² The origin of the lock industry at Aligarh can be traced to the Postal Workshops established here about 1842*. The workshops have served as a training ground for large numbers of mechanics who subsequently took to the manufacture of locks on cottage lines. Soon after the Mutiny the workshops were enlarged in size and scope and employed some 2,000 persons and almost every part of India was supplied with postal vehicles and other requirements in the shape of locks, bags, badges, belts, letter boxes, seals, stamps and printed forms etc.

Owing to a relatively large acreage under fodder crops and more grazing grounds the milch cattle in Meerut, Agra and Rohilkhand divisions are healthier than elsewhere in the province and trade in milk and ghi is

1 Jaffrey, H.R. Report on the Industrial Survey of the Aligarh District of the United Provinces, (1924), p. 36: hereafter cited as 'Industrial Survey, Aligarh District'.

2 Ibid, p. 22.

D.C. Aligarh (1909), p. 61.

a common subsidiary occupation of many agriculturists in the western U.P. The dairy near Aligarh has, therefore, a very advantageous location. It has a network of branches¹ in Aligarh, Bulandshahr, Agra, (Delhi), and Muttara districts which collect milk and after separating cream from it, despatch the latter to the Aligarh dairy for conversion into butter. A large quantity of butter is exported to all parts of India. The city is an important wheat mandi. It has also a considerable trade² in the other products of the region e.g. barley, oil-seeds, cotton, and ghi. The educational function of Aligarh is notable and the prosperity of the city is partly due to the University which had on its rolls³ 3,422 students in the session 1944-45. (This figure in the case of Allahabad, Lucknow, Agra, and Benares Universities respectively was 2,905, 3,049, 6,920 and 4,073).

Saharanpur (108), the only other centre in the Doab with a population over one lakh, is a 'frontier' city near the zone of contact between the Himalayan region and the Ganges Valley and consequently enjoys proximity to the products of both the regions. According to the statistics of 1941, in respect of factory industry Saharanpur was second in the Doab though an extremely distant second to Cawnpore, with 3,441 workers. It has two large paper mills (based on the Bhabar grass and bamboo) engaging about 1,300 persons (1941), the only tobacco factory of the province (1,518 workers in 1941) and a sugar mill. Among the non-factory industries of the city handloom weaving and wood carving (in which Shisham, Tun, Dudhi obtained

¹ 'Industrial Survey, Aligarh District' (1924) p. 32

² Ibid, p. 6 - 7.

³ ~~Annual Report on Public Instruction in the United Provinces for the year~~
Annual Report on Public Instruction in the United Provinces for the Year Ending 31st March, 1945, 1946, p. 19.

from the Siwalik and Bhabar forests are used) are the most important.¹ Saharanpur "sucks the trade of the greater part of the district from the Siwaliks on the north as far as Nakur and Rampur in the south and Haraura on the east. The trade is mainly in wheat, gur, tobacco, vegetables, and fruits, cotton, and jungle produce".²

The next and the much smaller city of the Doab viz. Farrukhabad - cum-Fatehgarh (69), with a rather 'out - of - the way' location in respect of the main routes of today, youngest among the cities of the province (except Cawnpore) is a somewhat stagnant centre in respect of population growth and has almost no factory industry. Its industrial importance depends on its cottage industries³ many of which probably originated in early 18th century when the city was the capital of Bangash Nawabs. The chief of these are calico-printing, the manufacture of 'durries' and tents, brass and copper wares in which latter there is a roaring business.

Farrukhabad had in 1923 125 'karkhanas' (small factories) and 33 firms⁴ dealing in this industry. While the hardware was despatched to Agra, Meerut, Cawnpore, Luc know and the Punjab the curtains printed here enjoyed a foreign market.⁵ The city is an important assembling market for potatoes and tobacco (Fig. 65) which are among the most important⁶ cash-crops of the

¹ Zia-Ur-Rub, M., Report on the Industrial Survey of the Saharanpur District of the United Provinces, (1924).

² Drake-Brockman, D.L., The Final Report on the Settlement Operations of the Saharanpur District, 1917-1920, (1921), p. 9.

³ Watal, J.S., Report of the Industrial Survey of the Farrukhabad district of the U.P. (1923).

⁴ Ibid, pp. 15-16.

⁵ Ibid, p. 36.

⁶ Season and Crop Reports of the United Provinces (1941-42 to 1944-45).

district in respect of acreage. It supplies tobacco mainly to Rohilkhand.

The population of the cantonment in 1941 was nearly ten thousands.

(53) Etawah about three-fourths of Farrukhabad in size, has few industries of note, its importance being due to its commerce. Owing probably to its fairly distant location from the other cities of the area viz. Agra, Hathras, Farrukhabad and Cawnpore, and Gwalior from each of which it is more than sixty miles away, it is a collecting and distributing centre for an extensive area. Wheat, cotton, ghi and oilseeds are sent there from the districts of Etawah, Mainpuri and from Gwalior state for export, while piecegoods, metals, rice, salt and sugar are imported for distribution over these tracts. Apart from the railway, the metal roads—the Gwalior - Bhind - Farrukhabad route and the Auriya - Shikohabad - Agra route are the main trade channels.¹ Etawah is the seat of one of the most important livestock fairs of the province.²

Hathras (47) is pre-eminently a commercial town. It enjoys a nodal situation on the junction of the main line of E.I.R. with Cawnpore - Achhnera (in Agra) railway, and on the crossing of the Muttra - Rohilkhand Trunk road with Aligarh-Agra road. It has "immense trade in cotton, grains, sugar, metals, cloth, oilseeds, and ghi."³ Large quantities of grains are attracted from Etah, Muttra, Budaun and Aligarh to Hathras which is one of the greatest⁴.

¹ D.G. Etawah (1911). p. 52.

² Report on Fairs, Markets etc. (1943) p. 7, N.B.: In this province, as elsewhere in India, the livestock fairs are usually held in villages or country towns. According to the report (pp. 7 and 110) about half of the 190 such fairs of the province are concentrated in the six central districts of Unao, Hardoi, Cawnpore, Etawah, Farrukhabad and Rae Bareilly and the most important livestock fairs in this province are held at Bateswar (a village in Agra), Makanpur (a village in Cawnpore), Dewa (a country town in Bara Banki), Etawah and Kakora (a village in Budaun).

³ D.G. Aligarh (1909), p. 245.

⁴ 'Industrial Survey, Aligarh District' (op. cit), p. 13.

distributing centres of grain in the United Provinces. As a result of its huge local and transit trade the town is full of market places and warehouses. Industrially too, Hathras is not unimportant. It is located in the heart of the cotton zone of the U.P. and after Cawnpore and Agra is the most important spinning centre in the province. Hathras had in 1941 three large spinning and weaving mills employing about 3,000 persons. It is the main ginning centre in the Middle Doab. Among those connected with food the splitting¹ of pulses is an important industry. Other non-factory manufactures for which Hathras enjoys a wide market are brass utensils, cutlery, and cart wheels.²

In spite of its commercial and industrial importance the growth of Hathras has not been remarkable. It was only one-tenth as large again in 1941 as it was in 1901. This is probably because other factors, besides trade, which contribute to the growth of a town or city are missing. Hathras is only a tahsil capital so it is of no administrative importance and as it is a town of the post-Mughal period predominantly settled by trading communities educational and cultural activities are limited. It ^{also} appears to suffer from the proximity of Aligarh.

The only other city in the interfluvium between the Ganges and the Jumna is the flourishing sub-Himalayan railhead town of Dehra Dun (78). Its good communication link with the Ganges Valley and phenomenal growth have been noted elsewhere. The residential function of Dehra is significant. The station, owing to its relatively high situation, is on the whole cooler than the areas south of the Siwalik Range and the wooded character of the foot-hills (Siwalik) "partly suppresses

¹ Ibid. p. 13.

² Ibid.

and partly moistens the scorching winds that blow during the hot weather in the plains. The climate therefore, is very favourable and has made Dehra a favourite resort¹ for the Indian aristocracy.

Dehra's commercial importance is a result of the resources of the Dun and the enclosing hills, and its location in a zone of contact where the nature of transport changes and products of the Himalayan area are exchanged with those from elsewhere. The Dun is the most important limestone and lime-producing tract of the province and Dehra the chief collecting centre of these materials which are supplied to Delhi, the Upper Doab and to Rohilkhand towns.² It is an important collecting and exporting centre of forest products viz. timber, (sal and 'haldu') and bamboos.³ Of agricultural crops it handles the export of tea⁴ (mainly green tea) and the much prized variety of rice 'basmati' from the Dun, also potatoes, from the Himalayan area.⁵

Industrially Dehra is unimportant except for a large government cement works which employed 1,383 persons in 1941. Dehra, however, enjoys military, administrative and educational importance. Containing the 5th largest cantonment of the province it is the seat of the Indian Military Academy, Royal Indian Military College, the Forest Research Institute and the map printing works and offices of the Geodetic Branch, of the Survey of India, most of these institutions being apparently located here owing

¹ D.G. Dehra Dun (1911). p. 37.

² Zia-ur-Rub, M., Report on the Industrial Survey of the Dehra Dun District of the United Provinces, (1923), p. 40.

³ Ibid.

⁴ The acreage under tea in the Dun was 5025 in 1944-45 (Season and Crop Report). The acreage was about the same in 1921 (Industrial Survey, p. 16), when the yield amounted to about a million lbs.

⁵ Industrial Survey, Dehra Dun District, (1923), p. 40.

to its relatively cool climate. The city contains several secondary schools, some of them primarily for European pupils.

The religious city of Muttra (81), on the trunk roads from Delhi to Bombay, and from Rohilkhand to Rajputana, and a focus of rail routes, enjoys a nodal location on the west bank of the Jumna. Though it has some trade, especially as a collecting centre of cotton, (Muttra has larger areas under cotton than any other district of the province), and *barley* its main function is religious. The main reason of its sanctity is the fact that Muttra is regarded as the birthplace of Krishna who is revered as the eighth incarnation of Vishnu.* Its industries, of cottage type, cater for the needs of pilgrims, the specialities being the manufacture¹ of silver toys and bead necklaces and cloth printing. The ornamental carving of red sandstone obtained from Vindhya of Bharatpur and Dholpur is also an important cottage industry.

The cities of Rohilkhand viz. Bareilly, Moradabad, Shahjahanpur, Rampur, Budaun, Amroha and Sambhal are comparatively closely situated to one another. This is partly traceable to the days when Rohilkhand, forming a frontier area of the empires of the Delhi Sultans and later of the Mughals, and peopled by rebellious Rajput clans, needed large garrison towns. All of these cities now (except Amroha and Sambhal) lie on trunk roads and the three largest are railway junctions.

¹ Main collecting and distributing centres for silver products. In brief, see Jaffrey, H.R., Report on the Industrial Survey of the Muttra District of the United Provinces, (1924).

* Imperial Gazetteer of India, Provincial series, United Provinces, Vol. I, (Calcutta, 1908), p. 389.

Bareilly (193), the most centrally situated city in Rohilkhand, is the premier urban settlement of the area. The factory industry of the place is increasing gradually and in 1941, 4,473 persons were engaged in factories, important among them being the match factory (the only important works of its kind in the province), the large bobbin factory, the carpentry works, the turpentine, catechu and soap factories, the flour mills, sugar works and the railway workshops. Both its chemical and wood works as well as its sugar factories are favourably ~~located~~ located with respect to their raw materials, the city being in the main sugar zone of the province and close to the sub-montane forests. Bareilly's industrial importance is also due to its cottage industries the most noteworthy of which are (i) the furniture (carpentry industry) on small factory basis using the Shisham growing in the district or imported from the Tarai and Nepal forests, and teak imported from Calcutta. (ii) handloom, weaving and art industries in wire and tinsel¹ the latter probably originating in the second half of the 17th century when Bareilly was the capital of Rohilkhand. As a consequence of its industries and its nodal location in a fertile tract, near the sub-montane forests, the commercial function of Bareilly is very considerable. It is one of the main rice assembling markets in the province, while as a mart for gur it² is probably the most important in Rohilkhand. It is a notable regional centre for the assembling of hides and skins and one of the main collecting foci for sub-Himalayan forest products. In brief, Bareilly is not only one of the main collecting and distributing centres of

¹ Saran, R., Report on the Industrial Survey of the Bareilly District of the United Provinces (1924).

² Marketing of Sugar (op. cit.), p. 340.

Rohilkhand but it also handles enormous trade passing between the Himalayan and sub-Himalayan and Nepal areas on the one hand and the rest of India on the other.

Besides being the capital of the district and the Division it is the only city in Rohilkhand where education is given to degree students and contains the 7th largest cantonment of the province.

Moradabad (142), the second largest city of Rohilkhand, 56 miles north-west of Bareilly, is unimportant in respect of factory industries with only seven factories (engaging 1,200 persons in 1941), the most important of which are the cotton spinning and weaving mills, the railway workshops and the 'metal works'. Yet the city enjoys a great industrial status due primarily to the manufacture of brass wares mostly on a cottage basis. The manufacture of ornamental brass and copper ware might have probably originated in the early 17th century when at the site of the village of Chaupala a governor of Shahjahan founded the city of Moradabad and shifted the provincial headquarters from Sambhal to this place.[†] The industry is at least a century and a half old.¹ The raw materials i.e. old brass articles are purchased from itinerant vendors or imported from Delhi, Mathras, Farrukhabad and Mirzapur etc.,¹ while sheet brass of foreign origin is also worked. The industry has in all probability been growing and so the following remarks written about 1923 may not be an exaggeration of the existing conditions: "seven or eight thousand persons (men, women and children) are engaged in the industry, and the number is on the increase

¹ Saran R., Report on the Industrial Survey of the Moradabad District of the United Provinces, (1923), p. 19. hereafter cited as 'Industrial Survey, Moradabad District.'

D.G. Moradabad (1911)p. 51.

[†] Moradabad appears to have remained the capital of Rohilkhand from c. 1632 to 1657 after which it gave place to Bareilly (D.G. Moradabad, L. 233 and D.G. Bareilly, L. 208)

as many persons are taking to the industry as a subsidiary occupation during leisure hours There are about 300 small factories, each employing eight to ten men; while 1,500 to 2,000 men are working independently. The annual output is approximately Rs. 13 lakhs worth of domestic ware and Rs. 2 lakhs of ornamental ware . . . There are more than 200 dealers in the city¹ Moradabad is also important in respect of sugar-refining and handloom weaving.² The bulk of the cloth manufactured in the district and in the surrounding tract of country (Bijnor, Budaun, Rampur etc.)³ is brought to the city for export. In the trade of agricultural produce the city is excelled by the much smaller town of Chandausi.

Shahjahanpur (110), the third city of Rohilkhand in order of size, 30 miles south-east of Bareilly, possesses a large Government clothing factory, the biggest industrial establishment in the province with 12,601 workers in 1941. Among the reasons for the establishment of this factory at Shahjahanpur appears to be the presence of a considerable number of weavers engaged in woollery and cotton and silk weaving. Owing to retrenchment, the number of workers went down to about 8,600 in 1945.⁴ Near by at Potesa, five miles south of the city is the largest distillery of the province. Other than these the city has no factory industry. In respect of non-factory industries Shahjahanpur cannot compare with Moradabad or Bareilly, though it is noted for an extensive industry in silver ornaments, dealers

¹ Industrial Survey, Moradabad District, (op. cit.), p. 20.

² Ibid, pp. 27 and 35.

³ Ibid, p. 36.

⁴ Labour Bulletin No. 3 (1946), op. cit.

coming¹ from all the districts of the U.P. to make purchases. It is an assembling market for 'gur', 'khand' and barley.

Rampur (89) next to Shahjahanpur in size, 17 miles east of Moradabad, is obviously the main trading, industrial, administrative and educational centre of the State of which it is the capital. In recent years factory industry has been growing in the city. In 1941 it contained eight factories engaging about 4,000 persons. These included a large textile works (2,600 workers), a gas plant manufacturing company (800 workers), two large sugar mills (1,540 workers) and a match factory (100 workers). While the sugar and match factories of Rampur have a geographic basis, the city being located in the sugar-cane zone of the province, and near the Tarai and Bhabar forests whose sal timber provides material for match sticks and cases, the other enterprises are due to a drive by the state towards industrialisation. As a legacy of the days of Rohilla supremacy there are some cottage industries² especially cotton damask, sword blades, knives, and velvet caps.

Amroha (56) in Moradabad district and 19 miles north-west of that city has only one factory (a sugar mill employing 685 workers in 1941) but like many other ancient towns it has several non-factory industries³ viz. calico-printing, the manufacture of embroidered caps, woollen pile carpets, pottery and country crafts which enjoy more than a local market. Amroha is an important local trade centre for north Moradabad and parts of Bijnor and

¹ Mushtaq, M., Report on the Industrial Survey of the Shahjahanpur District of the United Provinces, (1926), p. 12-13.

² Imperial Gazetteer of India, United Provinces, Vol. II, (Calcutta, 1908), p. 459.

³ Industrial Survey, Moradabad District (op. cit.).

deals chiefly in the export of sugar and wheat. One of the main causes contributing to the commercial importance of the town appears to be the fact that a large amount of grain is collected in the town after each harvest under the system of grain rents prevailing in the parana.¹

Sambhal (54), 23 miles south-west of Moradabad, was after Allahabad the most 'agricultural' of the cities in 1931 and there seems to have been little industrial growth in the place since to have altered that characteristic. The railway was extended to Sambhal as late as the decade 1921-30. It enjoys some importance in respect of cottage industries¹ - as the chief handloom weaving centre of the district after Moradabad, and a sugar-refining centre.

Budaun (52), the smallest of the Rohilkhand cities, on the provincial highway from Bareilly to Muttra, and 30 miles south-west of the former, on the metre gauge railway which runs parallel to the road, has not a single 'factory'. Like most other Muslim-majority towns, however, it is an important centre of the handloom² industry. There is no other manufacture worth mentioning and "only such things as the necessities of a fairly large city and civil station render indispensable are produced here."³ The railway connection to Budaun came relatively late (1901-1910) and the town is overshadowed by the principal nodal markets of Chandansi, Bareilly, and Kasganj.

¹ I.G. Moradabad (1911), p. 177.

In Industrial Survey, Moradabad District, (op. cit.), pp. 27 and 35.

² Mushtaq, M. Report on the Industrial Survey of the Budaun District of the United Provinces, (1924).

³ D.G. Budaun (1907), p. 184.

Fyzabad (cum-Ajodhya) (58), 92 miles almost due north of Allahabad and 78 miles from Lucknow, is the second largest city of Oudh but the smallest among the cities of Eastern U.P. Though on the Oudh Trunk road from Cawnpore and Lucknow it has a rather 'out of the way' location in respect of the main routes, being on the loop line of E.I.R. from Lucknow to Jaunpur and the bridge for the Oudh trunk road on the Gogra is one of boats substituted during rains by a ferry steamer service. "In the former days, Fyzabad was the great collecting and distributing centre for eastern Oudh and large quantities of sugar from Basti and Azamgarh, and timber from Kheri and Bahraich were brought to be distributed to Cawnpore and other distant markets. The extension of the railway system has, however, greatly altered the course of trade routes, as the exports from the north of the Ghagra are now carried for the most part along the Bengal and North-Western Railway".¹ The construction of the Allahabad-Fyzabad line has caused a similar diversion of trade to the south. In spite of the contraction of its tributary area, however, Fyzabad is still the largest market of the district. The city can boast of some cottage industries² viz, silk weaving, cloth printing, wood work and the manufacture of bell-metal wares which depend to a great extent on the market provided by the pilgrims flocking to Ajodhya. Ajodhya contiguous with and included within the municipality of Fyzabad, has a considerable priestly population (second largest³ after Benares in 1931) and is the scene of some of the largest religious fairs in the province.

¹ D.C. Fyzabad (1905), p. 44.

² Saprú, H.N., Report on the Industrial Survey of the Fyzabad District of the United Provinces (1923).

³ Turner, A.C., Census, 1931, U.P. Tables, p. 424.

Four such melas take place in the year with a concourse numbering 2 to 4 lakhs.¹ Fyzabad is the headquarters of the district and the Division but neither the religious importance of Ajodhya nor the administrative function of Fyzabad has arrested the decrease in population of the city which unlike the other ^{kw} cities of the province, ^{have} has been continuous. As we ^{have} seen Fyzabad, one of the youngest cities of the U.P., received a rude shock when the capital of Oudh was shifted to Lucknow towards the end of the 18th century. Later its commercial prosperity was damaged by the extension of railways elsewhere, and by its relatively out-of-the-way location in relation to the main routes of today. The ~~antique~~ industries catering for the pilgrims at Ajodhya have, as elsewhere, been declining and no factory industry has taken their place. The almost continuous decrease of the population of Fyzabad appears, therefore, to be natural.

Corakhpur (99), the premier city of the Trans-Gogra Plain and the most important rail and road junction in the region is 506 miles from Calcutta, 85 miles from Fyzabad and 131 miles from Benares. It has been growing as an industrial centre and, with 4,067 factory workers in 1941, it ranked eighth in the U.P. The number rose to 5,849 in 1945². After Lucknow it contained the largest railway workshop of the province where the bulk of the factory workers were employed (3,473 in 1941). This is said to be one of the best equipped workshops in India where new wagons, carriages, ... are built and old ones repaired.³ Apart from the two large

¹ D.G. Fyzabad (1905), p. 47.

² Labour Bulletin No. 3 (1946) op. cit.

³ Mushtaq, M., Report on the Industrial Survey of the Corakhpur District of the United Provinces, (1924), p. 20.

printing presses the most recent additions are the two textile mills engaging 1,390 workers¹ in 1945. In respect of cottage industries the city is unimportant. It is, however, noted in the region for tobacco manufacture. The importance of Gorakhpur as a regional city has been growing. This is in part due to its administrative and educational functions; it is the headquarters town of the district and capital of the Division and is the only place in the region where education to degree standard can be obtained. The fact that the city has a large railway colony (3,850 persons in 1941) and the headquarters of the Oudh Tirthut Railway which serves the vast tract between the Sarda and Mahananda ^{rivers} (in Bihar), has also contributed to its growth. It has a lonely situation, near the border of Nepal, which gives it an extensive service area. It is one of the main collecting and exporting centres for the forest products and the rice of Nepal and the Tarai region and is a principal distributing centre for imported goods.

Mirzapur-cum-Bindhyachal (71), almost the same size as Farrukhabad, located on the main line of R.I.P. and at the terminus of the Great Deccan Road is 55 miles east of Allahabad, 46 miles west of Benares, and almost the same distance (509 miles) from Calcutta as Gorakhpur. The damage caused to Mirzapur's trade by the advent of railways and the decay of river transport has been mentioned elsewhere (Chapter VII). Though the city has not regained its bygone commercial status it is still an important trade centre in the south-east of the province owing to its industries, relative nodality, and location near the border of two different physical regions viz. the Vindhyan Upland and the Gangetic Plain. Though the city

¹Industrial Survey, Mirzapur District, (op. cit.), p. 10.

²Labour Bulletin No. 3, (op. cit.).

³Chauhan, B.S., op. cit., p. 10. The Industrial Survey of Mirzapur District of the Province, B.S., op. cit., p. 10. The Industrial Survey of Mirzapur District of the Province, B.S., op. cit., p. 10.

lacks factories¹ it is one of the most important centres of the province for some cottage industries. The woollen carpet industry² of Mirzapur, known throughout India and abroad, though not flourishing, is still holding its own. The industry appears to have originated* in the two villages, Ghosia and Madho Singh, on the Grand Trunk Road, which are still the main centres of manufacture. The villages are passed by pilgrims on their way to Benares, Bindhachal and Allahabad and it is probable that the demand for cheap carpets and prayer mats by these pilgrims stimulated the industry. Moreover, Mirzapur has the advantage of producing wool, a considerable number of sheep being kept on the grazing grounds of the Vindhyan Upland. The city is one of the main manufacturing centres in the province of brass and bell-metal wares and acts as a distributor of the metals to other centres of the brassware industry in the U.P. Another important industry of Mirzapur is quarrying and dressing building stones³ derived from the Upper Kaimur sandstones. Stone is supplied to all the chief towns of Eastern U.P. Bihar and Benagal.⁴ Mirzapur the only centre of the shellac industry in the province " is one of the most important centres of lac manufacture in

1 There is a woollen mill and a blanket weaving factory which employed in 1941, 80 and 408 persons respectively.

2 No recent data are available. In 1923, 500 persons were estimated to be engaged in the industry and carpets worth Rs. 14 lakhs were sent to Calcutta for shipping abroad. In the same year 150 manufactures of brass and bell-metal wares employed 5,000 workers some of whom came from villages within a radius of four or five miles. Of these goods were valued at Rs. 85 lakhs and went to all the districts of U.P. and to the adjoining provinces.*

3 The district has about 1,400 quarries and of the 3,000 which are worked most are near Mirzapur (D.G. Mirzapur, p. 26, and Industrial Survey, Mirzapur, p. 8.).

4 Industrial Survey, Mirzapur District, (op. cit.), p. 25.
-D.G. Mirzapur, (1909), p. 73.

*Bhatta, B.R., Report on the Industrial Survey of Mirzapur District of the United Provinces, (1923), hereafter cited as 'Industrial Survey, Mirzapur District'.

India"¹ depending on lac from the district, and from Bihar, C.I. and the G.P. But owing to the growth of the industry in the lac-producing areas outside the province it has recently declined at Mirzapur.

Mirzapur is almost on the southernmost point of the railway east of Allahabad and about four or five miles south of the city rise abruptly the scarps of the Vindhyan Upland. Agricultural and forest products of the adjoining states come along the Deccan Road by bullock carts while those from ^{upto Rohitganj and thence by bullock-} Sonner usually by pack-bullock carts.² Thus Mirzapur acts as a convenient centre, for parts of the Foreland comprising eastern Rewah, Mirzapur upland and parts of Surguja, where cart traffic is transferred to the railway and vice versa.

Jhansi (103), the only city in Bundelkhand, is, like Mirzapur near the border line of the two physically different units viz. the relatively level expanse to the north (of the Trans-Jumna tract) and the rocky and wooded upland of Central India. It enjoys a high degree of nodality with routes converging like the spokes of a wheel from the north. Besides lying on the provincial roads from Cawnpore to Saugar and that from Agra and Gwalior to Satna, it is the most important railway junction of the region on the routes from Cawnpore to Bombay, from Agra in the north-west and Manikpur and Banda in the east. It is about 800 miles from Calcutta, 700 miles from Bombay, and is ^{of the} almost equidistant from the two most important

¹ Clover, P.M., Lac Cultivation in India, (Nankum, 1937), p. 92.

² D.G. Mirzapur (1911), p. 76.

cities of the U.P. viz. Cawnpore (138 miles) and Agra (133 miles). As a consequence of its nodality and size Jhansi is obviously 'the largest general market of Bundelkhand' and also 'for considerable tracts of native territory'.¹ It collects² millets, the chief crops of the area; oilseeds, ghi, pulses and cotton and distributes salt (from³ Rajputana), cotton piecegoods (from⁴ Bombay, Calcutta, Cawnpore, Indore and Ahmadabad) and sugar (from the Ganges Valley). Jhansi has few industries. Of the seven factories four are railway workshops which employed 2214 of 2,352 factory workers in 1941; the railway colony at Jhansi contained about 4,000 persons in 1941. The cottage industries⁵ of the city consist of handloom weaving, and pressing of oilseeds by indigenous methods. Besides being the capital of the district and the division Jhansi has a large cantonment with a population of 11,000 in 1941.

As will be evident from the foregoing discussion the cities of the United Provinces are of a multi-functional character. In most cases no individual function is so dominant as to enable us to give the cities a functional name. Cawnpore, however, with all justification can be called 'industrial' and this epithet may with some latitude be applied to Agra, Moradabad, Bareilly and Aligarh. Hathras, similarly, can be called a commercial city.

1 D.G. Jhansi (1909), p. 75.

2 Ibid.

3 Ibid, p. 74.

4 Bhargava, G.N., Report on the Industrial Survey of the Jhansi District of the United Provinces, (1923), p. 3.

5 Ibid.

As is expected in a predominantly agricultural province, all the cities have a considerable proportion of their population dependent or engaged in agriculture (exploitation of animals and vegetation), this proportion roughly varying inversely with the industrial and commercial status of a city. In all the older cities some declining old handi-crafts exist while the handloom industry still plays an important role. Modern factory industries, however, are gaining ground either in the cities or elsewhere and are thus probably undermining the industrial character of those cities which specialised in cottage industries e.g. Benares, Mirzapur, and Farrukhabad. The most uniformly distributed function is commerce, the strongest basis of interconnection between the city and the rural area. The relative commercial importance of the cities varies with their size, nodality, industries, agricultural productivity of the area and their mutual distance. The cities owe their administrative importance partly to their historical eminence which influenced the choice of such centres for district or divisional capitals under the British regime. The relatively young cities of Cawnpore and Mirzapur, eminent in other respects, do not enjoy any outstanding administrative importance. The city of Allahabad lying a bit too south for the province as a whole has failed to maintain its position as the provincial capital and given place to Lucknow - the most centrally situated city in respect of the province. The oldest riverside cities viz. Benares, Allahabad, Muttra and Ajodhya are the most important religious centres and it is the relatively old cities which have been selected as the seats of university education. Dehra Dun alone is residentially important, though an appreciable number of persons educating their children, or 'merely living' will be found in all cities.

especially in educational and cultural centres, Lucknow is particularly notable in this respect.

The cities as a class are distinct from the smaller towns of the province not only in size but also in (i) enjoying a high degree of nodality, (ii) being the chief industrial and commercial centres, with ample indigenous banking facilities and having in the majority of cases more than four scheduled banks, (iii) providing among themselves the seats of all the divisional headquarters, and universities and accommodating the largest cantonments of the area.

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CHAPTER X.

Size and Functions of the Towns other than Cities.

Large Towns: (20,000 - 50,000). Next in size to the cities are the forty-one towns with populations ranging from 20,000 to 50,000 according to the Census of 1941. They contain 16.2% of the urban population of the province. The number of the towns nearer the lower limit of population is much greater than those towards the upper limit, 29 having a population between 20 and 30 thousand, 6 between 30 and 40 thousand and 6 between 40 and 50 thousand. Thus Muzaffarnagar (47), Firozabad (41), Hardwar (41), Pilibhit (45), Bahraich (40) and Jaunpur (45) are close neighbours in respect of size. Similar is the case of the smaller towns of Hapur (35), Khurja (35), Bulandshahr (30), Ghazipur (31), Sitapur (30), and Balrampur (35).

As a whole these large towns are on the one hand tributary to the cities in the process of collection and distribution and on the other serve and are served by smaller towns and through the latter by the countryside. They are the chief commercial and administrative foci in the districts where cities are non-existent. The towns of this class fall into two groups viz. those which are district capitals and those which are otherwise important. The administrative function in the U.P. is much more centralised in the district capitals than in the permanently settled provinces e.g. Bihar and Bengal. Unlike in the latter provinces where courts and offices of the sub-divisional magistrate, ~~munsif~~ and deputy superintendent of police are located at the sub-divisional headquarters, in the U.P. all these offices, besides those of the district magistrate, judge, police superintendent and almost all the lawyers are concentrated in the district capitals. The

tehsildars, (the petty civil officers stationed at the headquarters of the respective tehsils), are invested with very restricted powers in dealing with cases. As a consequence of this arrangement the district town enjoys an extraordinary administrative importance and its clientele in respect of the administration of justice remains undisturbed by the tehsil headquarters. Owing to the concentration¹ in these towns of the personnel required in the administrative services the district towns have also become the most convenient centres for educational and medical institutions. They have a more or less central location in the district, ^(fig. 1) and are foci of metalled and unmetalled roads converging from various corners of the district and indeed all of them, except those in the Himalayan area, are served by railways. As a result of their nodality they are normally the most important collecting and exporting centres for the agricultural products of the district and distributing points for goods imported from outside. This is naturally indicated by the presence in such towns of a fairly large mercantile community viz. wholesalers, retailers and banks. Owing to the presence of a large population engaged variously in administration and the professions, some local industries, mostly of a non-factory type, exist in these centres to cater for the day-to-day needs of the town population. Such industries include food industries (milling, butchering and making of sweet-

¹ This concentration of the administrative functions of the district, of course, characterises all the towns which are district capitals - whether cities, towns in the 20 to 50 thousand scale or smaller centres. 20 of the cities i.e. all except Amroha, Sambhal and Hathras, 20 of the towns in the 20 - 50 thousand scale which are our concern for the present, and the remaining 8 from smaller towns are district headquarters.

meats), oil-pressing, carpentry, shoe-making, tailoring and building etc.

These are the usual functional characteristics of the twenty district capitals under consideration which fall in the scale of 20 - 50 thousand population. Yet though they are broadly alike especially in their administrative function relative differences in their regional setting and commercial, industrial and historical status have resulted in the different size of these towns. The largest among these are Muzaffarnagar, Pilibhit, Bahraich and Jaunpur. Muzaffarnagar ⁽⁴⁷⁾ in the heart of the rich wheat and sugar zones ^(49.67) is among the most important assembling markets of the Upper Doab. As a wholesale market of 'gur' it is unsurpassed by any other centre in the province, handling about 11 lakhs of maunds annually.¹ It also ranks third among the most important wheat-assembling markets of the province.² Jaunpur (45) owes its size not to any present commercial or industrial eminence but to its bygone glory of which it is a mere shadow now. As a consequence, however, of its nodal situation both in the past and present it is the main market of the district, and specialises in the manufacture of perfumes - a legacy of the 15th century. Other cottage industries viz. cloth-printing, embroidery and sugar-refining are decaying. Owing to its location in the Tarai near the junction of the Ganges Plain with Kumaon Himalayas and Nepal Pilibhit (45) handles a considerable amount of through trade. Apart from being one of the main rice assembling centres of the province - a result of its location in one of the richest rice zones of the area, - it is an important gur market and handles ghi, hides, spices.

¹ Marketing of Sugar (op. cit.) p. 339.

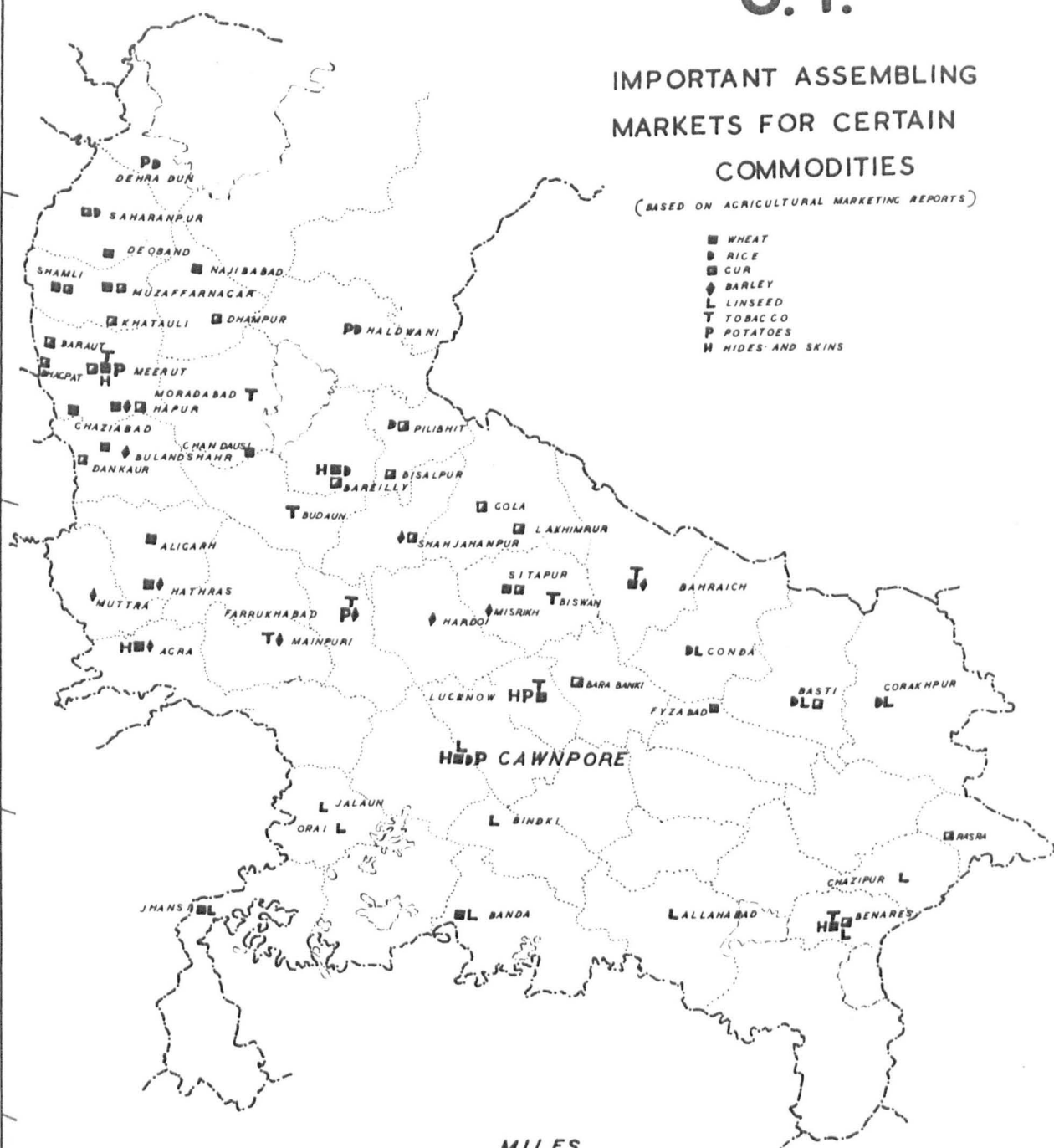
² Report on Fairs, Markets etc. (op. cit.), p. 123.

U. P.

IMPORTANT ASSEMBLING MARKETS FOR CERTAIN COMMODITIES

(BASED ON AGRICULTURAL MARKETING REPORTS)

- WHEAT
- RICE
- CUR
- ◆ BARLEY
- L LINSEED
- T TOBACCO
- P POTATOES
- H HIDES AND SKINS



MILES
20 40 60 80 100

timber and other products imported from Kumaon and Nepal; and piece goods from the Ganges Plain¹ are exported to these areas. Bahraich (40) is one of the main assembling markets of the Trans-Gogra Plain for wheat, rice, barley, tobacco and timber and the chief trade centre of the district.² Owing to its 'frontier' location it handles considerable amount of trade with Nepal.^{2a} As a result of its function as a market assembling the agricultural produce a small milling industry (especially of rice) has grown up there. Three of the district towns of this group (20-50 thousands) viz. Bulandshahr, Ghazipur and Sitapur have populations between 30,000 and 40,000. Bulandshahr (30), one of the oldest towns of the province is rather stagnant. The little commercial and industrial significance it now enjoys is based on its being a mandi for barley in the Doab and a seat of such cottage industries as wood-carving and glazed pottery.³

Ghazipur (31) is also a stagnant town and the setback it received from the diversion of the river traffic has been mentioned earlier. Its population in 1941 was 28% less than that in 1881. Its superiority in size over other smaller district capitals is due partly to its bygone political and commercial importance. At present, apart from the usual commercial status with which a district capital is endowed it is an assembling market for linseed and the seat of the largest (government-owned) opium factory in the province employing 593 persons in 1941. Sitapur (30), after Chandausi,

¹ D.G. Pilibhit, (1909), p. 73-74.

² D.G. Bahraich, (1903), p. 54.

^{2a} Ibid, p. 52.

³ D.G. Bulandshahr, (1903), p. 54.

is the largest wheat-assembling market of the Ganges-Gogra Doab and an important mandi for gur. The town is showing signs of industrialization. In 1941 it had 1,754 factory workers about 90% of which were engaged by the large plywood factory using timber from the sub-montane forests. Balrampur (35) with a 'frontier' location and the largest town of Gonda district, is the capital of a prosperous Estate and in 1941 its sugar and rice mills respectively employed 650 and 105 persons. Thirteen of the district capitals have a population between 20 and 30 thousand and enjoy lesser industrial or commercial importance than the towns described above. Mainpuri (21), though an assembling market for tobacco and barley, ranks third among the trade centres of the district,² (the other two centres being Shikohabad and Sirsaganj on the E.I.R.). The railway was extended to the town relatively late. Its population in 1941 was 15% less than that in 1881. In respect of commerce Fatehpur (27), is overshadowed³ by the other trade centres of the district viz. Bindki and Khaga which are nearer respectively to Cawnpore and Allahabad than is the district capital, and it is no more than a distributing centre for the neighbouring villages.⁴ The railway connection to Bijnor (28) is of recent construction and is even now only a loop line, with the result that the town has hardly any commercial or industrial importance except for the newly opened sugar factory. Of the other such towns in the Ganges-Gogra Doab Lakhimpur (21) is the chief trade centre of the Kheri district and besides being one of the main gur-assembling⁵

¹ Report on Fairs, Markets etc., (op. cit.), p. 123.

² D.C. Mainpuri (1910), p. 71.

³ Vatal, J.S. Report on the Industrial Survey of the Fatehpur District of the United Provinces, (1923), pp. 9 - 10.

⁴ Ibid, p. 10.

⁵ Marketing of Sugar, (op. cit.), p. 340.

markets of this Doab it handles some trade with Nepal. Hardoi (24), an important mandi for barley and other products of the district, viz. wheat, cotton and gram has some weaving industry¹ and is now the site of a large sugar mill. Unao (20) suffers from nearness to Cawnpore and "almost the entire trade of the district is diverted to Cawnpore, strings of carts plying night and day on the provincial road to carry the agricultural produce, including vegetables and fruits to Cawnpore and to bring back cloth and other articles of daily use. The railway is little used for the transport of grain, The proximity of Cawnpore is a serious obstacle to the development of trade in the district.....So far as the agriculturists are concerned, this is hardly a misfortune as prices obtained at Cawnpore are always more favourable than those which can be obtained locally."² Industrially the nearness to Cawnpore is favouring Unao where there is one sugar factory, a distillery and a tannery which engaged a total of 470 persons in 1941. Commercially Rae Bareilly (21) is hardly more than a local collecting and distributing centre.³ Its growth as a railway junction is a relatively recent event. Bara Banki or Nawabganj (23), though one of the main gur-assembling markets⁴ of the Ganges-Gogra Doab and the chief trade centre of the country cloth produced in the district, probably suffers from the proximity of Lucknow (the town is 17 miles from the city) as does Unao from that of Cawnpore. The cloth or agricultural produce collected at Nawabganj

¹ Ghoshal, Report on the Industrial Survey of the Hardoi District of the United Provinces, (1934).

² Maheshwari, H.S.K., Settlement Report of the Unao District, U.P., 1926-29, (Allahabad, 1931), p. 3.

³ Ghoshal, B.K., Report on the Industrial Survey of the Rae Bareilly District of the United Provinces, (Allahabad), 1923.

⁴ 'Marketing of Sugar' (op. cit.), p. 340.

are sent¹ on to the larger markets of Lucknow and Cawnpore.

Azamgarh (24) lying on a loop railway is unimportant both in respect of trade and industry. "Whatever distinction it has is derived from its being the largest town and market in the district, a municipality and the seat of civil authorities. the inhabitants are composed of the miscellaneous classes common in all small towns which have no special industry, namely, petty traders, brokers, shop-keepers, artisans, weavers, and agriculturists."² Ballia (24) has a similar status and being constantly pursued by the Ganges which has been gradually shifting north it has hardly had a chance of stable growth.

In the Trans-Gogra tract Gonda (22), the most important railway junction in the region after Gorakhpur, handles some trade that passes between the tract and Cawnpore. Its commercial status, however, is disturbed on the one hand by the market town of Tulsipur lying on the railway in the Tarai and nearer the Nepal border and on the other by Colonelganj which is nearer to Cawnpore.³ Though Basti (24) is the capital of the district in which "nearly half of the trade between Nepal and these (U.P.) provinces is registered"⁴ the real markets for Nepal trade lie in the Tarai zone further north and are the railway villages of Uska, Naugarh and Shohratgarh.

Banda (27), the second largest town of Bundelkhand and about one-fourth of Jhansi in size, *is a zone-of-contact town near the borderline of the Ganges Valley and Foreland* It lies on the roads from Cawnpore to Panna and Mahoba to Manipur. A recent extension of the railway from Cawnpore to

¹ D.G. Bara Banki, (1904), pp. 239-240.

² D.G. Azamgarh (1911), pp. 197-198.

³ D.G. Gonda (1905), p. 53.

⁴ D.G. Basti (1907), p. 61.

Khairadda, six miles west of Banda, which already lay on the Manikpur-Jhansi line, has almost given it the status of a railway junction and its role as a local collecting and distributing centre is growing. It is a regional assembling market for wheat, linseed, and millets. It has almost no manufactures save some weaving of coarse cotton cloth.¹

Most of the other towns which are not district capitals and consequently have no administrative significance but yet have acquired such importance of some other kind as to be in the group of the towns with 20 to 50 thousand population *notable significance either in respect either* enjoy of commerce, industry or religion.

The more or less commercial towns of this group, all, lying in the fertile Doab and Western Rohilkhand are Hapur and Ghaziabad in Meerut, Deoband in Saharanpur, Kairana in Muzaffarnagar, Khurja and Sikandrabad in Bulandshahr, Kasganj in Etah, Najibabad in Bijnor and Chandausi in Moradabad.

The railway junction town of Hapur (35) 19 miles south of Meerut "is one of the biggest wheat mandis in northern India",² and the biggest in the U.P.³ It is also an important assembling market for gurr and barley. Hapur lies on the only railway connecting the Punjab with the Doab and Rohilkhand via Delhi and on the longitudinal railway from Saharanpur to Khurja. Thus being centrally situated in the richest tract of the province, on the only cross-roads of railways in the Upper Doab Hapur's commercial prosperity

¹ D.G. Banda (1908), p. 75.

² Cooke, C.H. 'Final Settlement Report of the Meerut District' (1940), p. 6.

³ Report on Fairs, Markets etc. (op. cit.), p. 123.

is a gift of its geographical location and nodality, Ghaziabad (24) 12 miles east of Delhi and an important railway junction is a wheat-assembling market and 'carries on considerable trade in wheat and grain with Delhi'.¹ As a result of its nodal position/^{some} factories viz. a railway workshop, a foundry, an oil mill and vegetable-ghi producing establishment have come into existence. Deoband (25) in Saharanpur, second only to the city in respect of commerce "attracts to itself the export trade of a large tract of surrounding country and the railway station is usually stocked high with sacks of grain and gur... Many rich traders and bankers reside here and the place is popularly believed to contain anything from 1,000 to 1,5000 'khattis' (dug-outs) of 500 maunds capacity for the storage of grain."² Moreover, it is one of the main centres of handloom weaving³ in the Upper Doab and the seat of an Arabic theological college which attracts students even from other Muslim countries.⁴ Kairana (23), a wheat mandi and on the road forming a transverse link between the Shahdara - Saharanpur light railway on the one hand and the Grand Trunk Road and railway west of the Jumna on the other, is an entrepot with a considerable amount of trade⁵ between the Punjab and that western part of Muzaffarnagar district which is untapped by railway. Khurja (35), a railway junction on the Grand Trunk Road is the biggest town in Bulandshahr district and "may be regarded as the commercial capital as opposed to the official headquarters of Bulandshahr."⁶ It is a centre of cotton

¹ Cooke, (1940), op. cit., p. 6.

² Drake-Brockman, D.L., 'The Final Report on the Settlement Operations of the Saharanpur District, 1917-1920', (Allahabad, 1921), p. 10.

³ Industrial Survey, Saharanpur District (op. cit.), p. 21.

⁴ Drake-Brockman (1921), p. 10.

⁵ D.G. Muzaffarnagar, (1903), p. 269.

⁶ D.G. Bulandshahr (1903), p. 255.

ginning and pressing with five factories employing 363 persons in 1941. It is also known for its glazed pottery which serves as a substitute for china ware.

Sikanderabad (23) in Bulandshahr, a wheat mandi and a large market town is also noted for handloom weaving. Kasganj (28) on the Lucknow-Filibhit trunk road and the only railway junction in Etah is the largest town of the district. Besides being the chief collecting and distributing centre¹ of the district it also serves part of Southern Budaun.

The town of Majbabad (27) in Bijnor owes its commercial importance mainly to its zone-of-contact location in the the submontane tract (the town is only 12 miles from the Himalayan foot-hills). It acts as the main collecting and distributing centre not only for the district but also for the Himalayan area, particularly Garhwal district. The industries² of the town viz. the manufacture of cotton cloth, blankets and vessels of all kinds of metals (iron, copper, bell-metal and brass) serve mainly the needs of the Himalayans. Chandausi (29) in Moradabad, a focus of railway from Bareilly, Moradabad and Aligarh is the second biggest wheat-assembling market³ of the province and 'the chief grain market of Rohilkhand'.⁴ It is also an oil milling and cotton ginning and pressing centre.

The towns of this class which are more or less industrial are Firozabad, Nagina, Mau and Tanda.

If any town of the province after Cawnpore is pre-eminently in-

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- 1 D.G. Etah (1911), p. 60.
 - 2 Industrial Survey, Bijnor District, (op. cit.), pp. 40-41; p. 134.
 - 3 Browns, W.F.G., 'Settlement Report of the Bijnor District', (1939), p. 7.
 - 4 D.G. Bijnor, (1940), p. 75.
 - Report on Fairs, Markets, etc. (op. cit.), p. 123.
 - 6 Browns, 'Settlement Report' (op. cit.), p. 7.
 - Waugh, A.A. 'Final Settlement Report of the Budaun District, U.P., 1929', (Allahabad, 1930), p. 1.

industrial it is Firozabad (41), the most important centre of the glass industry in Northern India. The town had in 1941 67 of the 74 glass and bangle factories of the province, employing 4,768 persons. Many more are employed in the manufacture of bangles on a cottage basis and in trading the finished goods. Most¹ of the settlement can be regarded as devoted to the industry in one way or another. The manufacture of both block glass and bangles on factory or cottage basis is dependent on imported^{1a} materials; soda from England, sand from Lohgara in Allahabad and lime from Katni, but the origin of the industry is obviously related to the manufacture of crude glass - from reh obtained in usar lands - an industry still existent in some country towns of the usar zone e.g. Purdilnagar and Hecayan in Aligarh district.

Nagina (26) a 'frontier' town in the Sub-Himalayan region, is the main² hand-weaving centre in Bijnor, one of the most important districts of the province in respect of the handloom industry. Other well-known industries of the place are wood-carving in ebony imported from Central India³ and the manufacture of glass phials made from glass imported from Firozabad, used by pilgrims from all parts of India to convey the sacred water of the Ganges from Hardwar. Owing to its industries and frontier location it is like Najibabad an important commercial centre. Mau (29) in Azamgarh and Tanda (26) in Fyzabad are among the chief centres of the handloom industry

¹ Commercial Directory of the United Provinces, 1941-42 (1941), p. 22.

^{1a} Industrial Survey, Agra District, (op. cit.), pp. 40-41; p. 154.

² D.G. Bijnor, (1908), p. 75.

³ Browne, Settlement Report (op. cit.), p. 7.

in the province. Like most of the other important centres of indigenous industries these towns owe their industrial standing to the patronage of imperial or local authorities in the past. We have mentioned elsewhere the importance of Mau in Akbar's days. In Shahjahan's time¹ the town is known to have contained 84 wards, a large proportion of the population being composed of weavers, thread-spinners and traders, and to have been visited by merchants from all parts of India. The East India Company patronised Mau by appointing a commercial resident there in 1802² and in spite of the hard competition with machine-made goods, of subsequent days, the industry of the place is still holding its own. The town is a growing settlement and the various handloom fabrics e.g. muslin, perris (turbans), dhotis (loin cloths), saris command a wide market inside and outside the province. The dealers in the town have "branch shops in places as distant as Cawnpore, Poona, Hyderabad, Nepal and Calcutta."³ Tanda (26), a growing town, much patronized in the early 18th century by an Oudh Nawab⁴ and subsequently (19th century) by enterprising Europeans⁵ remains one of the main centres of muslin weaving in the province while several other types of cotton fabrics meeting the needs of Nepal and the Tarai zone⁶ are woven. "The chief centres of export are Lucknow, Allahabad, Benares, Cawnpore and Calcutta."⁷ It is also an important centre of printing cloth which is supplied

¹ D.G. Azamgarh, p. 254.

² D.G. Azamgarh (1911), p. 255.

³ Ibid, p. 63.

⁴ D.G. Fyzabad (1905), p. 271.

⁵ Ibid, p. 42.

⁶ Industrial Survey, Fyzabad District, (op. cit.), p. 23.

⁷ Ibid, p. 25.

mainly to Nepal and the Trans-Gogra Tract.¹ As in the case of other weaving centres most of the yarn is now mill-spun and received from important spinning centres such as Cawnpore, Bombay and Ahmadabad etc.

Two towns of this group viz. Hardwar and Brindaban are pre-eminently religious Hardwar⁽⁴⁾ - 'Door of Vishnu' - also known as 'Gangadwara' (gate of the Ganges) from its location at the mouth of the Ganges gorge "is one of the great tirthas of Hindustan."² It is thronged annually by pilgrims from all parts of India, particularly from "the west just as Muttra is characterised by the crowds of pilgrims from Rajputana and the Deccan."³ The prosperity of the town depends mainly on the host of pilgrims visiting Hardwar annually and seasonally. The sanctity of the place has attracted well-to-do Hindus who have retired from active life.⁴ Brindaban (21) on the Jumna, only some five miles north of Muttra is essentially a religious town with "about 1,000 temples."⁵ The calico printed here finds a ready market at the hands of the pilgrims. The recent growth of the town is partly ascribed to the development of various "cults connected with the worship of Krishna."⁶

The remaining towns of this category viz. Roorkee in Saharanpur, Kanauj in Farrukhabad, Sahsawan in Budaun and Shahabad in Hardoi have a more composite functional character. Roorkee (27) is noted on the one

¹ Ibid. p. 27.

² D.G. Saharanpur (1909), p. 89.

³ Ibid.

⁴ Drake-Brockman, Settlement Report, Saharanpur (op. cit.), p. 10.

⁵ Imperial Gazetteer of India, U.P. I, (Calcutta, 1908), p. 386.

⁶ Ibid.

hand for its engineering establishments (Regimental Workshops of Sappers and miners employing 1,375 workers in 1941, the Engineering College workshop and a small foundry), which employed about 1,800 persons in 1941, and on the other for its large cantonment which had a population of about 10,000 in 1941. The ancient town of Kanauj (22) on the Ganges, the Grand Trunk Road and the Cawnpore - Achnera railway line, specialises in the manufacture of scents and perfumed oils and in this respect enjoys a similar regional importance as do Lucknow, Jaunpur and Ghazipur in Eastern U.P. "The industry is carried on on all three systems - the cottage, the small and the big factory."¹ The causes for its location are difficult to trace. Sandal wood^{1a} is imported from distant parts of Southern India viz. Coorg and Madras Presidency. Lands adjoining Kanauj do not appear to enjoy any natural advantage for the cultivation of rose and Jasmine plants.² The manufacture is apparently due to the patronage of some old ruler.

Sahsawan (20) in Budaun and Shahabad (22) in Hardoi, besides being local trade centres are noted for handloom weaving but are in no way comparable to Mau or Tanda.

The Medium-Sized Towns.

The towns with a population of 10 to 20 thousand according to the census of 1941 are 68 in number containing 12.9% of the urban population of the province. In common with the towns of other sizes the majority of

¹ Industrial Survey, Farrukhabad District (op. cit.), P. 23.

^{1a} Ibid, p. 26.

² Ibid, p. 29.

them are in Western U.P. (Fig. 60). Most of these like other large centres have increased in population since 1881. Only ten out of the 63 were less populous in 1941 than in 1881. These towns are Kosi in Mutttra, Kashipur in Naini Tal, Sardhana in Meerut, Jalesar in Etah, Bilgaram in Hardoi, Khairabad in Sitapur, Mubarakpur in Azamgarh, Menhdawal in Basti, Kalpi in Jalaun and Rath in Hamirpur. As mentioned earlier the decrease of population in Sardhana and Jalesar may be ascribed to an increase of malaria due to waterlogged environs, in Khairabad and probably also in Bilgrim to the decline of their old cultural and political importance; in Mubarakpur to the decay of the handloom industry; in Menhdawal a market town for Nepal trade to its being bypassed by railway, in Kalpi to the decay of river traffic and in ^{the} Tarai town of Kashipur to malaria. It is difficult to explain the decrease in Kosi and Rath.

Taken as a whole the difference between the functional character of these and the 'large towns' is one of degree rather than of kind. Being inferior in size, variety of function and nodality, their tributary area is usually smaller than those of the 'large towns'. They are, on the other hand, better served by rail and roads (48 of 63 are on railways) than the smaller towns. Six of these viz. Almora, Naini Tal, Etah, Orai (Jalaun district), Sultanpur and Partabgarh are district capitals. Of the remaining 62, twenty seven are the headquarters of tahsils. The administrative importance of the district capitals has been discussed above and that the existence of a tahsil headquarters in a town does not impart any notable functional importance has been mentioned. This fact, however, results in the connection of these centres with the district headquarters usually by metalled roads and as such these towns normally enjoy better communication than those that are not tahsil headquarters.

Considering regionally, there are two towns of this group in the Himalayan area: Almora and Naini Tal. Both are district headquarters while the latter is the summer capital not only of the Kumaon division but also of the province. These, as the majority of the towns of the Himalayan region, form a distinct class in respect of function and as such have no parallel in the rest of the province - viz. they are to a great extent residential or resort towns. This characteristic is evidently due to their location about 6,000 feet above sea level and the consequent bracing climate in summer. "At Naini Tal the thermometer seldom records above 85 degrees at any time, while in the coldest part of the winter months it has an average of about 32 degrees, although the bright sun renders the cold little felt".¹ Its shut-up-position and the dampness resulting from the heavy rainfall keep it colder than the rest of the hill tracts in the district. At Almora (which is a little hotter than Naini Tal owing to a lower situation and a much lower rainfall) the summer temperature rarely exceeds 88°F and 'pankhas' (fans) are not needed at any time.² Owing to its exposed situation and the absence of mists and fogs during the rains Almora has a well-established reputation as a sanitarium for consumptives.³

Naini Tal is primarily a settlement of 'bungalows'. Other buildings viz. shops, hotels, schools and offices are the natural result of the residential character and the administrative importance of the town. The 'resort' character of Naini Tal, as of many other Himalayan towns, is in-

² D.C. Almora (1911), p. 206.

³ Ibid, p. 207.

¹ D.C. Naini Tal (1904), p. 52.

dictated by the appendix which shows a great increase in the population during the hot wather. The town and the cantonment serve in summer as a centre of employment for the hillmen of the surrounding villages as well as markets for fruits and vegetables. Lying on one of the main routes between the Himalayan and Tibetan areas on the one hand and the Ganges Plain on the other it has also become a trade centre of some importance.¹

Almora as a resort town is

much less important than Naini Tal not because of any marked inferiority in climate but because while Naini Tal is a growth of the 19th century well adjusted to the requirements of a resort town, Almora, besides being a much older settlement with a greater proportion of native dwellings, is further away behind the outer Himalayan range and the journey from the plain is 'long and wearisome',² especially to the consumptives travelling to the sanatorium.

In the Doab Gangoh (16), and Manglaur (11) in Saharanpur; Shamli (12), and Khatauli (12) in Muzaffarnagar; Baraut (11), Sardhana (13), Khakra (11) and Mawana (12) in Meerut; Dibal (15) and Siana (11) in Bulandshahr; Atrauli (16) and Sikandra Rao (13) in Aligarh; Shikohabad (14) in Mainpuri, Etah (14) and Jalesar (13) in Etah and Bindki (10) in Fatehpur are important local business centres,³ in the respective districts, particularly in respect of the grain trade. Two of these viz. Shikohabad (which had a railway connection about half a century earlier than Mainpuri), and Bindki are more important as trade centres than the district

¹ D.G. Naini Tal (1904), p. 311.

² See Industrial Surveys and District Gazetteers.

³ D.G. Almora (1911), pp. 206-207.

⁴ Ibid.

⁵ See Industrial Surveys, District Gazetteers and Settlement Reports.

⁶ Industrial Survey, Saharanpur District, (op. cit.), p. 12.

capitals. The other towns of this region falling in this group, viz. Kandhla (14) in Muzaffarnagar, Jahangirabad (13) and Shikarpur (12) in Bulandshahr are probably more industrial than commercial, being ⁷⁶seats of handloom weaving.¹ Soron⁽¹³⁾ is the lonely example in this group of a primarily religious town being usually flocked with pilgrims visiting Muttra² with which the town is linked by a direct railway and the Rohilkhand - Trans Jumna trunk road.

In the Ganges-Cogra Doab Kiratpur (19), Sherkot (17) and Seohara (12) in Bijnor; Jaspur (18), Kashipur (13) and Haldwani (18) in Naini Tal; Dhanaura (13) in Moradabad; Afonla (17) and Faridpur (11) in Bareilly; Bisalpur (13) in Pilibhit; Tilhar (19) in Shahjahanpur; Laharpur (13), Khairabad (14) and Biswan (11) in Sitapur; Nawabganj (18) and Budaun (14) in Bara Banki and Sherpur (13) in Ghazipur are important market towns of the respective districts.³ Nimitaur (12) and Chandpur (16) in Bijnor; Pihani (13), Bilgram (10), Mallewan (11) and Sandila (18) in Hardoi and Mubarakpur (12) in Azamgarh are more or less industrial in character being noted seats of handweaving or cloth printing.⁴ Some of these towns viz. Biswan in Sitapur and Seohara and Dampur (12) in Bijnor have become seats of sugar factories while Ujhni (12) in Budaun is industrially important with weaving and ginning mills (Fig. 63). Malihabad (11) in Lucknow carries on a trade in mango plants.⁵

¹ Industrial Surveys and District Gazetteers.

² D.C. Etah (1911) p. 223.

³ See Industrial Surveys and District Gazetteers.

⁴ Ibid.

⁵ Industrial Survey, Lucknow District, (op. cit.), p. 15.

Before passing on to another region it is necessary specially to note here the functional character of the sub-montaine towns of this tract viz. Jaspur, Kashipur and Haldwani which have an inter-regional importance. These towns (along with the smaller centres of Ramnagar and Tanakpur) are the chief collecting and distributing centres for the Himalayan region especially¹ Almora and Naini Tal districts. Part of the wool and borax brought from Tibet by Bhotias as well as the products of the Himalayan region viz. potatoes, ghi, hides and skins, timber, charcoal, baib/grass, and lime etc. are collected in these sub-montane markets and it is from here that food-grains, sugar, tobacco, cotton piece-goods, blankets, kerosene oil, metals and metal wares are distributed to the Himalayan region and Tibet by lorries for a short distance but mainly by pack animals². Three of these centres (Ramnagar, Haldwani and Tanakpur) lie on railheads at the foot of the Siwalik hills where railway transport gives place mainly to that by pack animals. Kashipur on the railway and only about 16 miles from the hills specialises in the cloth trade for the Himalayan area while large quantities of cloth are printed at Jaspur to serve mainly the needs of the Himalayans. Owing to the transport difficulties and remoteness from the plain area and the 'residential' character of most of them the Himalayan towns do not generally serve as the collecting and distributing centres of the region - (a notable departure from the general rule in the province) - their place

¹ Dehra, the railhead village of Kotdwara and the sub-montane towns of Najibabad and Nagina play a similar role for the western parts of the Himalayan region.

² (a) Joshi, L., Report on the Industrial Survey of the Naini Tal District of the United Provinces, (1923).
 (b) Sapru, H.N., Report on the Industrial Survey of the Almora District of the United Provinces, (1925).
 (c) Sapru, H.N., Report on the Industrial Survey of the Garhwal District of the United Provinces, (1924).

in this respect being taken by the Sub-Himalayan 'zone-of-contact' towns or even villages.

In the Trans-Gogra tract Nannpara (13), the capital of a considerable estate situated in the rich paddy zone, is a rice-milling centre. Menhdawal (11) in Basti, once an important mart for trade with Nepal which has declined as the town does not lie on a railway, is noted for the manufacture of brassware¹. Deoria (15) in Eastern Gorakhpur has two sugar mills and is a large market town. The heavy incidence of municipal taxation at Gorakhpur has resulted in a tendency for cloth trade to remove itself to the smaller town of Deoria where it can avoid octroi duties². Gaura Barhaj (15), formerly an important mart on the Gogra is still a trade centre, being on the upper limit of steam navigation along the river.

In the Trans-Jumna Plain Kosi in the cotton-growing district of Muttra (10) is a cotton ginning and pressing centre. In Bundelkhand the four towns of Orai (17), Kunch (19), Jalaun (10) and Kalpi (12) distributed evenly over the district of Jalaun are ^{market towns} of some consequence. Lalitpur (17) in Jhansi is a considerable trade centre, being the "only important town between Saugor and Jhansi"³. Mau (13) is noted for its calico-printing.⁴ Rath (12) in Hamirpur, larger than the district capital, is a trade⁵ centre, while the historic town of Mahoba (17) on the southern border of the province and on the Manikpur-Jhansi railway is noted for its pan (betel) industry throughout northern India and 'besides receiv-

¹ D.G. Basti (1907), p. 61.

² D.G. Gorakhpur (1909), p. 79.

³ D.G. Jhansi (1909) p. 287.

⁴ Industrial Survey, Jhansi District, (op. cit.), p. 32.

⁵ D.G. Hamirpur (1909), p. 57.

ing much of the trade of the district, attracts most of that of Ghatarpur and Charkhari¹ States. Karwi (10) on the Manikpur-Jhansi railway, near the Vindhyan table-land and like Manikpur a valuable outlet for inaccessible portions of the district and the Rewah State is an important trade centre, in Eastern Banda.

In the Trans-Ganges Plain there are three towns in this group viz. Ahraura (12) in Mirzapur, and Reotipur (12) and Gahmar in Ghazipur. The commercial importance of Ahraura arising from its location in a zone-of-contact has been noted earlier. The towns of Reotipur and Gahmar are centres of the handloom industry.²

Small Towns. (Population below 10,000).

The towns of this group, 294 in number, comprising 69% of the total number of towns in the province, contain about 21.9% of the urban population of the area. 154 of these had in 1941 a population between 5 and 10 thousands and the remainder each had a population below 5,000.

The towns of this class form the last link between the rural settlements on the one hand and the largest urban settlements on the other. They are the local collecting centres for a small tributary area, where the itinerant grain dealer or cultivator usually brings for sale, the agricultural produce of the countryside. Through them may³ be distributed to the village markets or village shops the piecegoods, salt, kerosene oil and other imported goods or agricultural commodities not produced in

¹ D.G. Hamarpur, p. 197.

² D.G. Ghazipur (1909), p. 240 and p. 193.

³ The imported goods, owing to their lesser bulk, are often distributed from larger towns direct to the shops in large villages whence they are either assembled at the open-air village bazaar or sold direct to the villager.

the area. Their usefulness consists in their proximity to the rural interior. The villagers can easily carry his produce on carts or go on foot to these market towns for the purchase of such goods, as are not available or are more expensive in the village bazaar.¹ They usually have a middle school and often a dispensary and thus serve the educational and medical needs of the surrounding country within a radius of about five miles.

But in spite of the facilities they provide to the countryside, about one-third (35%) of these towns have decreased in population since 1881. As we have noted earlier the causes of this decrease are manifold. The advent of railways brought about a concentration of trade in those towns of this group which are more favourably situated in respect to rail transport at the cost of those away from the rail routes. Owing to the extension of railways and roads the tributary area from which a market town assembled agricultural products has expanded and a number of country towns without railway connection have lost much of their commercial importance. There are again those towns which were centres of indigenous industry and have lost part of their population as these crafts decayed. One of the most important cottage industries of the province is handloom weaving which is very widely distributed. Owing to the competition with mill-made goods a considerable number of the purely handloom weaving centres have decreased in population. Again as a result of the decay of the weaving, calico-printing, making of metal images etc. which flourished at pilgrim centres and the emigration of the industrial labour to new manufacturing towns small religious towns without other functions have

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The open-air bazaars are held more frequently in these towns than in the villages.

decreased in population. Some towns in the canal areas seem to have declined because of water-logged environs.

The remaining two-thirds of the towns of this group were more populous in 1941 than in 1881. The majority of them lie on railways or metalled roads. Some of them have gained importance because of increasing factory¹ industry, particularly sugar manufacture. The towns of this class with sugar manufacture factories are Bilari in Moradabad, Baheri in Bareilly, Gola and Mohandi Kheri, Tulsipur in Gonda, Pipraich, Siswa Bazar, Captainganj and Pedrauna in Gorakhpur, Shahganj in Jaunpur and Jhansi in Allahabad. Some of the villages with sugar mills are probably towns in the making. Certain others viz. Cherra in Aligarh, Coverdhan in Muttra, Achhnera in Agra, Gunjandwaraganj in Etah and Auriya in Etawah, all in the cotton zone, have cotton gins and presses. In the small town of Bhadohi in Benares State, an important centre of the carpet industry, was opened during the 1939-45 war 'The Army Handloom Blanket Industry' which employed 3,700 persons in 1941. Benares the capital of the state has a large glass factory.

It is evident that the number of towns with factory industries is comparatively small and any industrial character that the towns of this class enjoy is mainly based on cottage industries viz. handloom weaving, cloth printing, sugar refining, working in metals, pressing of vegetable oils or milling of food grains, leather working, carpentry or making of jewellery and ornaments.

¹ Large Industrial Establishments in India, 1942, op. cit.

As noted above the most common role among the non-agricultural functions of these towns is commerce. There are no data by which we can judge the exact commercial status of these or the towns of other groups. According to the Marketing Report,¹ however, there are 477 mandis or wholesale markets in the U.P. and though the distribution of these mandis is given on a small scale map (p. 35) of the report the name of the places is not given. A brief note on the map says 'the number actually denotes market towns and not market places.' There can be no doubt that a considerable number of the mandis are located in villages but the majority of them are in towns and our 'small towns' being the most numerous among the various size groups of the towns evidently claim a large proportion of these mandis. Such market towns (with mandis) are characterized by the assembling of agricultural products of the surrounding countryside. Some shops or the godowns of the 'arhatya' (commission agents) are usually found in such places. These agents advance loans to the village merchants, producers or itinerant dealers on the condition that they will handle the produce brought to the market by their debtors. This transaction completed, the arhatya stores the commodity or it is carted to the larger towns, railway stations or factories.

The majority of the tahsil headquarters fall in this group of towns but as noted earlier the presence of a tahsil headquarters does not impart any notable functional importance to a town. Usually, a police station and in most cases a post office will be found in these centres.

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Report on Fairs, Markets etc. pp. 35-36.

Functionally the towns form a transition group. On the one-hand they (especially the smaller ones) merge with the villages and on the other (particularly the larger ones) they merge with the multifunctional towns.

It is necessary to note specially the Himalayan towns of this group most of which like Naini Tal or Almora are functionally much apart from the towns of the rest of the province. Chakrata and Mussoorie (and Landour) in Dehra Dun, Lansdowne in Garhwal, Bhowali in Naini Tal and Ranikhet in Almora are similar to one another in so far as they are all resort towns. Their population swells during May to September (appendix...) mainly because of their cool climate in summer in contrast with the great heat of the Ganges Valley.

Mussoorie is different from Chakrata, Lansdowne and Ranikhet inasmuch as it is a hill station for the civil population while the others are cantonment towns, (sanitaria for troops). Mussoorie is an aggregate of bungalows and houses, hotels, boarding houses, schools, banks, shops, churches, avenues and gardens. "There is a considerable import of necessities for the use of visitors ... Dun gives Mussoorie a very small part of its supplies. Animals for slaughter and poultry are brought from the Saharanpur and other districts beyond the Siwaliks, sheep from Tehri and poultry from the Punjab."¹

The cantonment towns consist of barracks, parade grounds, bazars, bungalows for officers, and residences for servants. Their relation with the surrounding country depends on their being tabail headquarters and as minor centres of employment for some of the rural population.

¹

D.C. Dehra Dun (1911), p. 247-248.

The small towns of Pauri (headquarters of Garhwal district) and Srinagar are not resort towns and do not draw visitors from the plain. Srinagar on the pilgrim route from Haridwar to Badrinath is a local trade centre dealing 'primarily with Najibabad, whence it obtains cloth, gur and other articles of mere handise.'¹

We have considered above the urban or non-agricultural functions of towns other than cities. We have seen in the previous chapter that in all the cities agriculture engages a considerable number of working population/and its importance generally increases as the town decreases in size. In 1931 more people were engaged in agriculture than in any other single occupation in the cities of Allahabad, Gorakhpur, Rampur and Sambhal. Of course, the urban or non-agricultural functions as a whole dominated in all the cities. Thus in the most rural of the cities viz. Allahabad and Sambhal about 30% of the working population was engaged in agriculture and the remaining 70% in non-agricultural occupations. Unfortunately, we have no data for finding the relative proportion of agricultural and non-agricultural occupations in the towns other than the cities. Sambhal, however, with no factory industry, no outstanding status as regards cottage industries and with little administrative importance (only being the headquarters of a tehsil) may probably be representative of the towns with 20 to 50 thousand population, in respect of the proportion of working population engaged in agriculture. It seems likely that in a ^{considerable} number of the towns with a population of less than 10,000 the proportion of agriculturists is probably greater than that of non-agriculturists.

¹

D.C. Garhwal (1910), p. 201.

CHAPTER XI.

The Morphology of Towns in the United Provinces.

From the view-point of morphology we are mainly concerned with the ground plan of a town rather than its functions or history although the latter do appreciably affect its ground plan and aspect. The ground plan consists of streets and built-up ground while the aspect expresses itself through buildings. Buildings, however, form much less a permanent feature than the ground plan.

In the following discussion, therefore, greater emphasis will be laid on the study and interpretation of the ground plan of the towns of the area. The town plans of the U.P. appear to have been influenced by several factors which may broadly be classed as natural and cultural or man-made. Among the natural factors rivers appear to have played a very important role. Other such features are relief in the Himalayan area and minor topographic irregularities in the Ganges Plain. The cultural features consist of two sets of factors viz. (a) historical e.g. forts, old market places, town walls, mosques and temples or old routes and (b) existing features of the site and environs viz. market places, roads, railway stations and administrative offices etc. Deliberate planning both in the past and present is an important factor but information in our case as to planning in the past is almost non-existent and during modern times planned reconstruction of the towns (in their older parts) has been generally of a fragmentary and haphazard character.

In a study of urban geography, like ours, which takes into consideration all the towns of the area, usually there is no scope for detailed study of any one town. In the study of the towns of the United Provinces, however, the study of the city of Lucknow is a special feature. In the study of the city of Lucknow, the study of the city of Lucknow is a special feature. In the study of the city of Lucknow, the study of the city of Lucknow is a special feature.

attention to individual towns. This undoubtedly leaves a gap in our intimate knowledge of the urban morphology of an area. It is therefore, felt that before we take up the general morphological discussion of the towns of the province we consider in some detail the location, morphology and functional topography of the five largest cities viz. Cawnpore, Lucknow, Agra, Benares and Allahabad. The reasons for a separate treatment of these five cities are various. In respect of size they stand quite apart from the remaining towns of the province - all with a population over 2½ lakhs and the smallest of them, Allahabad, being much larger than the next largest city, Bareilly. As brought out in a preceding chapter they enjoy a sort of metropolitan status in their respective spheres of influence. As a result of their functional variety and importance they present a rather more complex morphology than the smaller towns. They are the centres where the impact of the modern regime has produced the maximum results and where, too, except in the case of Cawnpore, the historical factors had full scope.

Cawnpore which originated about the seventies of the 18th century, has grown on the Ganges and westwards (Fig. 66) between the unimportant village of Kanhpur Kohna (old Cawnpore) and the historic village of Jajmau some eight miles downstream from the former. The riverside strip, almost unsettled ground, was chosen in 1778 as the site of the East India Company's cantonment, the main function of which was to protect the Oudh territory. The choice was guided, as mentioned elsewhere, by the fact that Cawnpore had already been selected as the site for a trading factory of the Company and a military force was essential for the protection of the European traders and business houses. Above the city there is a belt of Khadar keeping the stream away from the high bank. South-east of Jajmau the bank is

CAWNPORE

-  BUSINESS AREA
-  INDUSTRIAL "
-  CIVIL LINES
-  CANTONMENT



INDUSTRIAL-CUM-RESIDENTIAL SUBURBS

- A KALPI ROAD AREA
- B JUHI
- C JAJMAU

- ©
- M
- H.R.

- CHAUK
- MOULEGANJ
- HALSEY ROAD
- 1. COLLECTORGANJ GRAIN MARKET
- 2. ANWARGANJ RAILWAY STATION
- 3. CAWNPORE CENTRAL
- 4. JUHI

- 5. RAILWAY COLONY

Scale of Miles

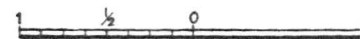


Fig. 66

intersected with ravines for many miles. The site of Cawnpore, therefore, was one of those few places on the Ganges and on the border of Oudh territory which was nearest to Lucknow, the most important city of the area in those days, and where the absence of Khadar afforded a site immediately above the stream - a fact so important in the commercial prosperity of the city owing to the significance of river transport in the pre-rail days. Moreover, the historic importance of Jajmau, now almost a part of Cawnpore, probably suggested to the settlers the significance of the site. In 1765 Shujahddaulah lost a battle against the Company at Jajmau and the place lay on the 'old road from Kalpi to Lucknow'.¹ In its regional location Cawnpore enjoyed other advantages in its early history. For the protection of the Oudh territory against the Marathas whose incursions were mainly from west and south-west Cawnpore had an excellent location. It also lay near the cotton areas of the province and was centrally located with respect to the commercial towns of Farrukhabad, Etawah, Kunch and Kalpi.

Taken as a whole Cawnpore (Fig. 66) is an elongated settlement most of which lies on the high bluff of the Ganges, (which imperceptibly slopes inland), between the river and the Grand Trunk Road. There is, however, a conspicuous bulge towards the south-west in the centre. This is because the city proper had to grow south-west of the riverside belt all of which, till the Mutiny, was under the cantonment², a fact rather uncommon, for in the case of most of the other riverside towns of the province

¹ D.G. Cawnpore, (1909), p. 87.

² Ibid, pp. 263-264.

the waterfront is occupied by the town proper and newer settlements lie further away. A south-eastern extension of the city proper has been checked by the railway and the cantonment and it has had to extend westwards and a south-westwards along the roads converging here from Delhi, Jhansi and Hamirpur. The railway stations of Anwarganj and Juhi also, exercised a pull in these directions especially to industrial establishments. Recently the city extensions along the Kalpi road have gone as far as a mile beyond the crossing of the canal by the road. A similar suburban growth has taken place along the Hamirpur road in the Juhi area and on the Benajhabar road in the north west leading to the Grand Trunk Road. Thus the industrial city of Cawnpore is spreading its 'tentacles' over the surrounding countryside.

Excluding the outer areas, the city proper occupies a roughly quadrilateral space bounded by the Benajhabar Road on the north, the Mall on the east and the railway on the south. The city has grown by constant accretion westward of the old cantonment boundary and the result of such unplanned growth is seen in the 'irregular form of the city, which is a mere congeries of houses, arranged on no definite plan and separated from one another by narrow irregular lanes.'¹ Recent reconstruction confined mainly to the metalling and broadening of the main streets and the erection of modern shops and houses has hardly altered the original street pattern.

Outside the city proper in the civil station, and cantonment the streets are broad and regular though not conforming to any standard plan. Both in the cantonment and the civil lines the main thoroughfares run parallel to the river. The railway colony has a perfectly rectangular layout.

¹

D.C. Cawnpore, (1909), p. 263.

Cawnpore is roughly divisible (Fig. 66) into the following functional zones¹ viz. (i) Civil Station (ii) Business area (iii) Industrial-cum-Residential Area (iv) Industrial-cum-Residential Suburbs (Kalpi Road, Juhi area and Jajman) and (v) Cantonment.

(i) The civil station is a linear strip about four miles long and 4 to 6 furlongs wide. It is traversed by the Mall - the most important thoroughfare of this zone which is mainly an administrative and residential area. It contains the district courts and offices, treasury, jail, police lines, head post and telegraph office, and banks. The bungalows of officials and rich citizens are strung along the pitched shady roads in separate gardens. Fashionable shops line the Mall mainly on the portion bordering the city. Churches, mission offices, clubs, cinemas, hotels, the main educational institutions and chief public gardens and parks are located in this zone. These features are more or less common in all the civil stations of the cities and district towns. But the civil lines of Cawnpore have one chief distinction. In conformity with the spirit of the place the civil station is also an important industrial area. In fact, seen from any direction the skyline of Cawnpore will be found full of tall smoky chimneys - an appearance quite distinct from that of any other town of the province.

¹ The functional zones of Cawnpore and the other four cities viz. Lucknow, Agra, Benares and Allahabad, shown on the Figs. (66, 69, 71-73) are only approximate. They are based on varied sources e.g. the guide maps (Lucknow and Benares), plans of these five cities in the Atlas Volume (1931 edition) of the Imperial Gazetteer of India, topographical sheets, District Gazetteers and such indirect sources as the Large Industrial Establishments in India, indicating the location of factories.



(a) A Market on Mall Road
(Civil Lines), Cawnpore.



(b) Mouleganj: A Busy Market in
Cawnpore City.

Most of the older leather, cotton and woollen mills that grew up in the latter half of the 19th century are located on the riverfront. Slums have, however, not been allowed to grow, the workers residing elsewhere in the city. In the north-west the industrial concerns have built modern quarters for their employees.

(ii) The business section of the city roughly lies between the Mall and Halsey Road (Fig. 66). It includes the great cotton mart of Couperganj in the southwest and the quadrangular grain market-place of Collectorganj (the largest and most important of its kind in the city). The business core, however, is formed by the Chauk¹ lying in the north central part of this zone. This road (i.e. Chauk) has been broadened in the southern part where it is known as Mouleganj and is probably the busiest street of the city. (4676) As a whole the entire business section is full of wholesale and retail shops and contains most of the firms of indigenous bankers. The names of most of the mohallas (wards) suffixed with bazar, 'mandi', or 'ganj' (all meaning markets) show the commercial character of the zone. It must, however, be remembered that the business section of Cawnpore, as of other cities and towns, is also one of the its main residential areas.

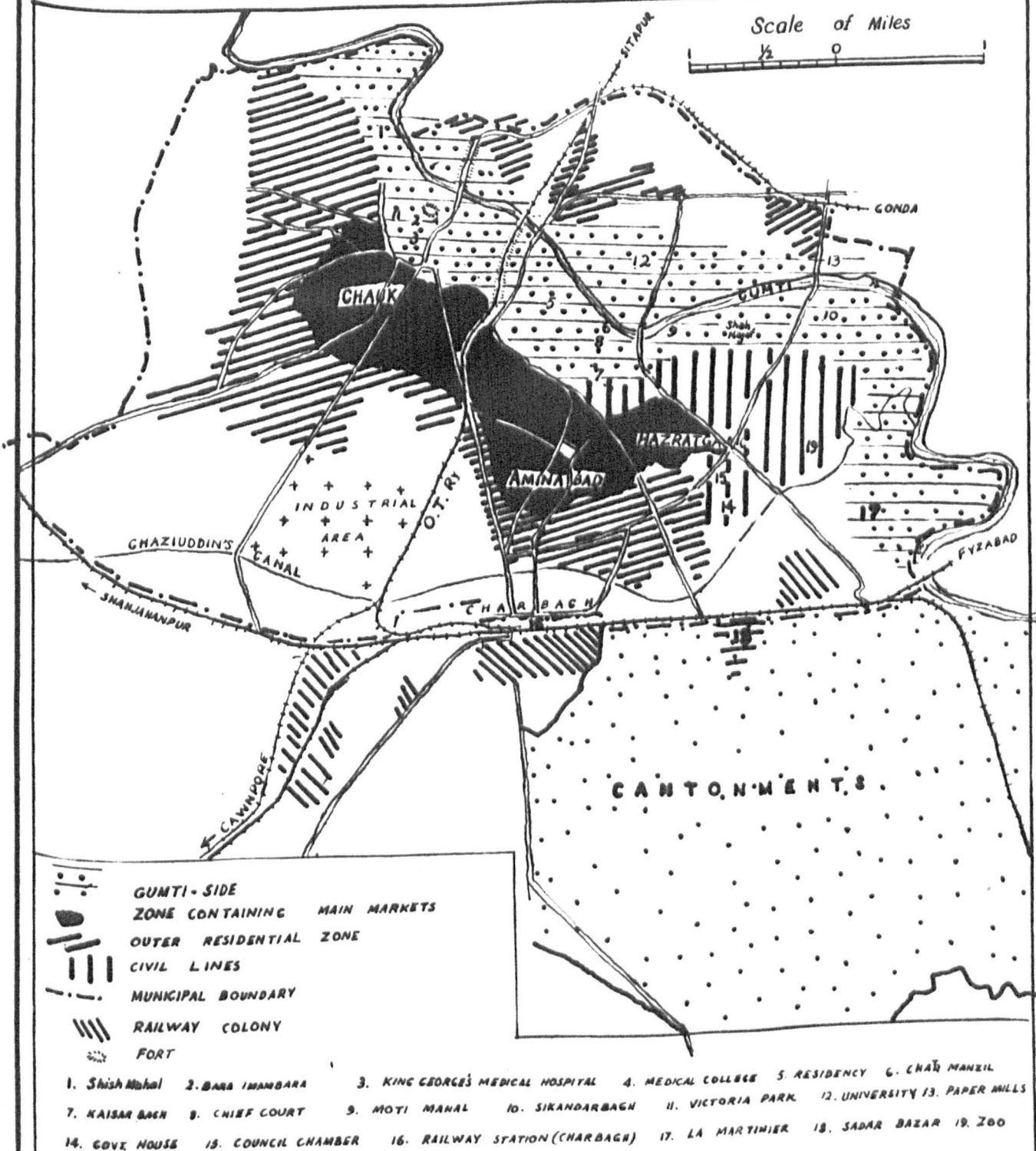
(iii) The portion of the city proper west of Halsey Road is mainly an industrial zone. It contains cotton mills, sugar works, jute mills, several tanneries, a large number of cotton ginning factories, presses and godowns, railway sidings, godsheds, offices and workshops. Side by side with the factories, particularly in the northern portion, have grown the mean dwellings of workers.

(iv) The suburban part of Jaji has several cotton and oil mills, engineering works and the residential quarters of the workers. The extension along the Kalpi road built mainly ^{after} 1942, consists of the large Gun factory, the I.A.F. works, and the bungalows and quarters of the employees. This area lies lower than the city, within the valley of the Pandu and is liable to suffer from inundation as in 1943. In the detached part of Jajmau several tanneries have been established.

(v) Though the cantonment covers a large rectangular area roughly between the Grand Trunk Road and River, buildings are concentrated in the north-western half and the remaining half is occupied by a few villages. It is characterised by the monotony associated with the word cantonment and consists of barracks, artillery and infantry lines, bungalows, a hospital, churches, a vast parade ground which is now also used as an aerodrome, and a few bazars.

LUCKNOW. The plan of Lucknow resembling a 'butterfly' in shape, ^(fig. 68) is in conformity with the local W-shaped course of the Gumti. The river comes from North-west and after a roughly straight central course flows away to the north-east, thus the built-up land following the river, appears like the 'wings' of a butterfly. As is natural, the longer axis of the city lies parallel to the river but the Gumti here is not characterised by high bluffs rising immediately above the stream and a relatively low area borders the stream while, as¹ in 1894, is liable to inundation in years of exceptionally high floods. We consequently notice that the riverside given over to gardens and parks has few dwellings, most of the buildings being the palaces

¹
D.G. Lucknow, (1904), p. 10.



of the Oudh rulers built on artificial mounds.

The origin of Lucknow is lost in obscurity but it is probable that the settlement grew on a crossing of the Gunti by some route to the ancient city of Ajodhya and Lakshman Tila¹ (on which stands Machhi Bhawan, the fort of Oudh rulers) which is ascribed to Lakshman (Rama's brother) is known to have been occupied by the Sheikhs of Lakhnau in the 13th century who built a fort on the mound and colonised the area on its south. Lucknow lay on the route to Ajodhya, the capital of Avadh (Oudh) province under Delhi Sultans and Mughals. Old Lucknow grew round the fort and to the south of it the Mughal rulers built the mohallas of Chauk and Sadatganj in the western wing of the city. One of the earlier rulers enlarged the river-side stronghold and named it Machhi Bhawan. It was here that in the late 18th century the first bridge across the river was built and the rough radial street pattern of the western part of Lucknow indicates the focal character of the fort and bridge. Even under the British regime the main thoroughfares viz. Napier Street, Victoria Street and Canning Street were built on a radial plan converging on the glacis half a mile broad round the fort. The portion east of the O.T. (Oudh and Tirhut) Railway is relatively new, built under Oudh rule and the British regime. Similar is the case of the relatively small portion north of the river. In the Eastern part there is no old cultural focus on the riverside. We see some convergence of streets on the various bridges all built under the British Government but the main thoroughfares converge in the south on the railway station. Thus the pattern of main streets in the eastern wing is almost the reverse of that in the western wing.

¹ Tila means a mound.

² D.G. Lucknow (1904), p. 141.

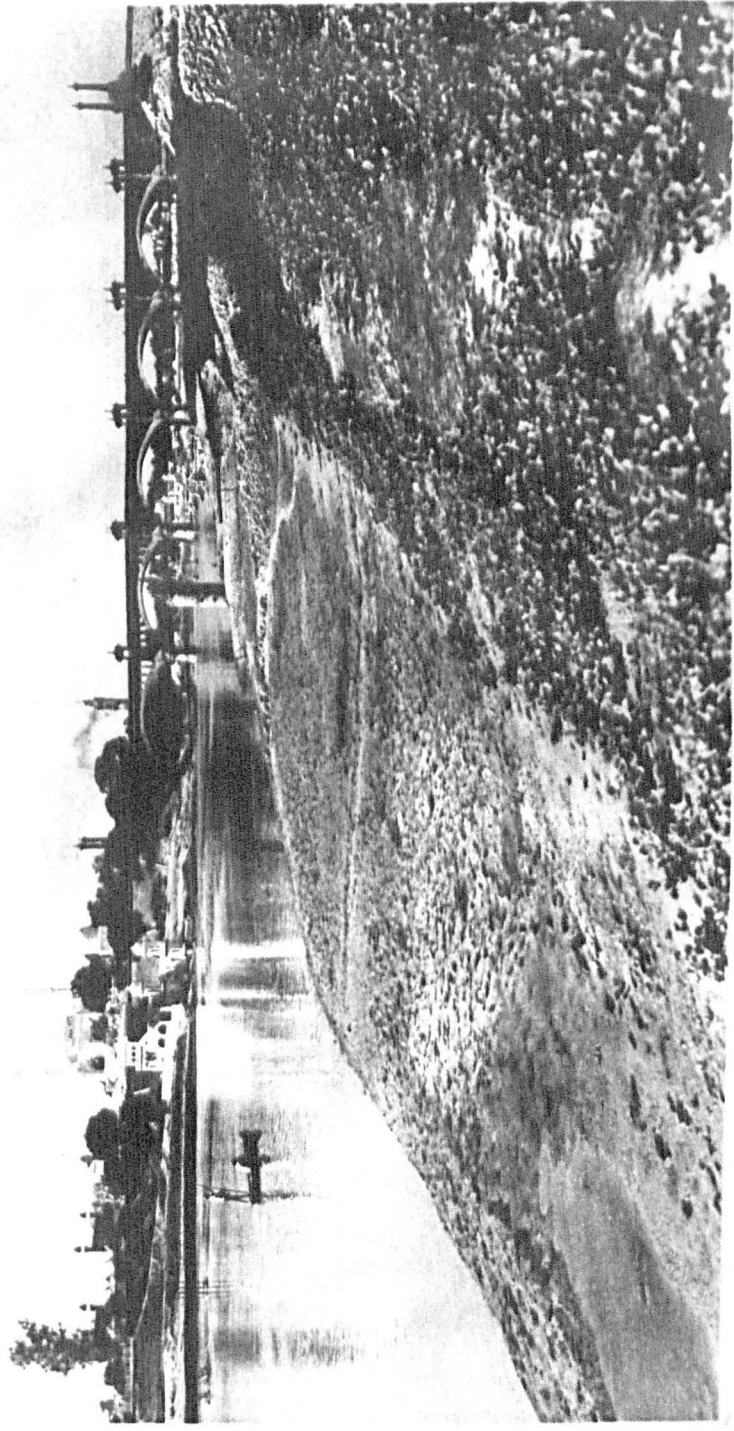
Lucknow consists roughly of the following functional zones (Fig.68

):-

(i) The Gunti side. This covers a longitudinal strip on either side of the river and is mainly given over to gardens and parks, old palaces, government buildings, educational and medical institutions and has very few dwellings. ^(Fig.69) *The narrow strip north of the river is relatively unimportant.* The university, some schools, the leper Hospital and paper mills are the only important buildings. The south riverside is however, studded with the most important shrines, palaces, public buildings and parks.

(ii) The business section intermixed with purely residential wards occupies most of the central part of the city extending from Chawk in the west to Hazratganj in the east. The markets of Lucknow are scattered over a wide area because of historical factors. The older markets grew in the western portion built by the Mughals. The Oudh rulers mainly patronized the eastern part where the important markets of the time came to be located. Under the British regime it was the eastern part which received greater attention and the extensions both of markets and residential and administrative areas were towards the east. The Chawk (ward) is indeed the old commercial centre of the city and here will still be found most of the silversmiths, manufacturers and dealers in old handicrafts and some of the chief grain markets. But the commercial interests of the city have shifted from this unclean and decadent section to the happier and busier areas of ^(Fig.70) ~~Amnabad~~ and Hazratganj and the present commercial centre lies east of the O.T. railway in the former ward. Hazratganj is one of the most important parts of Lucknow containing most of the European shops and a number of public buildings and railway offices.

(iii) Not clearly defined from and surrounding Hazratganj on the east and north are the civil lines, a relatively open zone containing such im-



Gumti Side, Lucknow. (Tilowali Mosque in the background) From Indian State Railways Magazine.

portant buildings as the Government House, Council Chamber and fashionable houses of European residents and Taluqdars, several schools and the 'zoo'. The northern part of the civil station containing courts/ and offices falls within the 'GumtiSide'.

(iv) Surrounding the zone with important markets, on the south and west is the peripheral zone of the city proper, mainly residential in character. The southern portion, particularly that to the east of O.T. railway, is prosperous and the southeastern portion between Hazratganj and Charbagh railway station contains the chief modern hotels of the place. The western outer wards have a somewhat decadent appearance as there is a constant tendency among the inhabitants to shift toward the busier wards of Aminabad and Hazratganj.

(v) North of the Gumti-side zone there are a few residential wards along the roads radiating from the Hardinge and Iron Bridges. The easternmost ward of Badshahnagar is a perfectly rectangular settlement.

(vi) There is a small zone outside the city on the south between Victoria Street and the O.T. railway containing most of the few modern factories and is known as the 'Industrial Area.'

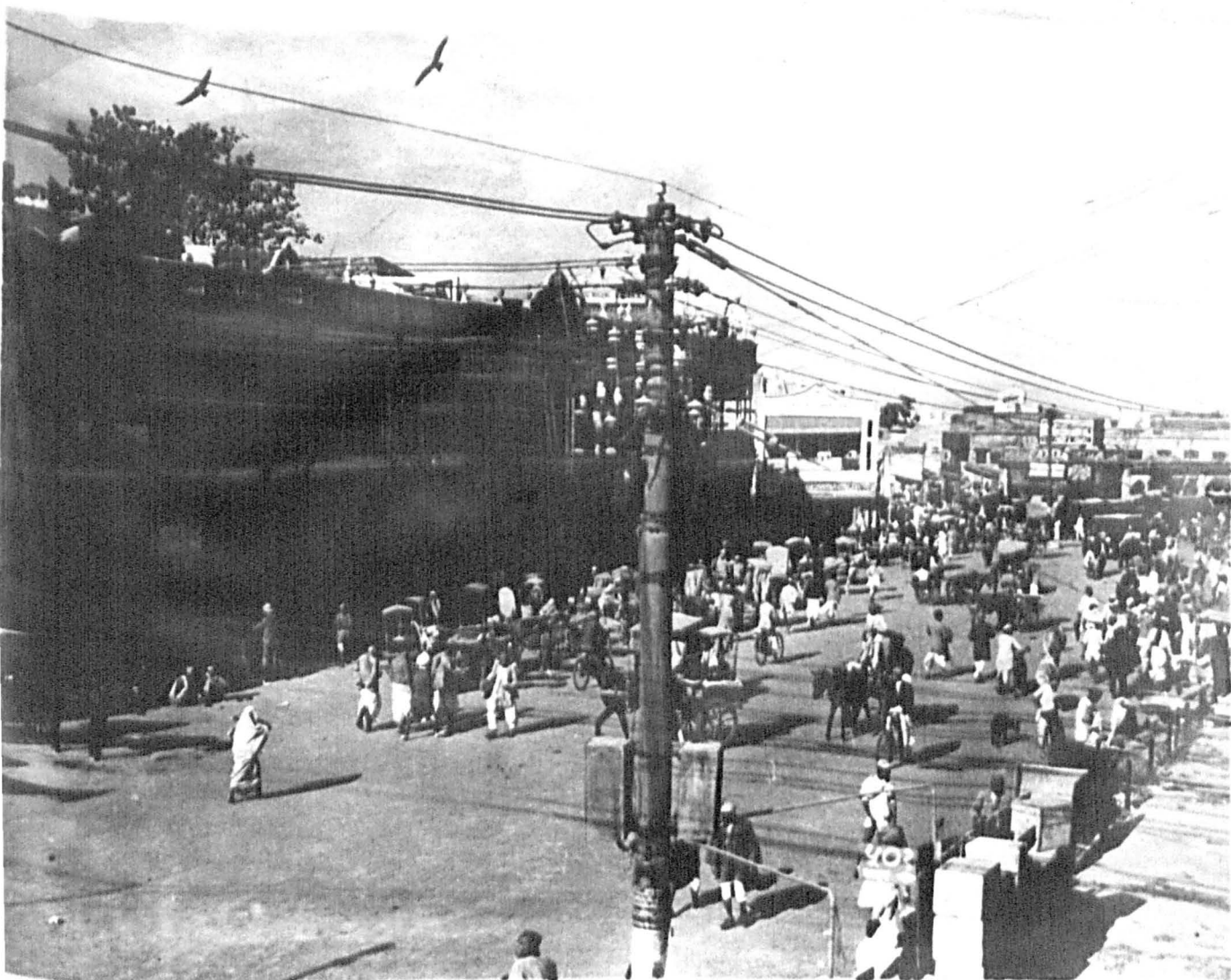
(vii) To the south of this is the fairly extensive railway colony.

(viii) South of the Fyzabad railway line and extending from the Rae Bareilly Road to the Gumti is the cantonment covering an area almost as large as that of the city but containing a population (1941) only one-fourteenth of the city's total.

AGRA for over a century the capital of the Mughal Empire, lies on one of the several loops in the course of the Jumna. A city and a fort is said to have been founded ^d ¹ here (probably on the site of a pre-existing settlement)

¹ D.G. Agra, (1905), p. 142.

Fig. 70



Aminabad Chaur - One of the busiest
markets in Lucknow. (From Indian
State Railways Magazine.

by Sikandar Lodi, by way of a forward capital, with the object of suppressing the refractory governors and chieftains of the Trans-Jumna territories of Biana, Dholpur, and Agra. The stability of the river bank is proved by the fact that the old riverside buildings dating from the early Mughal times stand on their original site. The site is ^{or} moreover less level except for a few ravines.

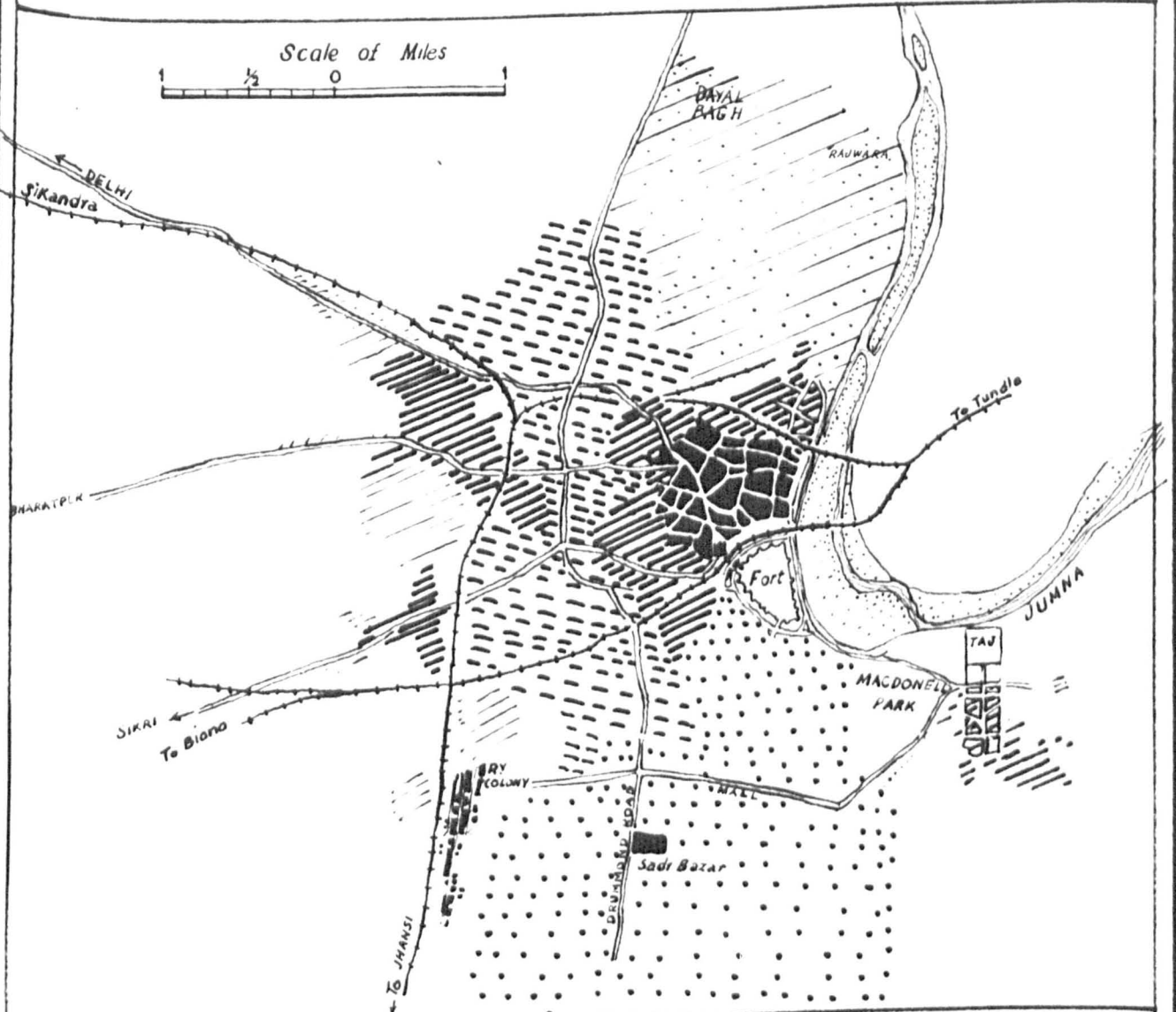
The city including the modern settlements is somewhat circular in shape focussed on the fort and the river (Fig. 71). The fort had at one time a central location for the now unbuilt ground between the Taj and the fort was covered, according to Bernier, by 'extensive bazars and houses of masonry, while beyond on either side were the gardens and palaces of the nobles.'¹ Many of them existed till the Mutiny. The rounded shape of the city is also due to the old fortifying wall² which has disappeared except for two gates viz. the Delhi and Chhanga Modi gates. The exact line of the wall is difficult to determine but it seems to have started from the Jumna bank about two miles above the fort and maintaining a radius of similar length from the fortress ended somewhere near the Taj. The entire city is interspersed with ancient mosques, tombs and mansions of Mughal days and many of the last have been rebuilt and used by the cantonment and civil authorities. The streets in the city proper lying north-west of the fort are very narrow but a radial pattern with marked convergence on the fort is discernible. It is below the fort on the north-west that the Jama Mosque and modern business core lie. In the portion immediately to the north of the fort lying along the Jumna the main streets run parallel to the river, and are joined at right angles

¹ D. G. Agra (1905) pp. 213-213.

² Ibid, p. 192.

AGRA

Scale of Miles
1 1/2 0



BUSINESS AREA

RESIDENTIAL AREA

CIVIL LINES

CANTONMENT

ZONE CONTAINING MODERN FACTORIES

BUSINESS AREA

RESIDENTIAL AREA

CIVIL LINES

CANTONMENT

ZONE CONTAINING MODERN FACTORIES

by side lanes giving to this section a sort of 'ladder pattern'. Tajganj is built in the form of an oblong rectangle along a road leading to the main gate of the mausoleum. Other outlying parts of the city are irregular in pattern. The cantonment is laid out on a rectangular plan with most streets lying parallel to the main thoroughfares viz. Drummond Road running north-south and the Mall running east-west.

Agra is roughly divisible into the following functional zones :-

- (i) The business area lies immediately north-west of the fort. The chief markets viz. Kashmiri Bazar, Kinari Bazar, Chilkint and Chauk lie along a street running northwest from the fort but the entire zone up to the river is interspersed with markets. (ii) Surrounding the business area on the north-west and south-west is an outer residential rim. (iii) Beyond this on the west and south-west lie the civil lines mainly along Drummond Road. (iv) Beyond this belt are the detached residential wards of the city mainly along the Sikri and Bharatpur roads. Suburban growths continue to extend along these and the Delhi roads.

The growth of Tajganj is to be ascribed to the Taj Mahal, and the inhabitants of this ward appear to depend a good deal on income derived from the visitors and the manufacture of marble and soapstone models of the mausoleum. (v) The cantonment apart from the usual military buildings also contains a large proportion of the bungalows of civil officials. The Macdonell Park covering 250 acres and on the north-east of the cantonment is one of the most pleasant spots of Agra. (vi) Though the cottage industries of Agra, especially shoe-making, are scattered throughout the city most of the modern factories of all types occupy a rectangular zone extending from the northern fringes proper to the further limits of Payalbagh and Najwara in the north and lying between Drummond Road and the river. The main in-

dustrial words in this zone are Dayalbagh, Rajwara, Jeoni Ki Mandi and Belanganj.

^{sculpies}
BENARES, a confluence site where the Barna, a stream of considerable size joins the Ganges. ^(Fig. 72) The confluence is considered a spot of great sanctity;¹ here lies the 'Kila Kohna' (old fort), and that ^{the} ground up to the confluence was inhabited in the past is clear from traces of old buildings.² The decay of this part is attributed mainly to the decline of river traffic of which this portion was the principal centre of Benares because the access to the bank was here comparatively easy³. The city proper lies on a 'high ridge of Kankar' about four miles long, which has resisted the erosion in spite of the concavity of the bank. The ground gently slopes away inland from the riverbank. The religious sanctity of the water of the Ganges, the concavity of its bank making intervisibility between the various ghats (steps leading to river) possible, its general north-south trend allowing the sun's rays to strike the ghats early in the morning, the high situation and the stable structure of the riverside have made the river-front the 'natural dominant' in the morphology of Benares and these factors along with the sanctity of the Barna confluence must have influenced the selection of the site in the past.

(Fig. 72)

The city proper is roughly semi-circular/in form, with the base lying on the curved river-front. There is, however, a conspicuous bulge westward in the north. This appears to be due to the restrictive influence of the Barna as well as the pull exercised westward by the river and the

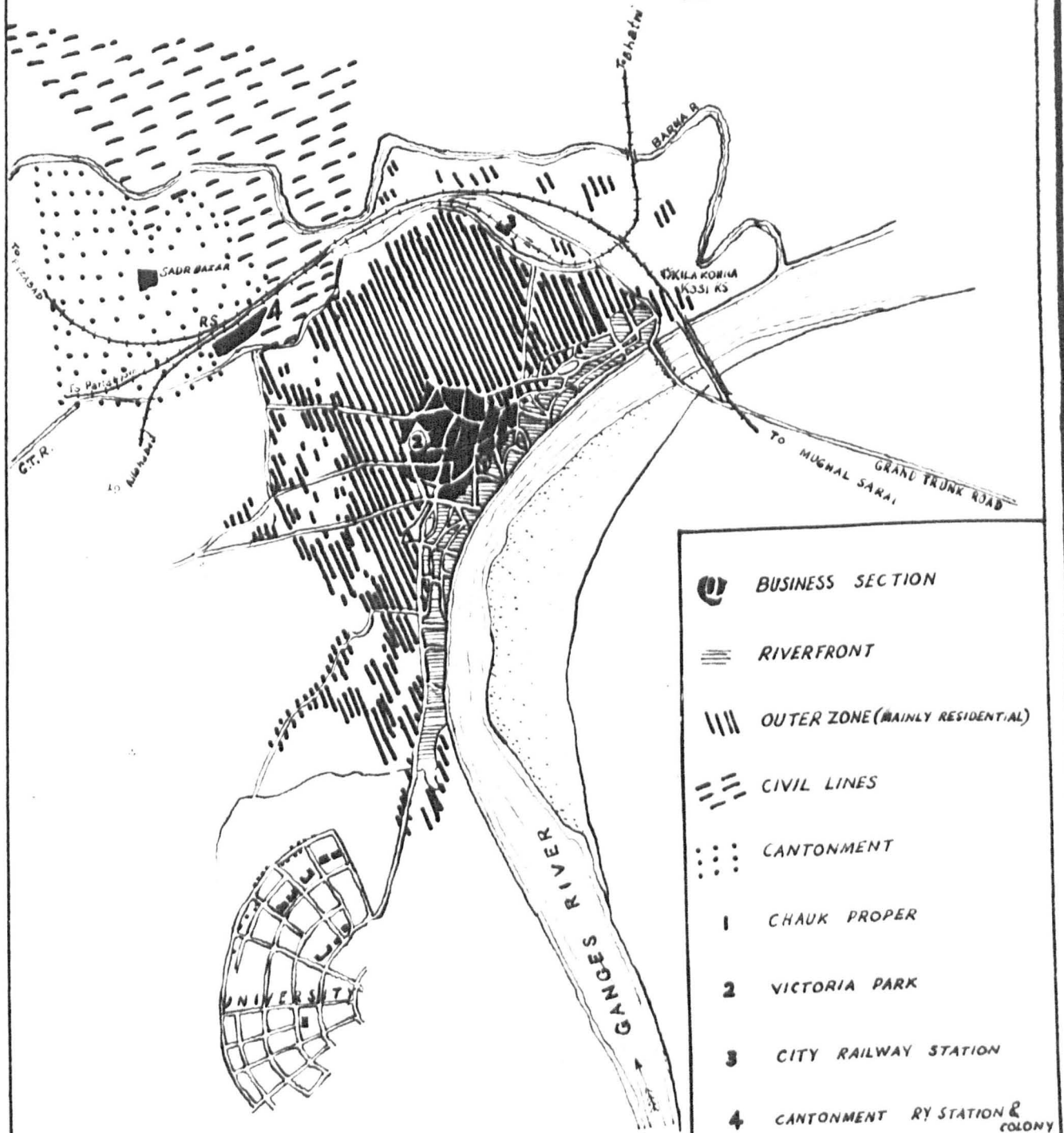
¹ D.C. Benares (1909), p. 9.

² Ibid, p. 255.

³ Ibid, p. 254.

BENARES

Scale of Miles



old highway identical here with the modern Grand Trunk Road. The dominance of the river-front (of the Ganges) is also indicated by a sort of fan-pattern of the streets opening on the numerous ghats on the curved bank. The main longitudinal streets run parallel to the river.

Among the cities of the province Benares wears a look quite peculiar to itself. 'It is perhaps the most essentially Indian city in the whole of the peninsula'.¹ Its peculiar features are the ghats, temples, mansions of princes from all parts of India, and the labyrinth of narrow dark alleys, in the central parts, between lofty buildings.

Benares consists roughly of the following functional zones :-

(i) The Ganges-side. This narrow strip is pre-eminently religious and residential in character. The riverfront is studded with numerous ghats, temples and akharas (monasteries). Behind or along with these are the palaces and mansions of princes and rich persons - all wishing to be as near the water as possible. (ii) The business centre is roughly coincident with the Chauk ward. "Here are to be found the great establishments for the textile fabrics and brassworks, for which Benares is so famous, and in fact all the large shops and many banking establishments."² Roughly speaking the section north-west of the Chauk Road is taken up by bazars and is mainly commercial. The south-eastern portion, where religious interests dominate, is occupied by temples and such shops as deal in images of deities, sacred threads and other appertinances of worship. (iii) The third zone of the city proper consists of the outer mohallas behind the

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D.G. Benares (1909), p. 238.

2

D.G. Benares (1909), p. 249.

riverside belt and round the Chauk ward. They are mainly residential in character though several bazars, some of them being important wholesale markets, are scattered over them. The workers of the city's chief industry, viz. weaving, occupy outerwards north of the Chauk area and it is here that the mud houses of the city will be found. The outer zone in the south and west is full of modern pukka houses and gardens and open spaces with frequent enclaves of cultivated fields. All the roads radiating on the west and south are marked by some ribbon development. (iv) Outside the city proper lies the University in the south, built on a semi-circular and radial plan; the cantonment occupies the area between the Barna and the Grand Trunk Road, while the civil station lies mainly north of that river.

ALLAHABAD, also known as Prayag, occupies the easternmost tongue of the Doab at the sacred confluence of the Ganges and Jumna. The celebrated temple of Patalpuri, the only relic of Prayag, known to have occupied the centre of that old city, now lies in the fortress indicating that the confluence lay further east in the distant past. The existing city and the fort were founded by Akbar. In the days prior to the advent of railways and good roads the rivers 'afforded the easiest and most natural means of travelling from western Hindustan to the provinces of Bihar and Bengal and it was doubtless the strategical advantage of the place, with respect to these waterways that induced Akbar to build the fortress of Allahabad! The fort also commanded the crossing at Jhūsi adopted in the medieval era by travellers from the Doab to the east, and lay on the Mughal road. The crossing

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D.C. Allahabad (1911), pp. 73-74.

to Arai, a village south of the fort across the Jumna, giving access to the Chunar road, was no less important.

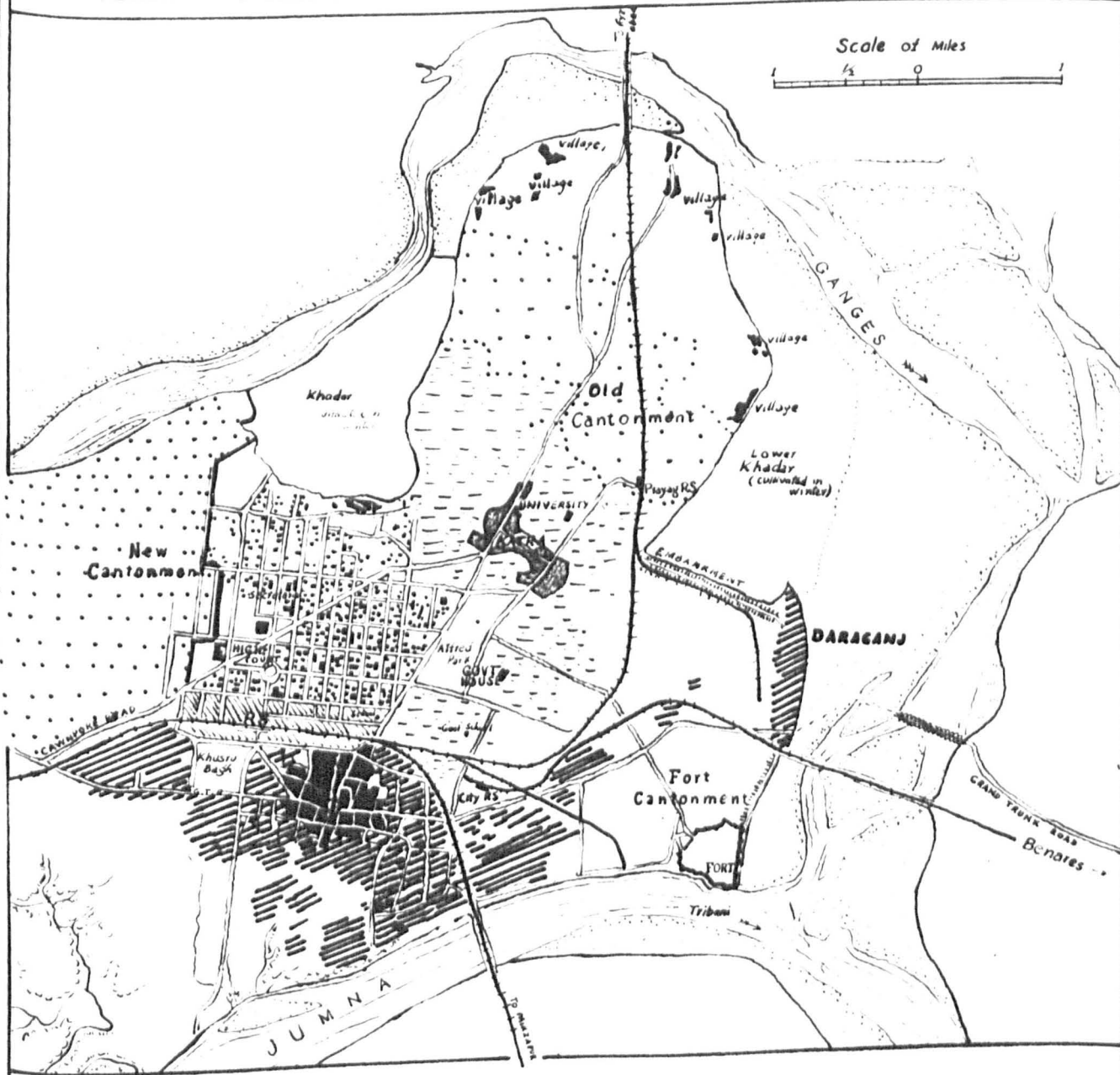
The influence of local topography on the city's morphology is evident from the map (Fig. 73). The Jumna flows immediately under its stable bluff intercalated with Kankar and there is no khadar bordering it. The city extends right to the water front on this side. Westward, however, the built-up land recedes from the Jumna because of some sandy ravines intersecting the river's bank. The Ganges surrounding Allahabad on the north-west, north and east presents different characteristics. It has a relatively wide flood plain which is marked landward by a well-defined bank, about ten to twenty feet high, below which there is no building at all. Above this floodplain or lower khadar there is another 'terrace'¹ in the east lying east of an old 'highbank' of the Ganges which runs from the Dufferin Bridge in the north past Prayag station, the eastern end of Government House grounds and the Government High School, meeting the Jumna bluff towards the bridge. This terrace is liable to inundation in years of abnormal floods, as in 1875,² when the high embankment ascribed to Akbar, running from Prayag station to the fort, burst. This area is thinly built over. Most of the city stands west of this 'terrace' on high ground.

The city proper lies in a somewhat elongated form on either side of the Grand Trunk Road which appears to have coincided here with the old Mughal road. The road is the main thoroughfare and other main streets join it at right angles from north and south imparting a sort of 'rib-pattern' to the plan.

¹ The word 'terrace' is used in its ordinary descriptive sense, not as a technical geomorphological term.

² D.C. Allahabad (1911) p. 199.

ALLAHABAD



BUSINESS CENTRE



OUTER RESIDENTIAL ZONE



CANNINGTON



REST OF CIVIL LINES



CHAUK PROPER



RAILWAY COLONY

KATRA : A BUSY MARKET IN THE CIVIL LINES.

The business quarter is centred round the Chauk formed by the junction of City Road with the Grand Trunk Road, where stand the clock tower, the police station, post office and the municipal 'city markets'. The chief bazars of the city including Johnstonganj (a general market), Thatheri Bazar (market for brassware), Sabzimandi (vegetable market), Machhli Bazar (fish market) and the meat market lie on the streets joining the Grand Trunk Road on and near the Chauk. Surrounding the business area are the mainly residential mohallas. The square-shaped garden of Khusru Bagh lies in this zone to the west of the business area. The detached ward of Daraganj, a linear street town with a rib-pattern, built on the great embankment, is also mainly residential. Immediately north of the city proper is the railway colony, a long rectangular settlement. It extends for over a mile and blocks access to the city from north, as there is no passage for wheeled traffic between the railway arch on City Road and the level crossing on the west. This feature occurs in other Indian towns and it is not good planning unless one wants to wall off the 'native quarter'. North of the railway settlement, extending up to the Ganges khadar and occupying a square space, is the modern town consisting of the civil lines (also known as Cannington), laid out on a perfect grid plan except for Cawnpore Road crossing it diagonally. Apart from the buildings of the High Court, Secretariat, Press, General Post Office and banks, the area is taken up by residences and shops. Thus this zone, containing grand government buildings, fashionable shops and bungalows in the midst of gardens, strung along the broad *paved* roads, forms one of the most pleasant spots in the urban landscape of the province. To the east of 'Cannington' are Alfred Park,

Government House, George Town and several schools. To the north-east lies the modern Katra Bazar and Colonelganj, the old Sadr Bazar, which grew up to cater for the needs of the old cantonment. North-east of Katra is the University, to the west of which are the district courts. To the west of the Civil lines is the new cantonment built on almost a rectangular plan. There are few buildings in the Fort Cantonment.

After this description of the five cities we pass on to a general discussion of the urban morphology of the area. Before taking the discussion of townplans we shall briefly consider the general appearance of the towns as expressed through their streets, houses and functional topography.

General Appearance. Streets in civil stations, railway colonies and cantonments are broad, metalled and often lined with shady trees. In the town proper they vary according to the size and importance of the place. In the cities the main thoroughfares are metalled - cemented or pitched and often broad. As one goes outward from the business centre to the poorer residential wards the streets become narrow and crooked, though paved with bricks or kankar in most cases. On those ends of the cities and towns bordering the civil lines, streets widen, and are much better kept than even in the business centre. As the town decreases in size and importance the streets deteriorate so that in the small country towns streets outside the main bazar usually consist of unpaved ground.

Brickhouses will be found to predominate in all the cities and large towns. There is, however, a striking diversity in their size, and structure. It is in the poorer mohallas of such towns usually in their peripheral zones, inhabited by market gardeners, conveyance drivers and

labourers that non-masonry dwellings will be found. These usually partake the characteristics of the regional rural house types. The pukka or masonry houses decrease in size and number with the decrease in the size and importance of the towns till in the country towns rural house types will often be found to predominate.

In the newer settlements viz. civil stations etc. almost all the buildings are pukka, generally constructed in western style, with some modifications e.g. western style, with the addition of a verandah and sometimes a courtyard so as to suit the local climate. With their extensive lawns, shady avenues, a general flattish skyline broken sometimes by the spire of a church, or high government buildings, the new settlements present a distinctly modern appearance forming a much happier but outlandish neighbour to the town proper.

The town proper has a very complex appearance. As opposed to the newer settlements which usually date from a time after the Mutiny and which have been laid out according to some plan on relatively large areas to serve some definite purpose, the town proper, has usually a long and a chequered history behind it. In its skyline are prominent the domes and minarets of mosques and pinnacles of temples. In its centre may be found some old sarai or a high mound marking the site of an old fort. Side by side with these now stand the clock-tower, the town hall, municipal office and two-to-four storied shops and houses of merchants and rich town-dwellers. On the streets cars and bullock carts go side by side. One may pass from the fashionable bazars to by-lanes which hardly appear to have felt the impact of the modern age. In brief, as a result of the fragmentary remains of past cultures, and a partial superimposition of modern

aspects and the gross economic inequality of the inhabitants, the larger towns of the province have a very complex appearance. In smaller towns modern influences are still relatively imperceptible.

Of the towns of the province 115 or about one-fourth are¹ illuminated by electric light, the rest by the dim kerosene lantern or the clay lamp fed by vegetable oil. Of course all the 24 cities are electrified and of the other districts capitals only 15 lack this modern amenity. Towns served with electricity are mostly confined to the Doab and Western Rohilkhand mainly because of the Ganges Canal Hydro-electric Grid, so that about 80 of such towns are concentrated in the eleven districts of Saharanpur, Muzaffarnagar, Meerut, Bulandshahr, Aligarh, Muttra, Agra, Etah, Budain Moradabad, and Bijnor. In the Himalayan area Dehra, Mussoorie-Landour, Rajpur and Naini Tal and in Bundelkhand only Jhansi^{are}/served with electricity. Fourteen of the districts viz. Garhwal, Almora, Kheri, Basti, Bara Banki, Unao, Rae Bareilly, Partabgarh, Sultanpur, Ballia, Fatehpur, Banda, Hamirpur and Jalaun have no electrified towns.

There is no clear cut zoning of functions in the towns of the area. As, however, we have seen in the case of the five cities, there is a central zone which contains most of the important bazars. This section which, however, is one of the main residential areas of the towns, may be called the business area. In many of the cities and large towns, the hub of this business area goes by the name of Chauk a word intended variously to mean a high street, a cross-roads or a ward, but always indicating the busiest bazars or the 'commercial core' of the town. The business zone contains the chief general markets, the specialized markets (there being a general tendency for the 'various trades' to be grouped together in the cities and large towns) e.g. markets dealing in the manufacture of the town, grain

¹This refers to 1944. The information is derived from 'Public Electricity supply: All India Statistics 1944' (Calcutta, 1947) pp. 177-191. The publication considers cantonment and similar adjacent settlements as separate electrified towns. We have considered them as one with the town proper and our number (115) of towns served with electricity will differ from that (128) given in this publication.

mandis, sabzi mandi (vegetable market), thatheri bazar (market for brassware), jewellers' markets as well as the firms of the native bankers. This business section contracts as the size, commercial and industrial importance of the town decreases till it is represented by a single small bazar in the small country towns. The wards surrounding the business area are primarily residential though some markets and retail shops may be found scattered in them in the case of the cities and large towns. The cultivating communities of the large towns naturally reside in their peripheral zones but in small towns the dwellings of the agriculturists who form so important a part of the population, are scattered throughout the settlements. Industrial areas are generally not differentiated. In respect of the cottage industries some of the manufactories are located in the firms or shops in the bazars but much of the products comes from the residential dwellings of the workers. Modern factories, wherever they have appeared, are usually located on the outskirts.

Quite distinct from, though adjacent to, the towns proper, is that distinct functional entity called 'Civil Station or Civil Lines'. The description given in the case of Cawnpore is fairly representative of the functional character of the civil stations found in all district capitals. In the smaller towns the buildings of the tahsil, school or dispensary are usually located on the outskirts along some shady roads leading into the town.

The railway colony usually located near the main station of the town consists of railway offices, workshops and quarters for the railway employees and is invariably outside the confines of the town proper. The cantonments with their infantry and artillery lines, barracks and a few

bazars are usually further from the town proper than the civil lines or the railway colony.

Town Plans.

The external form¹ of the town plans of the province consists of several well-marked types and admits of a general classification. The street pattern, however, is generally irregular. One of the main reasons for this is the checkered historical antecedents of the towns. As we have seen the majority of the towns grew as politico-economic centres of kingdoms and their administrative sub-units, or of principalities of local chiefs. Owing to the fear of invasion from some neighbouring states such towns were built near or round the local fort. Houses were usually huddled together in a very compact manner and with the increase of population 'the streets became narrower and more irregular, not only because of the over-crowding, but also because they offered thereby greater resistance to attacks.'² In many cases the towns were fortified with a wall resulting in a greater compactness and irregular street-pattern because of the desire of all the inhabitants to be within the fortifications. When attacked, however, by an enemy such precautions proved insufficient and the town was usually devastated with a consequent total or partial dispersion of the original

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For the present we concentrate our attention mainly on the town proper.

2

Bogle, J.M. Linton, Town Planning in India, (1929), p. 15.

population. The new settlers, however, rebuilt on the ruins of the same town owing to its relatively elevated site and the availability of building materials. This new town was usually built according to the tastes or the whims of the invader and probably differed in lay-out at least in parts from the pre-existing town. In course of time this new town met a similar fate as its predecessor and was built again with a re-orientation of the cultural and economic interests of the town and probably fragmentary remains of the original plan survived. This is a tale common to the majority of the towns of the non-Himalayan portion of the province.

As a result of the total or partial destruction and re-construction of the towns and a successive assimilation of different cultures in the past, a lack of common interests among the various communities occupying different wards and general absence of planning the street pattern of the towns of the province are generally irregular. If, however, we closely examine the pattern of the streets, behind their general irregularity we notice some arrangement in the case of a considerable number of towns especially in respect of the main streets, which seems to be related to the natural and cultural dominants of the site. Moreover, several old streets have been reconstructed and re-aligned and many new ones added during the British regime, modifying the original irregularity of the street pattern. In the following discussion, therefore, which lays greater emphasis on the external form of the plan street patterns have been given attention and considered side by side with the main town forms.

The town plans of the province may be grouped into six main types viz. (a) elongated (b) triangular, (c) circular, (d) semi-circular, (e) rectangular and (f) irregular.

(a) Elongated Towns. Nearly one-fourth of the towns of the area (about 190) have a markedly elongated¹ shape. Rivers and roads appear to be the main causes for such a pattern. Thus among the 'cities' whose shapes are elongated due to the control of river-fronts are Lucknow, Cawnpore, Shahjahanpur, Moradabad and Muttra. The advantages of a riverside location have been mentioned in the chapter on the distribution of towns and it is generally the same factors which have encouraged the growth of buildings along the bank of rivers. We have considered the form of Lucknow and Cawnpore in the preceding pages. Moradabad (Fig. 74a) on the Ramganga is another example of an elongated city. Shahjahanpur (Fig. 74c) is another good instance. The latter city is located on the narrow strip of land between the Garra and Khanaut rivers. The elongation is encouraged by lack of high ground which is in the form of an elongated strip marked (by form-line on the map) on either side by the edge of the well-defined flood plains of the two rivers.

There is a fairly large number of smaller towns with an elongated shape which seems to be related to river-fronts. And it is in the case of these smaller towns, where modern extensions like civil lines and cantonments are not large enough to alter the original shape of the towns, that the control of the river-front is most conspicuous. Thus Mau (Fig. 75a), Azamgarh, Akbarpur (Fyzabad district) on the Tons, Jaunpur on the Gumti and Ghazipur (Fig. 74c), Saidpur, Bara, Zamania (Fig. 75c), Chunar, Dalmau, Bithur (Cawnpore), Anupshahr, Hardwar and Rikhiyesh on the Ganges are excellent examples of elongated towns.

¹ By 'elongated' we mean towns whose length is usually not less than twice their breadth.

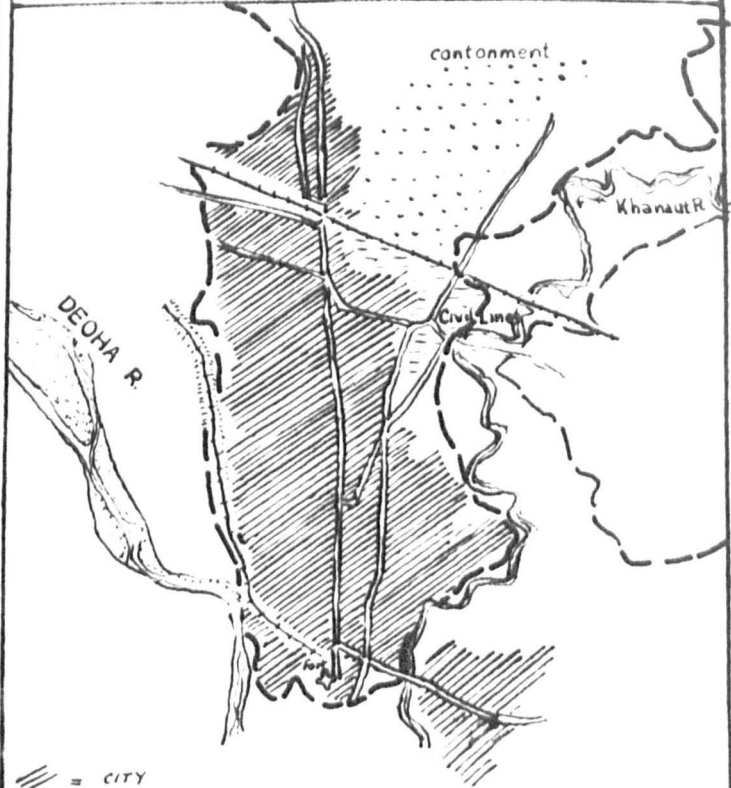
(a) MORADABAD

Buildup ground (city), $\frac{1}{4}$ CIVIL LINES

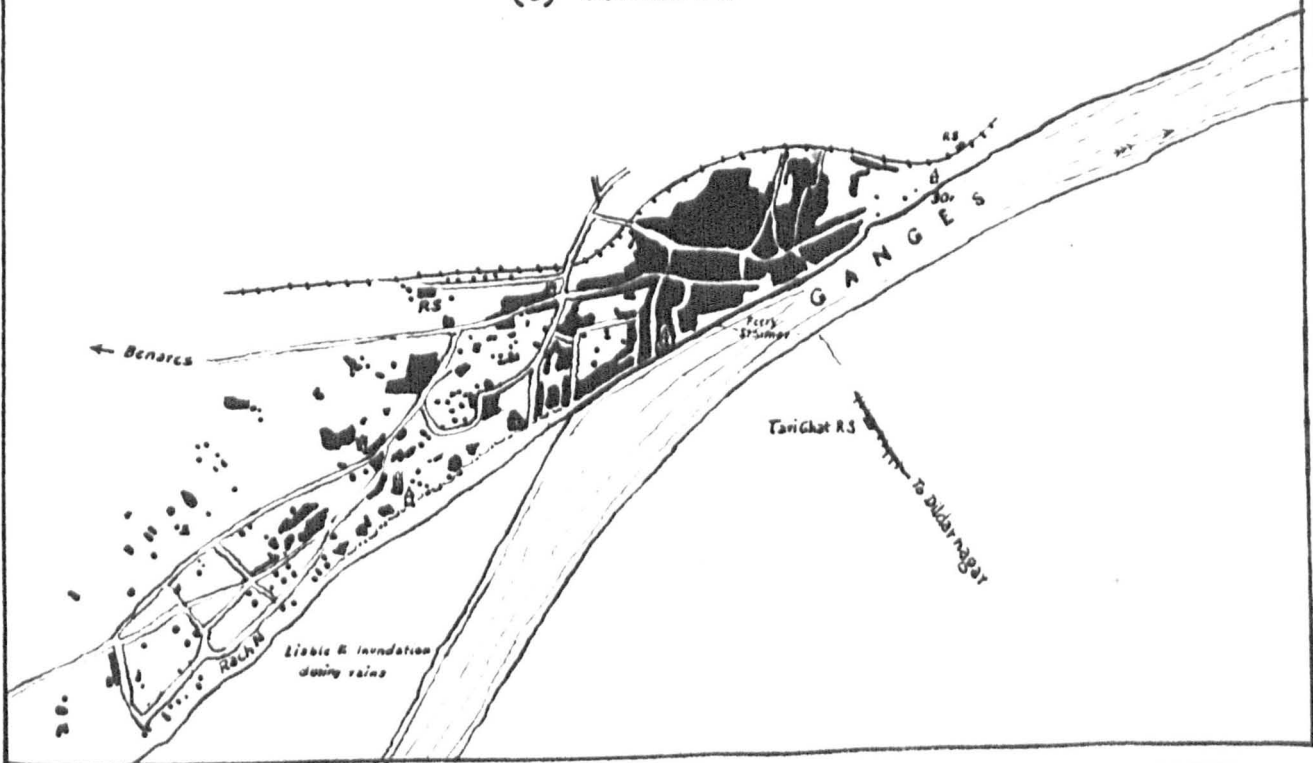


(b) SHAHJAHANPUR

Limit of the Flood Plain
Metalled Roads, Railway



(c) GHAZIPUR



Towns elongated apparently by road influence are more numerous than those on account of rivers. Such towns are usually small because an elongated shape due to roads is necessarily associated with the unusual importance of a single road. Larger towns lie at a focus of several roads and elongation in their case is due to rivers or other factors. In a considerable number of the towns elongated along roads, the linear growth is so marked and the single road so dominant that such centres may be called 'street towns.'¹ The road, especially if it is metalled, assumes great importance to traders who line it with their shops and receive and dispatch goods direct from and to larger towns by means of bullock carts. The road thus, besides serving as the main artery of communication, becomes the market place of the town and its dominance is indicated by the almost linear plan of the town with by-lanes joining the main street roughly at right angles and imparting to it a 'rib' pattern. Such street towns are relatively more numerous in the Trans-Gogra Plain than in any other region of the province. They are Nautanwa, Siswa Bazar (Fig. 75c), Captainganj and Pipraich in Gorakhpur, Tulsipur (Fig. 75d) in Gonda, and Basti. Their 'street' plan seems to be related to the importance of the local roads which serve as the lines of transport for the trade with Nepal.

Excellent examples of street towns in the Ganges-Gogra Doab are Usia in Ghazipur, Badshahpur in Jaunpur, Goshainganj in Fyzabad, Bela in Partabgarh, Faridpur in Bareilly and Haldwani in Naini Tal. In the Trans-Ganges Plain Ahraura is a very good instance. In the Doab Sirsaganj in Mainpuri and Miranpur in Muzaffarnagar are the only good examples.

¹

B.G. Jaunpur (1908), p. 187.

Dickinson, R.E., 'The Town Plans of East Anglia - A Study in Urban Morphology' *Geography*, Vol. 19, (1934), pp. 37-50

MAU **ELONGATED TOWNS**
Roads: metalized, unmetalized

00 Builtup ground, == == Roads, metalled, unmetalled
+ + + + Railway

(a)

MAU

(b)

ZAMANIA

(c)

BASTI

(d)TULSIPUR

(c)

SISWA BAZAR

(f)

BADSHAHPUR

(g)

AHRAURA

(h)

HALDWANI

Furlongs

8 6 4 2 0

1 m34.8

If we examine a few of these towns the importance of the roads in their plans will become evident. Basti (Fig. 75c) is built along a road from Nepal to Fyzabad. The principal connection¹ of the Badshahpur (Fig. 75f) merchants is with the bazars of Phulpur in Allahabad and Machhlisahr in Jaunpur, both these towns lying on the same road. In the case of Haldwani (Fig. 75h) the commercial importance of the town owing to its rail-head character and the consequent importance of the road leading to the Himalayan region is evident from the street plan of the town. Ahraura (Fig. 75g), another zone-of-contact town in Mirzapur, at the base of the Vindhyan tableland where the road traffic gives place to that by pack-bullocks shows by its 'street' pattern the importance of the road which comes from the north and on which it lies.

The Himalayan towns viz. Chakrata, Mussoorie and Landour, Rajpur, Pauri, Ranikhet and Almora are notably elongated primarily because they are located on the tops or upper slopes of long narrow ridges. Such a situation has some definite advantages. The climate during summer on the higher, open ridgetops is much cooler than in the valleys. In the Himalayan area roads and tracks quite frequently follow not the valleys but ridgetops which, forming local watersheds are free from ravines in marked contrast with slopes of the hills where numerous gullies and streams traverse the surface so that the tracks have to be carried on bridges at several points. Moreover, the view of the surrounding scenery is best from the ridgetops. All these towns except Almora originated in the 19th century to function as hill stations and the road and town have

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E.C. Jaunpur (1908), p. 189.

grown almost simultaneously.

Three examples of the elongated Himalayan towns viz. Chakrata, Almora and Mussoorie are shown in the Figure (76). Chakrata, conspicuously linear, lies on a narrow ridge the top of which is occupied by the cart-road (from Beharanpur) which has been broadened and metalled here. Buildings are strung along the road and in its close vicinity. Almora occupies the top of a narrow ridge about $2\frac{1}{2}$ miles long, the town is built on either side of the Panikhet road which occupies the crest. The bazar lies along the central part of the road. Mussoorie (Fig. 76c) is also markedly elongated but the form becomes relatively irregular owing to a comparative lack of level ground, the site of the houses having in all cases been made either by excavation, or by filling up on the ridges and slopes.¹ Dwellings often extend along the spurs projecting from the Mussoorie Range running east-west on which lie the main streets and bazars of the town.

The street-pattern of the elongated towns of the province is not so easy to interpret as their shape. In a considerable number of such towns, however, some of the main streets are parallel with the axis of elongation. Allahabad (city), Shahjahanpur, and Bareilly are instances from the cities. In the case of towns the elongation of which is primarily due to roads such examples are more numerous while in the case of street towns the pattern is mostly 'rib' like, with the main street forming the most dominant feature of the plan. But there is a fairly large number of elongated towns where the street pattern is very irregular.

¹

D.C. Dehra Dun (1911), p. 245.

ELONGATED HIMALAYAN TOWNS (ON NARROW RIDGES)

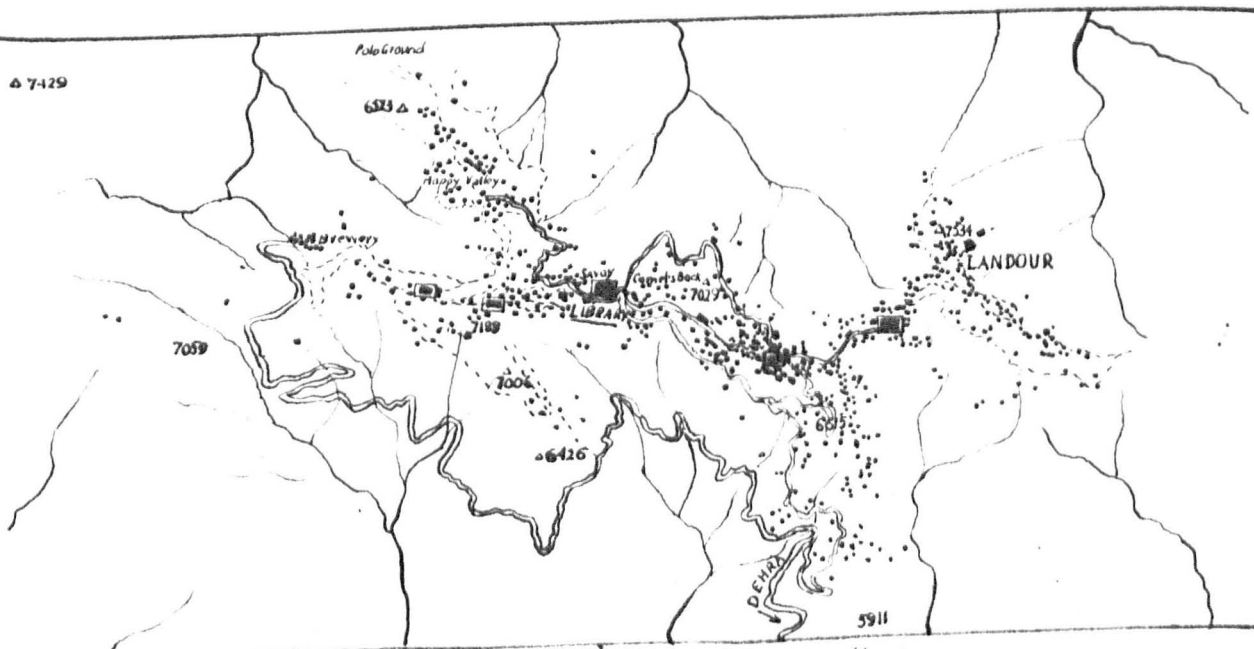
(a) CHAKRATA



(b) ALMORA



(c) MUSSOORIE



BAZARS
Roads
6500 contours
Perennial Streams
Buildings

(b) Triangular Towns. Curiously enough a considerable number (c. 40) of the towns have a triangular shape which is related to the convergence of roads, or a road crossing a river or to some restrictive forces in the site. A recurrent feature in their plan is the convergence of streets at least at one apex.

Dehra (Fig. 77a) (excluding the cantonment which lies further north-west) is an example of a town where the restrictive forces of the site have determined the triangular form. Built land lies on the triangular plateau carved by the Bindai and Rispana streams which gradually get further apart as they descend the northern slopes of the Dun. The roads diverge southward in sympathy with the diverging streams and the widening plateau.

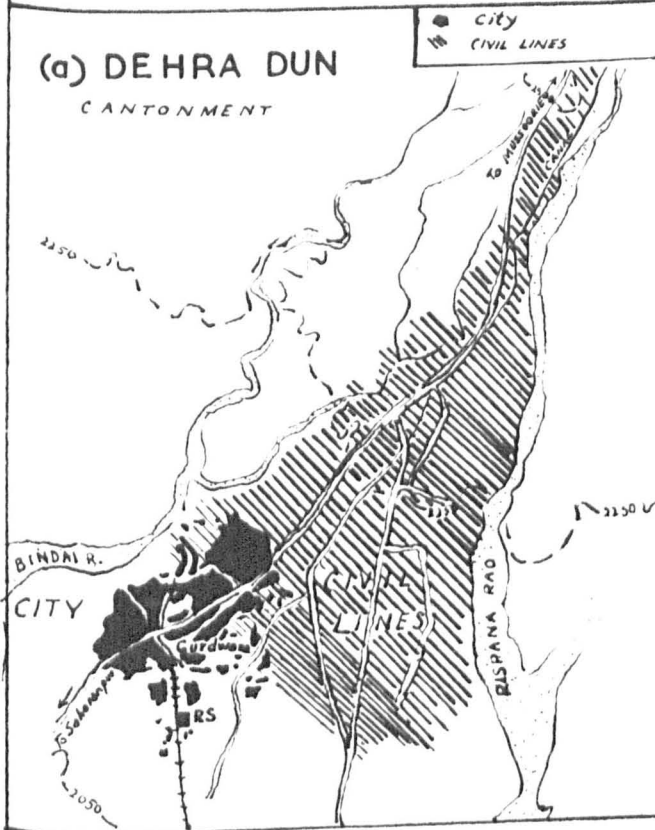
In the majority of cases the convergence of roads appears to account for the triangular form. Thus at Gola (Fig. 77c) roads from Mohamdi and Purnapur converge to proceed as one towards Lakhimpur. Hathras (Fig. 77c) is another example where roads appear to have been the main factors determining the triangular form. Two angles of the town lie on the trunk road from Muttra to Rohilkhand. The third lies on the provincial road to Agra where there is a marked convergence of streets. Some convergence of the streets towards the old fort shows that this latter was once the focus of the town. Extension on the Aligarh road has been restricted by the railway.

(Fig. 77d)
Mirzapur is an example of a triangular town the form of which appears to have been determined by the junction of an important road with a river. The base of the triangle lies on the Ganges, which has a firm bank here because of a kankar reef at or below the water line.¹ The

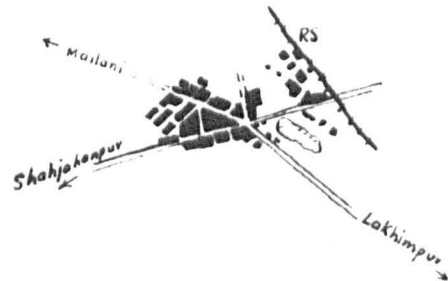
¹ D.G. Mirzapur (1911) p. 353.

TRIANGULAR TOWN PLANS

(a) DEHRA DUN
CANTONMENT



(b) GOLA



(c) HATHRAS



(d) MIRZAPUR



stability of the bluff and the importance of the river as a highway encouraged building on the waterfront. The Great Deccan Road, however, which being the chief road to the south was so important during the 19th century, in the commercial prosperity of the town, appears to have exercised a southward pull. The main streets lie parallel both with the river bank and with the Great Deccan Road.

(c) Rounded or Circular Towns. A number of towns in the non-Himalayan part of the province (about 30) have a rounded shape often becoming circular. The street pattern in many cases is roughly radial with a convergence in the centre of the town which has been and is the cultural and commercial focus. Some of the circular towns are definitely known to have had fortifying walls and though the latter have disappeared (save in a few cases) but for a few gates, their influence on the town plan is apparent. Such towns, for example, are Aligarh and Meerut city¹ and Jahangirabad (in Bulandshahr).

Some might not have had fortifying circular walls but appear to owe their form to their growth round the central fort² and the market.

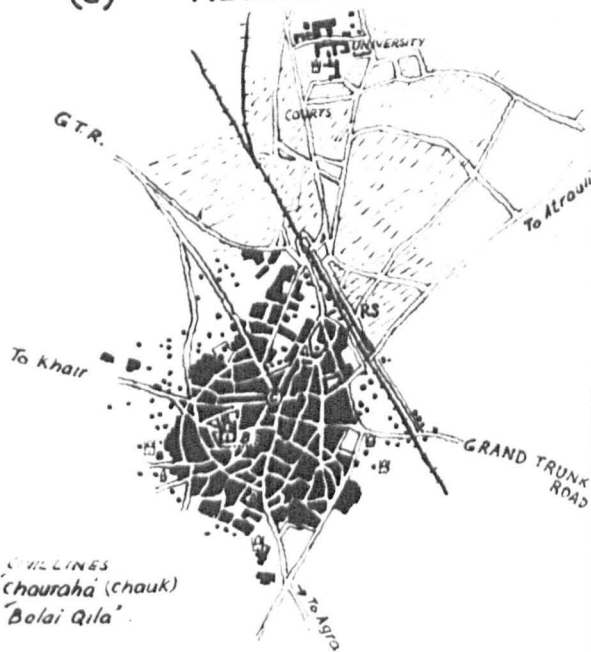
(H. 78a)
Aligarh city is a striking example of a circular town with a relatively radial street pattern. The town grew gradually round the old

¹ By a city is, here, meant the town proper excluding the civil lines and cantonment.

² A study of the District Gazetteers would reveal that about a hundred and fifty towns of the province have had forts at one or the other time in history. The number of such towns may probably be still larger as the ruins of many of these forts have disappeared. A few of the forts still exist, in some cases the decaying fortifications remain but in many there is nothing but a mound either standing apart from the town or included within the town and built over.

CIRCULAR TOWNS

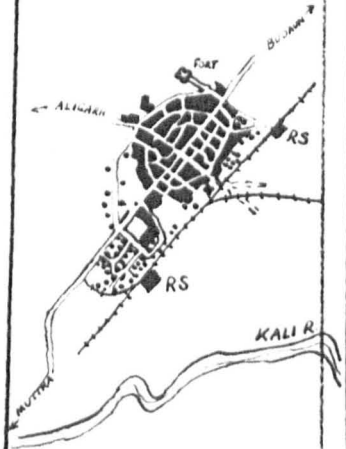
(a) ALIGARH



(b) JAHANGIRABAD



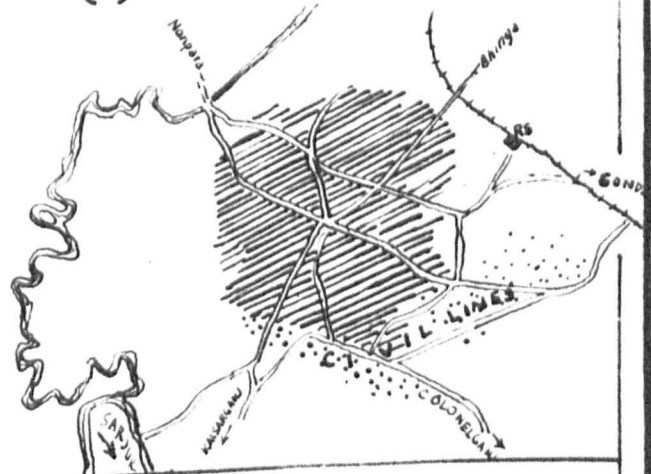
(c) KASGANJ



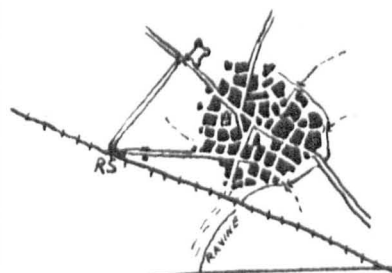
(d) JHANSI CITY



(e) BAHRAICH



(f) FIROZABAD



¹ Cor stronghold whose site is still indicated by the ward known as 'Balai-
 Gila' (on the fort). In the centre of this rising ground is the Jama mosque.
 This central portion seems to have formed the old focus of the city and even
 now the open space round the mosque is flanked with numerous shops and only
 a little to the north is the 'Chauraha' (cross-roads) which is the business
 core of the city, its chief markets lying on the streets converging here.
 The circular shape is probably due to the fortifying walls. "There were
 originally walls and gates round the city, as the names of Madar, Delhi,
 Turkman, Sarni, Aligarh Darwazas (gates) testify"² but only the vestige of
 one pillar of the last gateway remains. Jahangirabad (Fig. 78f), another ex-
 ample of a circular town was formerly surrounded by a mud wall with a ditch
 all round.³ The wall has disappeared and the ditch has been converted in-
 to a drain. Jhansi city (Fig. 78d), another town with a rounded shape, is sur-
 rounded by a roughly circular wall which is extant. Though the plan is
 grid-iron in the centre it tends to be radial on the periphery.

There are several good examples of circular towns with a radial
 pattern e.g. Bahraich (Fig. 78e) and Firozabad (Fig. 78f) or without such a
 pattern e.g. Saharanpur city, Bijnor, ^{Kasganj (Fig. 78c)} Khurja and Lalitpur (in Jhansi) where
 owing to lack of information it is difficult to account for the shape.

(d) Some of the smaller towns (about 20 in number) have a roughly semi-
 circular plan owing to some focal point or line being located on one side
 of the town often indicated by a convergence of lanes there. Such a

¹ D.C. Aligarh (1909) p. 198. (See glossary for 'Cor')
² Ibid, p. 200.
³ D.C. Bulandshahr (1903), p. 237.

SEMICIRCULAR TOWN PLANS

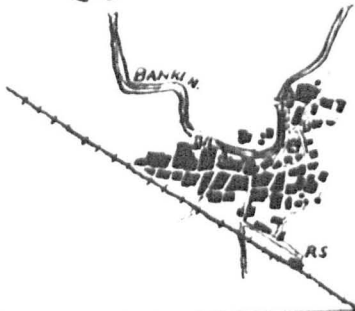
(a) SAHANPUR



(b) KARA



(c) PADRAUNA



(d) BILHAUR

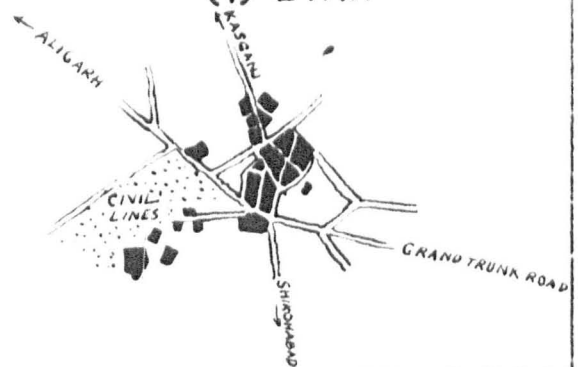


IRREGULAR TOWN PLANS

(e) FATEHPUR



(f) ETAH



(g) BANSGAON

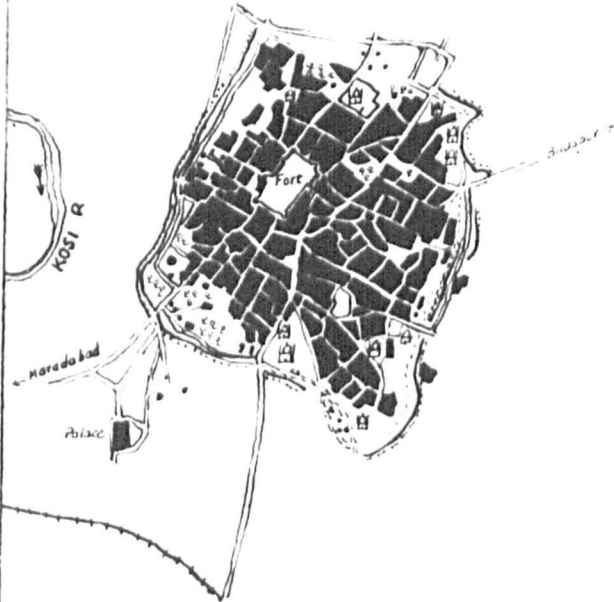


(h) GONDA (TOWN PROPER)

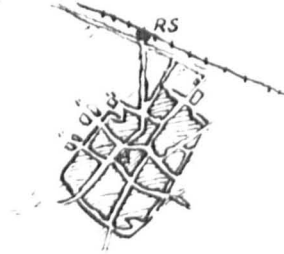


RECTANGULAR TOWNS

(a) RAMPUR



(b) CHANDAUSI



(c) JALALABAD



(d) MACHHLISHAHR



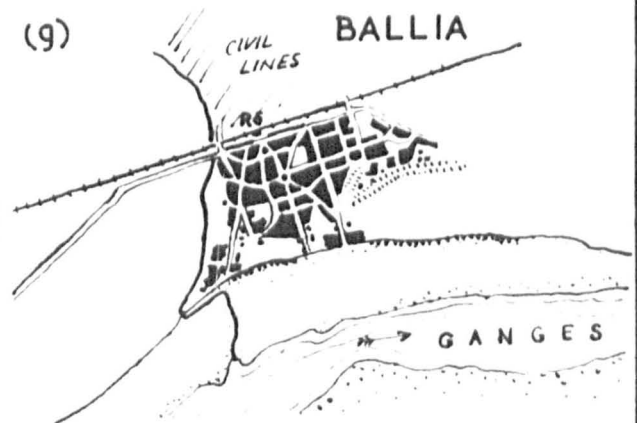
(e) AURIYA



(f) RAE BARELI



(g) BALLIA



component known as Jahanabad was surrounded by a wall. Jalalabad (Fig. 80c) and Thana Bhawan in Muzaffarnagar, Chandauli (Fig. 80d), and Tikainagar in Bera Banki are examples of smaller towns which owe their rectangular shape and street pattern to a surrounding rectangular wall. Machhlisahr (in Jaunpur) and Auriya (in Etawah) (Fig. 80e) are examples of such towns whose rectangular plan appears to be related to cross-roads. At places like Lucknow

Evidence as to the planned layout of a town in the past is almost non-existent. Ballia (Fig. 80g), however, is an example of a town whose rectangular pattern is due to a planned re-construction in the present century. Owing to the shift of the Ganges to the north the older Ballia was almost totally swept away by 1827. A new town in the shape of an elongated quadrangle was built but this too was eroded by the shifting stream about 1904 and the existing town is a subsequent growth round a 'rectangular ghank' ¹.

(f) Irregular Town Forms. The largest group (about two-fifths) is formed by towns whose external form does not fall in any of the foregoing categories and is, generally speaking, irregular. Owing to the fact that the majority of our towns are small and that most of the larger ones fall in one or the other of the foregoing groups, the majority of these irregular towns are small. Among them however, a large number have some sort of quadrilateral shape. Whatever their origin the form of these small towns where agriculture, as a single occupation would be found to predominate, could not be divorced from the considerations which appear to have governed the predominant roughly rectangular village pattern of the area. ^(Fig. 78f)

¹ With reference to the plan of Ballia see the railway station and the Civil D.G. Ballia (1907) pp. 167-169.

lines. Another feature of the town is along the main trunk road and along Ballia

up ground lies on the main road. In the case of Lucknow city (Fig. 78f)

In a considerable number of the towns of this group the form is too irregular to be likened to anything. Historical vicissitudes, distribution of firm or loose soil or lowlying or raised land in the site the unequal pull of various roads according to the commercial connection of the town with the surrounding areas, the position of the railway station and the administrative section and the location of the market places are factors which appear to have contributed in varying degrees to the form of such towns. The following few examples may serve to illustrate the diversity of such conditions.

The ancient city of Sambhal, for centuries the capital of a subah was on a relatively small and steeply sloping site which was gradually lost and is now an aggregate of several detached settlements centred round the numerous sarais and bazars. The plan suggests that the settlement was probably relatively more compact in the former days, probably being to the last continuous in the past. The straggling plan of Manikpur (Partabgarh district) or Zafarabad (in Jaunpur) suggests the decay that such important trading towns have undergone in course of time.

In some cases the irregularity of the plan is probably due to the riverine location of the town. The irregularity of the river has caused the growth of two separate towns which appeared at different times but owing to their proximity became later agglomerated into one. A few of such examples are Ganj Daranagar (Ganj and Daranagar) in Bijnor, Gaura and Barhaj (Gaura and Barhaj) in Gorakhpur and Karwi (Karwi and Tarhawan) in Banda. The proportion of the elongated towns as a whole is smaller in eastern U.P. than in the west. The reason, as in the case of

In some cases the irregularity of the plan seems to have arisen from the unequal pull of the roads converging on the town. Thus in the case of Fatehpur (Fig. 79e), for example, the maximum growth is towards the south where on the road to Banda lie the railway station and the Civil lines. Another ribbon growth is along the Grand Trunk Road and some built-up ground lies on the Dalmau Road. In the case of Gonda city (Fig. 79f)

the pull of the various roads gives a starlike form to the town. In some cases a taillike growth has been appended to some towns owing to the pull along the road leading to some important towns. Bara Banki owing to the nearness of Lucknow, Unao because of Cawnpore and Banskason (Fig. 79) near Gorakhpur are such examples.

In some cases terrain factors dominate. Thus the form of Etawah is determined by the ravines of the Jumna.

Distribution

The Himalayan towns are markedly elongated because of their location on relatively cool and open tops of ridges which are usually long and narrow in this region. In the non-Himalayan area the 'street towns' are relatively more frequent in the Trans-Gogra Plain probably owing to the importance of the trade with Nepal and the pull on such towns by the roads leading to that territory. Towns elongated along river banks are more numerous in Eastern U.P. than in the western parts. While other advantages of the riverside location are common the navigability of the rivers increases in the east on their lower courses and in the past when rivers were the main arteries of commerce and transport they encouraged elongation of the towns along their water fronts. The proportion of the elongated towns as a whole is smaller in western U.P. than in the east. The reason, as in the case of the villages, appears to be the fact that in the western parts with a more disturbed past and greater need of defence the general tendency has been towards maximum compactness of settlements. For similar reasons the rounded or circular towns occur ^{mainly} in the Doab and Rohilkhand where fortifying walls are known to have been in existence in many cases. Other town plans do not depend on any regional characteristics but, as noted above, are generally

related to local conditions. Consequently they do not appear to show any regional concentration.

Plan of the Newer Settlements.

In the foregoing discussion of the town plans, our attention, except in the case of the Himalayan towns, has been mainly concentrated on the older town to the exclusion to its new neighbours viz. the civil lines, railway colonies and cantonments. The cities having cantonments are Dehra-Dun, Meerut, Muttra, Agra, Cawnpore, Allahabad, Jhansi, Bareilly, Shahjahanpur, Lucknow, Fyzabad and Benares. Chakrata, Landour, Lansdowne, and Ranikhet are entirely cantonment settlements. Other cantonment towns of the province are Almora, Naini Tal, Rookhee and Sitapur. Civil lines of varying extent depending on the size and administrative importance of the town exist in all the district headquarters. There are railway colonies of considerable size at all the cities and towns which are important railway junctions: and at Jhansi, Lucknow, Gorakhpur, Allahabad, Cawnpore, Benares, Bareilly, Agra and at the small towns but important junctions of Tundla and Mughal Sarai quite large colonies have been constructed.

All these settlements are contiguous with the older parts of the town but are morphologically different. They have been laid out on some plan with roads and buildings usually appearing simultaneously and are not characterised by a gradual accretion, on various cultural and economic foci at different periods, such as has been the case in the older parts of the towns. They are covered by networks of broad metalled roads ^{like ribbons} with buildings strung along them. The density of dwellings is very low as compared to the older town.

Most of the cantonments are well-laid out. A rectangular pattern of streets is frequent. Such examples are Agra, Meerut, Fyzabad, Roorkee, Lucknow, Allahabad and Sitapur. In others part of the layout is rectangular and part rather irregular. Such cases are Jhansi, Muttra, Fatehgarh Cawnpore, and Shahjahanpur. In the case of Dehra Dun and other Himalayan cantonments a rectangular layout is out of the question owing to the uneven topography. The 'Sadr Bazar' (chief market of the cantonment), except in few cases e.g. Agra and Benares lies at the margin of the cantonment, nearest the town.

Civil stations, though well-built in respect to roads and houses, do not conform to any standard plan. The rectangular lay-out common in the case of the cantonments is usually absent. Owing to their spacious design, artistic tastes have found expression in their plans, as for instance, circular or semi-circular streets which are frequently noticed. Local conditions of the site in some cases dominate the plan. Thus in the case of the civil stations occupying river fronts e.g. Cawnpore, Moradabad, Mirzapur and Ghazipur the main streets run parallel to the rivers.

The railway colonies are almost invariably perfect oblong rectangles parallel to the railways. The quarters are lined along the streets which have a literally rectangular pattern, or they fill the rectangular spaces formed by the network of the streets. In the case of smaller towns the railway quarters form a single row parallel to the railway.

Chapter XII.

CONCLUSION.

We have seen in the foregoing chapters that the distribution of population, siting and types of rural settlements, village patterns or house types are to a great extent related to the natural and cultural features of the area. We have also noticed that the towns of the province originated owing to diverse causes and that their distribution is related not only to the natural and existing cultural aspects but also to the historical antecedents of the area. Predominance of a single function, except in the case of some country towns where agriculture may dominate, other occupations, or the Himalayan towns which are mainly resort centres, is uncommon in the province. While factory or cottage industries occupy an important place in some towns, commerce is the most evenly distributed and important function in the majority of the towns of all sizes. The administrative function is unusually concentrated in the district capitals, with the result that the tahsil towns have been dwarfed. While the larger towns show clear evidence of the impact of the west, the smaller ones are still considerably rural and predominantly native in aspect. The town plans seem to be related in varying degree to the natural and cultural 'dominants' in their sites. The present chapter tries to bring together in a concise form these facts which have received elaborate treatment in the main body of the thesis.

The largest area of a very high density (7000-1,000) of population lies roughly east of a line drawn through Allahabad and Fyzabad. The zone is the wettest part of the Ganges Plain in U.P. (40" to 55" rainfall

with a considerable proportion of area under water, a high watertable and a high density of masonry wells used in or available for irrigation. The tract falls in the region of rice, a crop which needs a heavy labour force in its arduous cultivation and contributes to a high density of population. Double-cropping, particularly on non-rice lands, the chief device to feed an increasing population is an important feature of the rural economy of this zone. In the northern portion of this tract the growing importance of sugar-cane as a cash-crop and the multiplying sugar works also help to account for the high density.

Other relatively small zones of the same grade of density are the Upper Doab and Central Rohilkhand. The protection afforded by canals and tube wells particularly to wheat the staple crop of the region, the fact that the northern part of these zones are the areas of heaviest cane cropping in the U.P., appreciable industrialisation and the notable frequency of towns are among the factors that account for the high density of population here.

Elsewhere the density in the Ganges Valley ranges between 500 and 700 except in the following tracts where it is below 500:— (a) The Jumna khadar and ravines (b) the portion of Muttra and Agra occupied by the Aravalli and Vindhyan outliers respectively, (c) parts of the Middle and Lower Doab with a high proportion of usar land (d) the Ganges khadar, (e) the northern portion of the Guntur-Gogra Doab (with a considerable proportion of forest area), and the adjoining Tarai tahsils, (f) the Bundelkhand plain. The tahsils with the lowest density (below 100) in the Ganges Plain are Kichha and Haldwani, the subdivisions of Naini Tal wholly falling in the Tarai and Bhabar zones respectively. The presence of swamps in the

Tarai and the absence of water in the Bhabar, a high proportion of forests and the prevalence of malaria in both the belts account for the low density.

In the Himalayan and Foreland regions population is relatively sparse. The preponderance of forests, lack of level ground, relatively thin soil cover and the vigours of a cold climate are the limiting factors in the Himalayan region. In the Foreland zone the presence of jungle and scrub, the frequency of hills, relative unproductivity of the sandy soil, the quick run-off and the relative *lack of water*, are the main reasons for a low density.

The distribution and siting of rural settlements in the province is influenced broadly by the relief, soils, nature of water supply and vegetation cover of the various tracts.

In the cis-Tibetan zone, north of the Great Himalayan Range relief, climate and facilities for trade with Tibet are the chief factors determining the siting of settlements. The region consists of a number of narrow roughly north-south valleys separated by wide snow-covered ranges. The passes at the head of these valleys provide passage into Tibet with which territory the Bhotia residents of the zone carry on trade. The entire region remains buried under snow from October to March. Owing to the destructive avalanches and landslides, cold climate and steep gradient the upper slopes of spurs are avoided and the villages are almost invariably sited in the valleys (along which run the tracks to Tibet), on relatively level ground near riverbeds, on alluvial cones or moderate slopes bordering the valleys. Most of the habitations of this region are seasonal, being inhabited only during snow-free periods. Permanent snow is non-existent in the Lesser Himalayan zone but relief is here the dominant factor. The region is pre-eminently a country

of slopes consisting of a rather confused mass of ridges and valleys. Every ridge has been dissected into numerous spurs by perennial or seasonal torrents. Pieces of level ground a few acres in extent occur only in the wider river valleys. Though the region ranges from about 2,000 to some - 10,000 feet in elevation most of the valleys lie below 5,000 feet. The climate of the spurs is healthier than that of the valleys even 500 or 1,000 feet below. The latter have a sultry climate from March to October owing to their lower altitude, shut-in position and the reflection of insolation from the hillsides. In the cold months they remain shrouded in mist in the forenoon and suffer from frost at night. Most of the country above 8,000 feet is under wood, while forests of some type occur on the upper part of all the ridges irrespective of their elevation. Owing mainly to steepness of slope and the predominance of forests at higher levels the upper limit of cultivation is roughly 7,000 - 8,000 feet. As settlements without cultivation are rare the upper limit of cultivation is also the upper limit of settlement. As a result of all these factors the distribution of inhabited sites is very uneven. The forests and steep slopes at all levels as well as most land above 7,000 - 8,000 feet are without settlements.

The characteristic site of a rural settlement in the Lesser Himalayan zone is a spur over-looking a river valley. The site has the advantages of being airy, well-drained, and above the sultry valley-bottom. Such a siting suits the local land use pattern (Fig. 39% and pp. 98-99), the settlement being midway between cultivation below, and grazing ground and forest above. Springs form the usual source of water supply for human consumption. Where springs are absent the local stream or the gul (irrigation channel) serves as the source of water.

The Duns and Bhabar are the zones pre-eminently of waterpoint settlements. The relatively thin, porous soil in both the zones consists of sandy loam or sand overlying a gravelly subsoil. Natural surface water is rare and in spite of a copious rainfall the porosity of the soil renders irrigation necessary. The watertable is very deep and wells are scarce in the Duns and non-existent in the Bhabar. All the settlements line, or lie near, irrigation channels (mostly masonry lest the water should be absorbed by the porous soil). These channels are the source of water to fields, men and cattle. In both the zones forests and water supply are the limiting factors of cultivation and settlement. The relatively enclosed nature of the Duns, however, results in a deeper soil and a higher water table in these valleys than in the more thirsty Bhabar. Relatively, therefore, to their size the Dehra and Kotah Duns are more fully inhabited than the Bhabar zone where inhabited areas occur in the midst of small cultivated patches in its northern margin near the foot-hills.

In the Ganges Valley though the distribution of settlements is broadly uniform resulting from the general fertility of a level alluvial plain considerable variations may be seen occasioned by varying hydrographic and soil conditions.

The Upper Doab (i.e. north of Aligarh district) above the Khadar of the Jumna and Ganges is dotted with villages which are the largest (on an average) in the province. They are situated at a distance of about 1½ miles from one another, the large size of the settlement striking a balance between the high density of the area and the long inter-village distance. Owing to the uniform soil-fertility and underground water there is little to choose between village sites. In the Khadar bordering the rivers, where the watertable is near the surface firm uplands are sought. Dry point

villages are located in the midst of cultivated rises but as there is a constant danger of losing cultivation by diluvial action these settlements are small. In contrast with the flood plains the high bluffs of the rivers are favourite sites for large settlements the bluff villages enjoying cultivation in the Banar, and the additional advantage of unirrigated cultivation and abundant grazing in the khadar. Where, however, the bluff is ravined and has a very deep watertable it is free of settlements.

If we take a section across the Middle or Lower Doab the distribution and siting becomes rather different owing to two fundamental changes in the landscape occasioned by the Jumna ravines and the wide belt of usar patches running through the length of this portion of the Doab. In the ravine tract the watertable is very deep, the soil denuded and tree growth scanty. Settlements, which appear to antedate the deforestation of the riverain dhak woods, are small and few and far between, perched on small pieces of flat ground in the midst of hideous ravines. In the succeeding usar-free belt there is nothing striking, but the usar zone presents a different landscape. Patches of relatively low, bare or grassy wastes often containing large lakes in their midst, break the continuity of cultivation. The usual settlement in size, half to one-third of the Upper Doab village, is sited on the junction of the usar and arable land. One rarely finds a settlement on the negative usar but the siting on its margin, enforced by a relative want of fertile land, enables the agriculturist to spare more of the usar-free land for cultivation and bring some of the usar near inhabited sites under the plough.

In the extreme north of the Ganges-Gogra Doab the typical habitation in the Tarai Belt is a dry-point settlement. Owing to inundation during rains, frequency of grassy lowlands and river channels, a high watertable

and the prevalence of malaria there is a quest for dry rises in contrast with the Ehabar zone where it is the waterpoints that are sought.

Further south this doab consists of two main tracts, a northern one free of usar and a southern one containing an extensive zone characterised by usar patches. In the northern portion the distribution of settlements is very even, the main difference compared with the tract west of the Ganges i.e. the Upper Doab, being the small size and greater frequency of the inhabited sites owing to a higher watertable resulting from a heavier rainfall and from seepage from the Tarai. Near the Ganges, drypoint settlements occur in the Khadar zone. In the Bhur tract, infested with grassy patches harbouring wild animals, hamlets are conspicuous. Much of the Sarda Khadar is covered with a thick growth of tamarisk and is bare of habitation.

The southern portion of this doab consists of the narrow Khadar of the Ganges and Gogra on either side succeeded by relatively narrow usar-free belts while the centre is occupied by the usar zone extending from Hardoi as far east as Azamgarh and Jaunpur. The Ganges Khadar is characterised by alluvial flats often arranged in the form of double terraces and settlements are sited on the river-ward elevated edge of these. East of its confluence with the Gumti the Ganges is associated with high levees usually above the reach of floods and large dry-point villages are seen on them. Where the high bank is away from the stream the low flood plain is dotted with temporary huts. The bluff and the Khadar of the Gogra has similar distribution. The loamy belts on the north, east and south of the have an even distribution while the silt in the usar belt is akin to that in the usar zone of the Ganges-Jumna Doab. As a whole the size of settlements and the distance between them is small compared with the northern part of this doab or western U.P., owing to the development of numerous hamlets

within the limits of a muza. Thus while in Eastern U.P. the high density of population expresses itself through small closely situated settlements, in the Upper Doab it does so through large widely spaced agglomerations.

In the usar-free Trans-Gogra Plain the evenly distributed settlement is usually small in size, growing larger on the drypoints afforded by the levees of major streams or by the elevated margins of oxbow-lakes which mark the old courses of rivers. The villages thus situated are usually above the reach of floods during the rains while they enjoy the proximity of surface water during the hot season. Thus the drypoints in rains are often water-points in the hot season. All settlements, as elsewhere in the Ganges Plain, stand on rising ground above the level of fields, especially in the Khadar zone. The Terai in the Trans-Gogra Plain is different from that west of the river, being relatively free from extensive swamps and jungles. Cultivation extends mostly to the margin of the patches of sal forests. Small areas of swampy ground are confined to the river beds or near the jungle borders. The distribution of settlements, as a whole, is even, the inhabited sites being spread at an approximate distance of half a mile from one another.

In the Dundelkhand Plain the ravines of the rivers are characterised by the same type of settlement distribution as noted on the Jumna ravines in the Doab, with the difference that villages are less frequent. In the ravine-free plain of Jalaun and Jhansi i.e. west of the Betwa river, where the black soil is relatively fertile and free of waste grassy growth, the villages are evenly distributed. It is relatively free of the numerous streams that characterise the plain east of the Betwa. In this zone of low density of population and large-sized settlements the inter-village

distance is considerable. Owing to the stickiness of the black soil most villages occupy elevated sites on patches of lighter soils.

In the doab between the Betwa and Ken the striking feature is the river-side siting, all the perennial and seasonal streams being lined with villages because of the advantages of water supply, a high watertable in the dry river beds, grazing and a freedom from the sticky black soil (infested with kana grass in the interfluvial uplands) as the soils along streams are light. As we go south riverside siting becomes predominant. Interfluvial villages are located on elevated sites near tanks. Villages away from the streams decrease in number as we go east of the Ken till in eastern Banda with a deep watertable and the invariably kana-infested black soil of the 'doabs' almost all settlements are located along streams.

In the narrow portion of the Ganges Valley east of the Banda and south of the Ganges the distribution is a repetition of that north of the river.

On the gneiss upland of Bundelkhand the most striking site of the village is at the base or on the side of the small ridges. The wooded hillocks provide grazing, fuel and timber to the village, and sites for impounding seasonal nalas into perennial tanks, and also afforded defensible sites in the days of internecine warfare. Where hills are non-existent the village in this zone of relatively sandy and gravelly soil, where natural surface water is absent and wells difficult to dig, are located along streams or artificially constructed tanks.

Hill-foot siting is also characteristic of the northern fringes of the Vindhyan Upland in the south-east of the province. In the country south of the Son, settlements occur in cultivated clearings on the slope of

spurs near perennial streams or relatively wide alluvial basins.

The province has four types of rural settlements: (a) compact villages where almost all the dwellings are clustered in one central site (b) 'cluster and hamlet' type where apart from the main cluster the mauza contains a few hamlets, usually one or two, (c) fragmented type where the dwellings of a mauza are contained in a central site and several outlying hamlets and (d) dispersed type where the dwellings are relatively apart from one another and do not form clusters.

The main zone of compact settlements comprises Rohilkhand, most of the Doab south of the Bhabar, Trans-Jumna Plain and the Bundelkhand Plateau. Other outlying areas are the Trans-Gogra Tarai and the bluffs of the larger rivers in Eastern U.P.

There are various factors that may account for the compactness of rural settlements in Western U.P. and Bundelkhand. As a whole water supply is less abundant in these zones than in Eastern U.P. The tract, except a narrow submontane belt in the north receives an annual rainfall below 40", the amount gradually decreasing in the south-west to less than 25". Natural surface water in the form of lakes and ponds is relatively scarce. The village pond near the inhabited sites, the result of age-long excavation for building, binds the inhabitants in a compact settlement. The south-western part of the zone of compact settlements i.e. Bundelkhand Plain, the Trans-Jumna districts of Agra and Muttra and parts of the Doab bordering the Jumna, are as a whole the areas of the deepest watertable in the Ganges Plain. A deep watertable means that the construction of masonry wells is costly, but these are the main source of water for domestic use. The infrequency of masonry wells in areas of deep watertable, therefore, contributes to compact villages by drawing inhabitants

round the water source. In the central parts of the Doab too the watertable before the advent of canals appears to have been deeper than in the Eastern U.P. owing to a lower rainfall. The rise of the watertable in this tract is a comparatively recent event and does not appear to have modified the original compactness of settlements. In Bundelkhand a quick run-off inhibits natural lakes and ponds and the artificially constructed tanks or banks of rivers become clustering forces. The collective building of tanks and irrigation channels has favoured agglomeration. In the Bundelkhand plateau there is another natural factor. It is the frequency of the tiny hillocks which by offering advantageous sites, drew together the inhabitants of the locality.

Another very potent and more widely operative factor appears to be that of insecurity in the past. Since remote times it is the western part of the province which appears to have borne the brunt of invaders. The Doab, the country west of the Jumna, Rohilkhand and Bundelkhand formed the main zones of strife owing to the successive incursions of foreign hordes or the influx of peoples, dispersed from North-Western India by the impact of invaders, the frequency of internecine warfare and more particularly the comparatively recent disturbances caused by the incursions of marauding Marathas, Sikhs, Jats, ^{and} Pindaris. The movement of invaders or the battling forces of the internal rivals or the armed bands of the marauders resulted in the trampling of crops, looting of villages, loss of life and property and the inhabitants inevitably congregated in compact villages round the fort or mansion of the local chief or zamindar.

Rohilkhand is an area where water is relatively abundant. The tract, however, appears to have been more disturbed than the eastern

districts owing to the fact that it formed a 'frontier province' of the Delhi rulers and was peopled by refractory chieftains in early times, and later (18th century) was the scene of long internal strife between Rohillas, Afghans, Oudh rulers and Marathas.

There is another cultural factor which seems to have been operative in the zone of compact settlement. The clan solidarity of some castes notably Jats, Gujars and Jharkurs has kept them together on a central site.

Marked nucleation on the levees of large rivers in Eastern U.P. is due to their elevated position above the flood level and the deep water-table resulting in the binding force of the well. The development of compact villages in the Tarai is curious. It appears to be due to the presence of forests harbouring wild animals, the frequency of theft owing to the proximity of the Nepal border to which territory the criminals escape and endemic nature of malaria and fear of inundation with the consequent need of building on rises, which though few and small are sufficient to accommodate the dwellings of the mauza of this less densely peopled zone.

The rest of the Ganges Valley is occupied by 'cluster and hamlet' and 'fragmented' types of settlements. The former is a transition type occurring between the areas of compact and hamletted villages and is due to the mingled influences of the factors which have contributed to nucleation on the one hand and hamletting on the other. In the fragmented or hamletted type there are several settlements in a mauza owing to the spread of population from the central site to detached hamlets so that it is often difficult to distinguish the parent village from the surrounding hamlets if only size is kept in view. The causes which have contributed to the spread of settlements in Eastern U.P. are various.

The rainfall here is higher than in Western U.P. Surface water in the form of ponds and lakes increases as we go towards the east. The watertable is relatively high. Masonry wells can be easily and cheaply constructed wherever the need arises. The frequency of the sources of water (wells and other water forms) in the mauza has obviated to a considerable extent the need for congregating in a compact central site, and has contributed to the spread of population to outlying hamlets.

This part of the province has enjoyed relative security in the past being comparatively out of the reach of the frequent upheavals which characterised the annals of the Western U.P. and Bundelkhand. What is more significant is that the area was almost out of the reach of the hands of Marathas, Sikhs and Jats whose depredations during the 18th century are relatively recent events of history and have left their influence on the compact villages of the western and south-western parts. Moreover, it was the eastern part of the province which came first under the British influence because of the passing of the Benares province to the Company in the seventies of the 18th century and their association with Oudh territory. The feeling of security has helped the growth of hamlets near fields: where the cultivator can pay better attention to his crops.

The relatively large proportion of low agricultural castes - Koeris, *Muraos* etc.-thoroughbreds of the soil - in the Eastern U.P. is another factor for hamletting. These castes pay the greatest care to cultivation and frequently settle in outlying hamlets. Similar is the case of such untouchables as Pasis and Doms - castes which are scarce in the zone of compact settlements. In the eastern districts and Oudh much of land is

owned by a few privileged taluddars and landlords, the absenteeism of some of whom has adversely affected village collectivism and the growing power of others eclipsed the authority of the panchayat, tending to the fragmentation of settlements. Owing to a high density of population and a relatively small holding in the eastern districts the attention needed to the fields and crops becomes the greatest. This too appears to have led to the development of hamlets.

In the tract between the Great Himalayan Range and the southern end of Bhabar the typical rural settlement is relatively dispersed with individual dwellings situated apart from one another. In the Lesser Himalayan zone which is a country of marked slopes there is a general lack of level ground where a clustered village might be built. The terraced fields require extreme care owing to the dangers of erosion or bursting of terrace walls after heavy rainfall and the cultivator settles in or above his respective strip of cultivation. Most of the land is cultivated by proprietors or tenants who have occupancy rights in the soil. People can build their dwellings anywhere on their holdings. In some cases the dwellings of a settlement are partly dispersed and partly clustered in hamlets while in a few all the dwellings are concentrated in compact villages where an expanse of level ground on a gentle slope or a relatively wide river valley is available.

In the Duns and Bhabar the dispersal of dwellings is due mainly to the fact that the waterpoint here is not a point but a line - in the form of a canal. This has led to the scattering of houses along the source of water. Each tenant resides on his own holding so that he may look after the irrigation of fields and protect the crops from the wild

animals which haunt the adjoining forests. Settlement in much of these tracts especially the Dun is comparatively recent (during the period of security under the British Government) and the cultivator has built his cottage on his holdings.

For reasons mentioned in the text (p.132) we are not able to say definitely much about the type of settlements in the Cis-Tibetan zone. The physical characteristics, however, viz. the vigours of climate, steepness of slopes and fear of avalanches on spurs appear to have fostered clustering near river beds.

The common shape of a village or hamlet in the Ganges Valley is roughly rectangular which, inter alia, is related to the rectangular field pattern and the orientation of dwellings along north-south and east-west lines. The L - shaped settlement and the village where the rectangle is characterised by indentations on one or more sides are frequent, being due to the fertile vegetable fields bordering dwellings, which have not been built over. Oblong villages where one of the axes of the rectangle is markedly longer than the other are due mainly to physical causes. Thus in areas liable to inundation the villages on levees along rivers, old channels or oxbow lakes are conspicuously oblong. In the Ganges Valley elongated villages are more due to the narrow high ground along water features than to any other cause. Even where there is no danger of floods waterfronts may lead to elongation. In the Bundelkhand Plateau or the hilly areas of Agra and Muttra where a village is located on the side of a long narrow ridge it is frequently elongated. Villages so oblong as to consist of a row of dwellings on either side of a road (strassendorf) are rare owing to the general indifference of the villages to the highway of communication.

The rounded village which is related to the need for defence generally occurs in the areas which have been the zones of insecurity, i.e. the Doab, Trans-Jumna Plain, Bundelkhand, Rohilkhand and Western Oudh, though their number east of the Ganges becomes very small. Similar is the distribution of the less common patterns allied to the circular form viz. radial or hollow-circular. The hill-foot villages of Bundelkhand are frequently of horse-shoe shape. The settlements along the slopes of the rounded hillocks owing to its defensibility in the past and the advantage of grazing above, forming a sort of girdle around it.

In the canal-irrigated Bhabar the settlement is strikingly linear. The dwellings are lined along irrigation channels which are the only source of water. The settlement has no breadth except that of the dwelling and it extends like strings along the canals often for a mile. The common pattern in the inhabited Duns is also linear.

The rural house of the province consists of several types. The Himalayan dwelling - stone-walled, two-storied and slate-roofed stands apart from the rural houses of the rest of the area. Abundance of building stone obtained from the village quarries, timber from the local forests, protection needed from the cold climate and the better economic condition of the average inhabitants account for the superior house of the Himalayan region. Both the abundance of building materials and lack of level ground are reasons for two storeys. In the submontane Dun and Bhabar zones the average rural dwelling^{is} of wattle-and-daub. A plentiful supply of grass and timber and the relative absence of a cohesive soil suitable for mud walls, explain this type. In the rest of the Ganges Valley mud is the predominant material for the wall but the roof varies with the amount of

rainfall. In the north and north-east the average dwelling is thatched, materials being derived from the grass and woods which are more abundant in this moist zone than further south. The pitch of the roof is high to suit to the heavy monsoonal rain. In the drier west and south-west the relatively low amount of annual rainfall accounts for the strikingly flat mud-roof of the average rural dwelling while in the moister eastern districts tiled roofs are the rule. In the Bundelkhand plain the average dwelling is tiled, the pitch of the roof being lower than in Eastern U.P. Stone is used as material for walls in the hilly parts of Muttra, Agra and Bundelkhand.

It appears that the majority of the towns of the province have had a political origin. Towns were built by rajs, local chiefs, imperial rulers or their magnates on commanding and relatively defensible situations provided by river bluffs or pre-existing sites. The focus of such centres was the fort of the raja or imperial magnate whose followers gathered round it. Industrial and mercantile communities were attracted here by the patronage of the courts and aristocracy. Another category is of those towns which are overgrown villages. Some towns appear to be of religious origin. Here too, traders and artisans congregated to benefit from the constant influx of pilgrims. Communications, commerce and industries have contributed to the growth of towns especially during modern times but towns originating precisely due to these causes are not numerous. Railways, however, have raised some villages to the status of towns. There is another class of towns with quite a distinct origin. This is the group of hill stations in the Himalayan region, which were built to serve as resorts during the summer for the European civil and military population.

The existing distribution of towns is related to a considerable extent to the history of the province. Owing to its central location in the Indo-Gangetic Plain by which reason it was known as the Madhya desha (middle land) the province became the seat of Indo-Aryan civilisation and one of the main settled areas during medieval times so that a considerable number of towns were in existence before the advent of the Muslims. Owing to its proximity to the historic capital of Delhi the province was long under the direct influence of Delhi rulers, a period characterised by a growth of towns over much of the area. But there are regional nucleations owing to the growth of regional powers at different times. Thus the frequency of towns in and round Jaunpur district, round the cities of Lucknow and Fyzabad, in the Middle Doab, Rohilkhand and Western Bundelkhand may partly be ascribed to the Jaunpur Kings, Oudh rulers, Bangash Nawabs, Rohillas and Marathas. The greater frequency of towns in Western U.P. appears to be due to several causes. The establishment of numerous Rajput principalities during medieval times, the fact that the tract formed the home country of the Delhi Sultans and Mughal rulers, the frequency of land routes converging on the imperial seats, a fairly early development of canals contributing to the agricultural productivity and prosperity of the area, tolerable industrialisation at present, a nucleated type of rural settlement capable of easily growing into towns and the need for numerous towns serving as marketing centres of a surplus of agricultural produce (greater than in Eastern U.P.) owing to a more economic holding, are among the causes of this concentration.

One of the most striking facts in the distribution of the towns of the province is the control of rivers. 17 of the 23 towns with a population over 50,000 are on rivers. Taking the district capitals into consideration

36 out of the 48 such centres are on or close to river banks. This influence of rivers is noticeable on the location of small towns also. The causes are obvious. Rivers are a source of adequate water; their banks were in many cases endowed with religious sanctity; immigrants from the drier areas of Central Asia or North Western countries had a special liking for building their towns on waterfronts, in older days when defence was an important question, the bluffs of rivers afforded commanding sites for forts and towns and the streams naturally protected the settlements at least on one side; rivers ~~for forts and towns and the~~ formed the main highways of transport and commerce till the advent of metalled roads and railways; but they also presented effective barriers to the old land routes and where these crossed rivers towns frequently grew up to supply the necessary service to traders and travellers. The river bluffs standing above the water's edge have been favourable sites for towns. When, however, the high bank is away from the stream a relatively wide flood plain lies between the edge of the Bangar and the water channel. This lowlying Khadar, moist because of a high watertable and total or partial inundation during rains is usually devoid of towns but lines of towns may be seen on the edge of the Bangar where it marks the old bank of the river.

In the absence of statistics of occupations which would have yielded better results, we have considered the functions of towns by recognising four groups viz. cities (^{over} 50,000 persons), large towns (20,000 - 50,000 persons), medium-sized towns (10,000-20,000) and small towns (less than 10,000 persons). The cities as a class are distinct from the smaller towns not only in size but also in enjoying a higher degree of nodality, being the chief industrial and commercial centres of the province, having among themselves all the divisional headquarters, universities and the

largest cantonments of the area. The next group of towns (20,000-50,000 persons) are, as a class, nodes of fewer routes, serve smaller tributary areas and are usually subservient to the cities in respect of commerce. This category includes two main sub-groups - one of the towns which are important mainly because they are district capitals and the other of those which have little administrative significance but are important because of commerce, industry or religion. The medium-sized towns are administratively unimportant, only six of the 68 such towns being district capitals. This class, however, is better served by rail and roads than the smaller towns and many of them are centres of trade and cottage industry. The *raison d'être* of the small towns is their nearness to the rural interior and they function as local collecting and distributing centres.

Commerce is one of the most important functions of the towns of all size in the area. Their role as collecting and distributing centres is one of the main reasons for their continuance or growth and the hierarchy of towns ranging from the small country town to the largest city acts as a continuous chain in this process.

The other important function is administration. In marked contrast with Bengal and Bihar the administrative function is very much centralised in the district towns of the U.P. Apart from the district courts, the officers who look after the administration of a tahsil viz. magistrate, munsif, deputy superintendent of police etc., are stationed at the district-capital. Only petty cases are dealt with by the tahsildar (a petty civil officer, stationed at the tahsil headquarters). This centralisation of administrative function imparts extraordinary importance to the district capitals at the cost of the tahsil towns. Their relatively central location

in, and communication links with, the various parts of the district, and the presence of those engaged in administration have contributed to the growth of educational and medical institutions as well as of trade and some industries catering at least for the day-to-day needs of the towns. Thus the administrative importance of the district capital has given it a multifunctional character. The unusual concentration of the administrative functions in the district towns is probably one of the factors which account for the frequency of large towns in the United Provinces in marked contrast with Bengal and Bihar where wider gaps between large towns are common.

From the view point of functions we may also visualise the towns of the province as belonging to five zones, i.e. (i) the Himalayan towns (ii) the Northern 'economic boundary' towns (iii) the towns of the Western Urban Zone, (iv) the towns of Eastern U.P. and (v) the southern zone-of-contact towns. / (i) In the first zone the towns are confined to the southern half of the Lesser Himalayan region. All the towns except Almora, Pithoragarh and Srinagar were founded during the 19th century to function as resort towns for the European civil or military population. The high sites, afforded by the ridges of Lesser Himalayas between elevations of five to seven thousand feet, have the advantage of being 25 to 30° F cooler (during the hottest hours of May and June) than the Ganges Plain adjoining the foothills. / (ii) The towns lying in the submontane belt, say, within 30 miles or so of the Himalayan foot hills are characterised to some extent by a common function i.e. the exchange of goods between the Ganges Valley and outside on the one hand and the Nepalese, Himalayan and Tibetan areas on the other. This function of inter-regional exchange is most marked in the towns lying immediately below the foothills particularly ^{and in Dumra}

the rail-head centres e.g. Dehra Dun, Ramnagar and Haldwani, but the influence of this zone-of-contact location is also seen in the functional character of towns lying in a wider belt roughly including such important centres as Saharanpur, Najibabad, Najina, Kashipur, Pilibhit, Bahraich and Balraampur. Owing to the presence of the wooded Bhabar and moist Tarai zones most metalled roads terminate at the southern end of this belt of 'contact' towns. The belt contains about a dozen railway termini near the foothills or the Nepal border showing the change that takes place in the mode of communication on the border line between the Himalayas and the Ganges Valley. Only the hill stations are reached by lorries along motorable roads, elsewhere access is by pack-animals. The foot-hill towns, therefore, form break-of-bulk points where the bulky goods brought from the Ganges Plain to the railway termini are transferred piecemeal to the pack animals to be distributed over mountainous country; and vice versa. / (iii) We have seen that the western U.P. is the zone of the maximum frequency of towns and what we have called the 'Western Urban Zone' contains half the towns and more than half the 'cities' of the province over one-fourth of its area; also that the cause of this concentration is both historic and economic. In this comparatively urbanized zone, however, there is only one of the biggest five cities of the U.P., the other four lying in the relatively unurbanised eastern part of the province. This raises the question: is there a territorial struggle for existence and does a proliferation of small towns prevent the growth of master towns and vice versa?

The zone roughly corresponds with the wheat and sugar belts in the north and cotton area in the south-west and contains several mandis (markets) of all India importance. Prominent among these are Hathras,

Chandauli, Hapur, Meerut and Muzaffarnagar. Owing to historical factors, the production of cotton and sugar and the availability of hydroelectric power the zone is industrially more important than other parts of the province. But the hydro-electric power allocated to industries is used mainly in minor industries viz. flour milling, sugar refining and crushing, cotton ginning and oil crushing. Thus the Grid, by supplying power to light industries dispersed over a wide area, may favour small towns in future thus continuing the motif suggested above. The chief industrial towns of this part are Agra, Bareilly, Moradabad, Aligarh, Firozabad, Hathras and Rampur. Agra, the 'master town' of this zone obviously does not command such a wide sphere of influence as Cawnpore but it dominates the Middle Doab and the tract south-west of the Jumna. It is to some extent an 'economic boundary' town near the border line of the Ganges Valley on the one hand, ^{and} the Central Indian Tableland and the Avaralli region on the other. ^{Para} Muttra and Etawah are also to some extent zone-of-contact towns. / (iv) East of the urban zone the frequency of towns is relatively small but we find here the four biggest cities of the province i.e. Cawnpore, Lucknow, Benares, and Allahabad. Though Cawnpore is located in the Lower Doab it has a wide sphere of influence encompassing in some respects the whole of the province. This is due to the extraordinary centralisation of industries in the city and its pre-eminent position as a commercial centre. It is indeed the industrial and commercial 'capital' of the province. It is the chief focus of industrial employment particularly for the eastern zone. That Cawnpore came to be located in the late 18th century near the crossing of the Ganges by the Bundelkhand - Lucknow road, in the midst of the fertile tracts of the North-Western Provinces was an important initial fact in its commercial history.

The stationing of a cantonment whose protection drew European business men to this newly growing town gave a great stimulus to its trade. Later the construction of the Grand Trunk Road connected it by land to Calcutta. Thus Cawnpore began to function at a fairly early date as a far western trading outpost of Calcutta. The construction of railways led to the absorption by Cawnpore of the commerce of such riverside emporia as Farrukhabad, Etawah and Kalpi. Its industries originally came into existence because of its commerce and the presence of European enterprise and initiative.

Lucknow, with a much smaller sphere of influence in respect of commerce and industries is probably the most important cultural focus. It is not only the provincial capital with a central location but it voices to some extent the feelings and aspirations of the educated population of the province. Though Benares is more important in respect of cottage crafts than either Lucknow or Allahabad it is essentially a religious city lying on a small circuit of ground supposed to antedate the rest of creation. Allahabad too is a cultural city, its importance being due to administration, education and religious sanctity. Fyzabad is a stagnant city owing to historical reasons and the absorption of its trade by other nodal centres. Gorakhpur is a growing centre as the premier town of a vast fertile region—the Trans-Gogra Plain.

Industries become less important in the smaller centres of the eastern zone except some small towns of the cane-belt containing sugar works. Handloom weaving is important in some centres particularly Bhadohi in Benares State, Mau and Mubarekpur in Azamgarh and Tanda in Fyzabad. / (v) Mirzapur, Banda, Jhansi and the smaller towns of Ahraura, Karwi, Bath, Mahoba and Mau-Ramipur lie on a line where the Central Indian plateau meets the Ganges

Valley and they have an interregional function exchanging the products of the two different physical entities. This 'frontier' character is shared to some extent by all the towns lying south of the Jumna and Ganges between the Jumna-Chambal confluence and the eastern border of Mirzapur. Mirzapur, on the terminus of the great Deccan Road and some 5 miles north of the Vindhyan scarps lies near the southern-most point of the railway east of Allahabad and acts as a convenient centre for parts of the Foreland viz. Eastern Rewah, Mirzapur Upland and parts of Burguja, where goods brought by carts and pack animals is transferred to the railway and vice-versa. The smaller town of Ahraura lies below the Vindhyan scarps where cart traffic from north gives place to that by pack-animals to the south. The zone-of-contact towns of Bundelkhand, Karwi, Banda, Mahoba and Mau lie where the Manikpur-Jhansi railway is crossed by the roads from the Doab to Central India. The borderline city of Jhansi is an important focus of roads and railways converging from Agra, Cawnpore, Banda and Allahabad and proceeding towards the south. Jhansi is thus a regional commercial centre serving Bundelkhand and the adjoining states.

The business section of the larger towns of the province usually occupies a central position. In no case is this business area very clearly defined though a central ward containing specialised and general markets, the hub of which is known as chawk, is a frequent feature. Modern factories wherever, they have come into existence, usually occur on the periphery, generally near the railway station where they enjoy transport facilities. In Cawnpore there is a real industrial zone, but factories are also scattered over many parts of the city. Agra and Lucknow have compact but less important factory zones on their outskirts. In the case of pilgrim towns viz. Benares

Muttra, Hardwar and Ajodhya, the religious zones containing the temples and monasteries occur along the rivers. The most clearly defined zones are the modern sections of the towns - the civil stations, cantonments and railway colonies. Cantonments occur farthest from the native town, civil lines lie in between, while railway colonies are located near the main stations.

The business section shrinks as the town decreases in size so that in small country towns it consists of but one or two bazars along narrow streets. The rural aspects of these towns are striking. Except for the market streets most lanes consist of unpaved ground and even the open gutters are absent, drainage flowing through the muddy lanes. Two-storied buildings are scarce and the shops may frequently be mud-built with a rukka verandah in front. Modern transport has not yet reached these towns; cars and lorries can rarely be seen on their streets; akkas (pony-drawn carts) and bullock-carts are the common vehicles of transport. Owing to the great proportion of agriculturists among the population there will be found cattle, straw-stacks, agricultural implements, dung-heaps and carts near dwellings. Cafes and cinemas are yet a thing of the future. These towns have a general sleepy air contrasting with the noise and bustle of the larger towns.

Many of the towns of the province have a striking elongated form. The oblong shape is due to rivers and roads and to ridge-top sites in the Himalayan region. The factors which have contributed to the location of towns along rivers have also led to the elongation of their ground plan, but elongation is seen usually where the town occupies the bank close to the stream. The narrow elevated site afforded by the bluff whose stability is frequently guaranteed by intercalations of kanker bands,

the charms of the waterfront, the importance of rivers as highways in the past, and their religious sanctity have contributed to the marked elongation of the towns along their banks. Thus the cities where rivers form the natural dominants and account for the oblong shape are Benares, Cawnpore, Lucknow, Shahjahanpur, Moradabad and Muttra? Elongation is more marked in the case of smaller towns where modern growths are not large enough to disturb the original form. The elongated towns have no common street pattern but the main streets frequently lie parallel to the axis of elongation. Towns oblong due to roads are more numerous than those due to rivers. The towns that lie on a focus of roads are less likely to be elongated than those on a single road. That a single road is the cultural dominant in the plan of the latter group is indicated by their linear form, the shops and buildings being strung along the road and short side-lanes joining the main street, usually at right angles and imparting a herringbone plan. In the Himalayan region most of the few towns, lying on long narrow ridges, on either side of the cart roads following the crest-line are markedly elongated.

The triangular towns appear to be associated mainly with the convergence of roads. The form may be seen where a road terminates on a river bank. A recurrent feature in their plan is the convergence of streets at one or more apexes.

* There are other cities on rivers, whose shape is not elongated owing to certain reasons. Agra is located on a loop of the Jumna and the waterfront is not straight; in the case of Etawah the river front is revined; Gorakhpur is on a tongue of upland bordered on the north and south by the wider flood plain of the Rapti; Farrukhabad lies within a triangular wall of fortification.

Some towns have a circular plan. In some of these the shape is due to an old fortifying wall which has disappeared, but in many the cause is difficult to trace. This might have been due to the growth of the towns round the old forts which were quite numerous in the past. The street pattern in the case of many circular towns is roughly radial converging in the centre where lies ^{usually} ~~roughly~~ the business section.

A few small towns have a semi-circular pattern, the settlement being focussed on an old fort, a curved river bank or a tank. The dominance of these features is indicated by a convergence of lanes on them.

A considerable number of towns have a strikingly rectangular form. In some cases it is due to a fortifying rectangular wall, or a rectangular fort in the centre which has influenced the layout of the surrounding buildings. In some it appears to be due to natural growth on cross-roads and in a few the result of planning.

About two-fifths of the towns, generally small, may not be grouped with any of the foregoing categories and are relatively irregular though a large number of these has a somewhat rectangular shape the causes of which may be the same as those which have governed the predominant roughly rectangular village pattern of the area. In some of these towns the shape is irregular owing to site factors e.g. the distribution of low or raised land, firm or loose soil; or the unequal influence of the roads converging on the town, the position of the railway station and administrative section. It may also be due to the decay of some towns or agglomeration, in course of time, of two or more separate settlements into one.

Our study of settlements in the U.P. has brought out a number of interesting correlations with the physical and cultural background. We have seen that within a general evenness of distribution of settlements in the Ganges Plain considerable variations are introduced by such physical features as Bhabar, Khadar, Usar and ravine lands. Compact villages cover the major portion of the Ganges Plain, nucleations being more marked towards the drier west which has also remained more disturbed in the past while hamlets increase in number towards the rainier east. In the Himalayan area relief is one of the main factors determining ^{the} distribution and dispersal of settlements. The village patterns seem to be related to field pattern, site and historical antecedents. The various house types reflect the influence of relief, rainfall, building materials and the economic condition of the rural population in the different parts of the province.

As for towns we see that the historical factor is of great significance. There is a marked concentration of towns in the western parts which bore the brunt of invasions while other minor urban nucleations may be traced back to regional kingdoms. The relatively urbanised western part, however, has only one city of the first class; in the east conversely, which is a zone of fewer towns occur the four biggest cities of the province. Most of the important administrative centres of today are not without a historical standing while the cottage crafts in urban centres have their roots in the past when the patronage of a court or aristocracy was often a factor strong enough to foster their growth. Regional location and nodality have played an important part in the functions of the towns of the area while the influence of site and cultural background on their morphology is quite noticeable.

Appendix.Table^{*} Showing the Seasonal Variation of Population of the Hill Stations.

Name of Hill Station	1921		1931		1941	
	Regular Census	Hot Weather Census	Regular Census	Hot Weather Census	Regular Census	Hot Weather Census
Naini Tal (including cantonment)	11,230	17,319	10,673	18,910	10,118	14,447
Mussoorie	8,297	17,589	4,966	17,115	5,966	15,312
Landour (cantonment)	1,405	3,286	1,150	2,878	1,206	na
Chakrata (cantonment)	1,459	3,661	1,374	5,935	957	na
Lansdowne (cantonment)	5,070	5,538	4,399	5,900	6,174	3,423
Ranikhet (cantonment)	3,632	6,851	3,772	9,489	4,894	6,231

* Based on the Census (U.P.) Tables, 1921, 1931, 1941 and 'A Hand Book of Statistical Information' (Department of Economics and Statistics, United Provinces), Allahabad, 1947.

na = not available.

Glossary.

Akhbar	Newspaper
Andhi	Dust storm
Angan	Courtyard
Arhar	Pigeon pea (<i>Canjanus indicus</i>)
Babul	Acacia arabica
Bahera	<i>Terminalia Celerica</i> . A deciduous tree yielding building-timber and fruit which is used for medicinal purposes.
Bajra	Spiked millet (<i>Pennisetum typhoidum</i>)
Bangar	The older alluvium
Bangash Nawabs	A Pathan dynasty which held the Middle Doab during the 18th century (1713-1801 A.D.). Their capital was Farrukhabad.
Bania	A caste whose main occupation is trade, shopkeeping or money-lending.
Banj	Species of oak (<i>Quercus incana</i>).
Banjaras	An itinerant trading class travelling in groups carrying merchandise on ^{bullocks} mules and ponies.
Bazar (bazaar)	Market.
Bhabar	The porous and gravelly dry zone south of the Siwalik Range.
Bhars	Certain tribes who probably flourished in the Middle Ganges Valley before the advent of the Indo-Aryans, they declined subsequently and later became powerful holding Oudh and Bihar before the Muslim invasion.

Bhotia	Resident of the cis-Tibetan zone (lying between Tibet and the Gt. Himalayan Range) in Almora and Garhwal districts.
Bhur	Sandy ridges or areas interspersed with them. <i>Also used for soil with a high proportion of sand.</i>
Bugial	Alpine Pastures between the limit of tree-growth and the snow line in the Himalayan area.
Bundelas	A Rajput clan which ruled over parts of Central India and the Trans-Jumna portion of the U.P. during 1680-1791 A.D.
Bundelkhand	The name of that part of Central India and the adjoining plain which lies roughly between the Betwa and the Son and South of the Jumna. The Bundelkhand of the U.P. means the Jhansi Div.
Chamars	An 'untouchable' caste ^{where} hereditary occupation is leather-tanning or shoe-making. They also form one of the main castes providing agricultural labour.
Chandelas	A dynasty which ruled over Bundelkhand and adjoining parts of Central India during the 9th to 12th centuries.
Chauk	A word intended variously to mean a high street, a cross-roads or a ward, but always indicating the busiest bazars or the 'commercial core' of the town.
Chir	Chir pine (<i>Pinus longifolia</i>)
Dastur	The name of an administrative division of Akbar's empire roughly equivalent to a modern District.
Deodar	<i>Cedrus libani</i> . A large ever-green tree yielding very durable timber.

Dhak	Butea frondosa. A moderate-sized deciduous tree yielding fodder, and timber for well-curbs.
Doab	Interfluve.
Dom	An untouchable caste working as scavengers or ploughmen.
Dor	A Rajput clan in the Doab who are said to have held the land between Aligarh and Meerut before the Muslim invasion.
Dumat	Loam.
Duns	Small valleys between the Lesser Himalayas and the Siwalik Range.
Durry	<i>cotton carpet</i>
Chantappas	'Baskers in sunshine'. Poor class of temporary migrants from the Himalayan Area to the <u>Bhabar</u> .
Chi	Clarified butter.
Gujar	A Hindu caste (most numerous in the Upper Doab and Western Rohilkhand).
Gur	Raw sugar.
Guru	Title of the religious leaders of the Sikh community. Also it means any spiritual guide.
Hali	Ploughman.
Jaman	Eugenia Jambolana. An ever-green tree cultivated for its durable timber and fruit.
Jat.	A sturdy community, said to be of Indo-Scythic origin, whose skill as cultivators is proverbial. They plundered parts of Northern India after the downfall of the Mughals.
Jhil	Lake.

Juar	Indian or great millet (<i>Sorghum vulgare</i>).
Kabar	A light variant of <u>mar</u> , the black soil of Bundelkhand.
Kail	Blue pine (<i>Pinus excelsa</i>).
Kankar	Literally gravel, but in Indian Geology it stands for carbonic concretions.
Kans	A tall coarse grass (<i>Saccharum Spontaneum</i>) difficult to eradi- cate owing to the profuse growth of its deep roots.
Karar	<i>Sterculia urens</i> . A deciduous tree yielding gum, fibre and inferior timber.
Karaunda	<i>Crissa Carandas</i> . A small bushy tree with astringent fruits.
Katehr	Old name of Rohilkhand (the Bareilly Division).
Katehria	Of Rohilkhand; also applied to the Rajputs inhabiting the tract.
Khadar	The newer alluvium.
Khair	Catechu (<i>Acacia catechu</i>) tree.
Khand	Refined sugar prepared by in- digenous methods.
Kharsu	Species of oak (<i>Quercus semi- carpifolia</i>).
Khilji	A muslim dynasty which ruled at Delhi between 1290 and 1321 A.D.
Kirana	Merchandise, mainly grocery.
Koeri	A market gardening caste.
Kokat	Miscellaneous tree species.
Lakh	Hundred thousand (100,000).

Loo	Very hot dusty west-wind blowing in Northern India during the hot weather season.
Mahua	Bassia latifolia. A large deciduous tree. The flowers are dried and eaten, and are also used for distilling country spirit.
Mandi	Market; generally a wholesale grain market, also applied to villages and towns having such markets.
Mandua	A small coarse millet. (Eleusine coracana).
Mar	The Black soil (cf. Black Cotton Soil) of Bundelkhand.
Mauza	The smallest administrative unit - the survey and settlement 'village' which is a parcel of ground with definite boundaries.
Mohalla	Ward of town.
Munj (grass)	Saccharum munja.
Munsif	A subordinate judge.
Muraos	A market gardening caste.
Nala	Small water-course or ravine
Nim	Melia azadirachta. A large, small-leaved, deciduous tree of considerable economic importance. It provides durable timber, its leaves, flowers and bark are used as disinfectants, twigs as toothbrushes and seeds are pressed for oil.
Panchayat	Council of Five. The elected council of five persons presiding over the disputes of villagers.
Pargana	The subdivision of a <u>tahsil</u> .

Parua	The name of sandy loam in Bundelkhand.
Pasi	A 'untouchable' caste given usually to selling country liquor.
Pindari	A class of freebooters (prominent during the latter half of the 18th and the beginning of the 19th centuries) whose stronghold was Malwa and adjacent tracts.
Pukka	Permanent, standard or brick-built.
Purdah	Screen, custom of keeping women in seclusion.
Rabi	Spring crop.
Rakar	Gravelly soil of ravines in Bundelkhand.
Reh	Efflorescence of salt (a mixture of sodium carbonate, sulphate and chloride together with varying proportions of calcium and magnesium salts) found on the surface of alluvial soils in the drier parts of the Indo-Gangetic Plain.
Rohillas	A Pathan dynasty which seized Rohilkhand after the downfall of the Mughals (1720-1774 A.D.).
Sal	<i>Shorea robusta</i> . A large gregarious tree. It is best known for its wood which is the most extensively employed of all timbers in Northern India.
Salai	<i>Boswellia serrata</i> . A moderate sized gregarious tree yielding timber and fuel.
Sarai	Inn. Quadrangle with rooms or verandahs on all sides, where travellers stay.

Sarjupar	The plain of the U.P. north of the Gogra and east of its affluent, the Sarda.
Sarker	An administrative division of Akbar's empire roughly equivalent to a modern 'Division'.
Semal	The Red silk-cotton tree (<i>Bombax malabaricum</i>). The wood is regarded as suitable for making match sticks and boxes.
Sharqi	Literally it means 'eastern' but in history it refers to the Muslim dynasty who ruled over eastern U.P. and the adjoining tracts during 1389-1500 A.D. Their capital was Jaunpur.
Shisham	<i>Dalbergia sissoo</i> . A deciduous tree yielding durable timber.
Sonpar	The part of Mirzapur district south of the Son river.
Subah	The name of the largest administrative sub-divisions (during the Muslim period) roughly equivalent to a modern 'province'.
Tahsil	Subdivision of a district.
Tal	A natural depression filled with rainwater or by the overflow of a stream.
Taluqadar	Owner of a <u>taluka</u> or large estate.
Tarai	The moist (at places marshy) plain south of the <u>Bihar</u> .
Thakur	A proprietary caste.
Tharu	A semiaboriginal tribe of the <u>Tarai</u> .
Thug	One of the secret society of murderers exterminated during the time of Lord Wm. Bentinck.

Tilonj	Species of oak (<i>Quercus dilatata</i>).
Tirath	A place of pilgrimage.
Tirhut	The ancient name of the western part of North Bihar. Now it is applied to the Muzaffarpur Division of that province.
Tughlaks	A dynasty, which ruled at Delhi roughly between 1321 and 1450 A.D.
Tun	<i>Cedrela toona</i> . A large rapidly growing deciduous tree of the Sub-Himalayan forests. It yields durable timber.
Usar	<u>Reh</u> - infected sterile land.
Zaminder	Landowner.

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