CHAPTER FIVE

RURAL SETTLEMENTS

Growth of modern villages.
Regional distribution.
Settlement pattern.
Nucleation and dissimination.
Spatial analysis.
Nearest neighbour Index.
Types & morphology.
Case study.
CHAPTER 5

RURAL SETTLEMENT:

It has already been concluded in the preceding chapter that rural settlements were primarily developed on the river bank sites. With the advent of civilization men felt the necessity of better food, refined clothes and stable shelter. Permanent settlements could hardly come until he had discovered the art of crop cultivation. With the clearings of forest, man created a variety of fabric over the vast natural landscape. These clearings may be regarded as precursors of rural settlements in the vast Gangetic plain. Chronological development of rural settlements has been widely discussed in chapter 4. Social and cultural relations gradually developed among the widely scattered groups. According to Hudson development of rural settlements took place under the process of (i) Colonization (ii) spread (iii) Competition. Forest covered areas (Potential cultivated land) were cleared and process of colonization took place. Increasing population

1. Robinson H., 'Human Geography' 1978 p. 120
2. Mandal, R.B., 'Introduction to Human Settlements' Delhi 1979 p. 91
compelled to clear some distant sites resulting into diffusion of settlement (Spread) competition is the process that tends to produce regularity in the settlement pattern. Hagerstrand suggested four stage models for passage of innovation waves i.e. Primary stage, Diffusion, Condensing and saturation. Doab area witnessed a scene of constant misrule, mal-administration and natural calamities in form of floods, epidemics etc. consequently repeated cycles of innovation waves were observed.

SITE AND SITUATION:

Without exception villages are sited in relation to some natural advantages. For selection of village site the architecture of Mansara declares it sloped toward the east, near the stream and availability of ground water at the depth of 17 feet. In khadar tract where floods and wind blown sand deposits are frequently observed, comparatively high ground is selected for rural settlements. In southern part of doab area no ground above flood level is traced.

DISTRIBUTION OF VILLAGES

POPULATION SIZE

- 1-500
- 501-2000
- 2001-4000
- Above 4000

Urban centres
resulting into a few permanent sites of settlements.

With the construction of roads and bridges (specially in southern part) a number of villages shifted their built up area near the road. Recent construction of Farrukhabad-Jalalabad state Highway verifies the above fact. Wet point settlements in the southern part are depicted in fig. 5.9 climate (by affecting water supply, nature of drainage, vegetative cover and cultivated plants) plays a decisive role* in determining the character of human settlements. N. Demangeon asserts that agrarian system affords reasonably satisfactory explanation for the development of rural settlements.

**SPACING OF DIRECT DISTANCES**

The existing set up of rural settlements would reveal the causes and pattern and its correlation with spacing. In this agro based region physical and cultural factors have clearly set their impact over the distribution of villages (vide Fig. 5.1). A close observation of the map indicates the spacing of direct distances in Bhur and Katehr tract is lesser than Khadar and Eastern lowlands. Spacing of direct distances of inhabited settlements is recorded in table 5.1.

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SPACING OF DIRECT DISTANCES OF INHABITED VILLAGES
Fig. 5.3

Histograms of direct distances separating settlements population wise.
It is observed that villages are normally situated at a distance of 1.00-1.5 Kilometres. Only 14.4% villages have close spacing (.5-.75 Kilometre) Ujhani, Usawan and Rajpura blocks which have substantial area under khadar tract, frequently observe distant situation of villages (2.25-3.25 Kilometres) due to lack of favourable sites. To consider economic factors it may be predicted that area of fertile sandy and clayey loam have closely spaced dwellings while in khadar tract lack of undulating ground and patches of alkaline land resulted into distant spacing.

NUMBER OF VILLAGES AND LIVING POPULATION: Correlation between number of villages classified by population and living population reflects the trend and development of villages. Villages are classified into five groups according to population size. Villages and living population is recorded in percentage vide table 5.2.

The table concludes that small villages are 36.6% of total villages. Harpalpur, Junawai, Rajepur and Sahaswan blocks have higher percentages of small villages (above 40%). Villages having 1001-2000 persons are recorded 23.4% which give shelter to 29.3% of total rural population. Correlation between villages and living population is plotted on scatter diagrams (Refer to fig. 5.7)
**REGIONAL DISTRIBUTION:**

Functional importance of rural settlements may be acknowledged to get hypothetical complementary area. Data for number of villages per 100 Sq.Kilometre of area are recorded in Table 5.3.

Table 5.3

<table>
<thead>
<tr>
<th>No. of villages per 100 Sq.Kms.</th>
<th>Hypothetical Inter settlement distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rajapur</td>
<td>48</td>
</tr>
<tr>
<td>Kalan</td>
<td>40</td>
</tr>
<tr>
<td>Harpalpur</td>
<td>41.1</td>
</tr>
<tr>
<td>Rajpur</td>
<td>35.9</td>
</tr>
<tr>
<td>Gunaur</td>
<td>42.6</td>
</tr>
<tr>
<td>Junswai</td>
<td>45.9</td>
</tr>
<tr>
<td>Sahayawan</td>
<td>42</td>
</tr>
<tr>
<td>Ambiapur</td>
<td>34.6</td>
</tr>
<tr>
<td>Bissau</td>
<td>43.1</td>
</tr>
<tr>
<td>Asafpur</td>
<td>39.7</td>
</tr>
<tr>
<td>Wazirganj</td>
<td>38.2</td>
</tr>
<tr>
<td>Binswar</td>
<td>41.4</td>
</tr>
<tr>
<td>Ujhangi</td>
<td>30.4</td>
</tr>
<tr>
<td>Jagat</td>
<td>39.7</td>
</tr>
<tr>
<td>Ussman</td>
<td>35</td>
</tr>
<tr>
<td>Dataganj</td>
<td>52.9</td>
</tr>
<tr>
<td>Missu</td>
<td>48.6</td>
</tr>
</tbody>
</table>

\[ H_d = 1.0746 \sqrt{\frac{A}{N}} \]

\[ A = \text{Area of unit} \]

\[ N = \text{No.of settlement} \]

* Reference: *Geographic Dimensions of Rural Settlements*  
It reveals the fact that highest number of villages are traced in Dataganj, Mau, Rajpur (48-52 villages). On the contrary, in Khadar blocks -Rajpura, Ujhani, Usawon the number of villages per 100 sq.Km. of area is recorded low (vide fig. 5.12)

Observed mean nearest distance for inhabited villages is calculated by the following formula,

\[ Dobs = \frac{X_1 X_2 X_3 \text{ etc.}}{A} \]

Whereas \( Dobs = \text{Mean Nearest Distance} \)

\( X_1 X_2 \text{ etc} = \text{Summation of nearest distances in Kilometres.} \)

\( A = \text{Area of the units.} \)

Results (obtained through the formula) are recorded in table 5.1 (Column mean nearest distance). It is concluded that observed distances are less than one kilometre for Rajpura and Harpalpur blocks due to lack of higher ground. In the northern part of Khadar tract which have considerable undulating ground, provides frequent favourable sites resulting into highest observed distances i.e. Rajpura (1.5) Ujhani (1.29) and Usawon (1.21).

SETTLEMENT PATTERN:

Pattern of rural settlement deals with the spatial relationship between one dwelling to another.

HYPOTHETICAL INTER SETTLEMENT DISTANCES

Distance in kms.
- □: 1.6 - 1.7
- ■: 1.71 - 1.8
- ◦: 1.81 - 1.9
- ▪: 1.9 - 2.0

FIG. 5.5
The settlement pattern of Ganges valley is controlled mainly by physical conditions which invariably favour nucleation. Ganga-Ghagra Doab (which covers the whole part of the region) is characterized by compact settlements in wetter parts.¹

Factors Favouring Nucleation:

Man being a gregarious animal, prefers to live in close contact with his fellowmen rather than above with the clearings of forests, communal dwellings were preferred due to insecurity and horror of forested animals. In flooded affected areas man absolutely harmonised with nature's havoc and constructed dwellings at some higher grounds.

Rural dwellings near the wet points - an oxbow lake, tank or river bank - have a privilege of water for drinking and agricultural purposes. Compact settlements in the southern part of Doab area are generally wet point settlements (vide fig. 5.9). Demand system accepted that agglomerated settlements as an ancient feature situated on fertile plains. Nucleation is the obvious response to certain type of

². Robinson H. 'Op. cit.' p. 120.
NO OF VILLAGES
Populationwise 1971

Population groups
1. 1-250
2. 251-500
3. 501-1000
4. 1001-2000
5. 2001-3000
6. 3001-4000
7. Above 4000

FIG. 5.6
physical environment. With a view to cultivating maximum area of fertile plains, Concentrations are developed in Bur and Katehr tracts. Another type of concentration is experienced in the vicinity of large cities called suburbs.

To consider the economic factors agriculture and its processing needs cooperation of human labour. Exchange of agricultural implements, advantages of communal cultivation and pastures on common land may be regarded as the factors favouring nucleation. Social gathering at some convenient place, subsidiary occupation and cottage industries may flourish generally in the areas of compact settlements.

FACTORS FAVOURING DISSEMINATION:

In recent times increasing population with the help of easy and quick means of transportation accelerated the process of dispersion. Patches of Usar soil (Reh) where cultivation is difficult man's
PERSONS LIVING IN VILLAGES Population wise

- 0
- 1-10 Percent
- 11-20
- 21-30
- 31-40

1-500

501-1000

1001-2000

2001-4000

Above 4000

FIG 5.7
occupancy is rarely seen. Abundance of surface water and greater amount of rain cause fragmentation in the areas east of the Ganges. Dissemination generally results from the voluntary breaking away from older organization of settlement due to increasing population.

Other than these deagglomerating factors, ethnic factors (low caste dwellings) and security of cultivated fields from wild animals helped the growth of hamlets. These fragmented settlements are found in riparian sections of Ganga and Ramganga flood plain (vide fig.5.10).

**SPATIAL ANALYSIS**

The spacing of settlement denotes the relative locational arrangement which are closely associated with physico-socio-economic attributes. Settlement density in relation to spacing was firstly initiated by Robinson and Barnes. Spacing is considered the basis for classification of rural settlement. Hypothetical inter settlement distances are obtained through the

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formula devised by Mather. 

$$Hd = 1.0746 \sqrt{\frac{A}{N}}$$

Whereas = Mean nearest distance.

A = Area of the region

N = Number of inhabited settlements

Results tabulated in table 5.3 concludes that rural settlement have hypothetical distances ranging from 1.6 Kms. to 2.00 Kms. which are grouped into four categories.

(i) Low spacing (1.6 - 1.7 Kms) Areas of low spacing are observed in Junawai, Bissuli, Binawar, Dataganj and Rajapur blocks (Refer to fig. No. 5. Hypothetical Intersettlement distances).

(ii) Areas of Moderate spacing (1.71-1.8). In this group Sahaswan and Jagat observed 1.77 Kms. distance while Mianu and Harpalpur observed 1.73 Kilometres.

(iii) Areas of Moderably high spacing (1.81-1.9 Kms) Khadar blocks of Kalan and Gunnaur recorded moderately high spacing due to lack of favourable sites. Ambapur block having lesser number of settlements observed high spacing due to lack of roads (Refer Traffic flow cartogram).

(iv) Areas of High Spacing - are calculated for Rajpura block where scattered patches of forests are generally seen. Flood and Reh affected Ujhan and Ussawan blocks unfavourable for human habitations, also observe high spacing (2 Kilometres).

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RURAL SETTLEMENTS (Wet Point Location)
MEASURING SETTLEMENT PATTERN:

Evolution of settlement pattern is governed by number of forces which create different shades over the fabric of human occupancy. Areas of similar characteristics create similar set of forces to evolve a settlement pattern. King and Dacey initiated a scientific method to calculate settlement pattern on the basis of randomness. Clark and Evans postulated a formula to find out index of nearest neighbour. The deviation from randomness in relatively uniform environments drift towards uniform end.

Nearest neighbour index for spacing is calculated by the formula mentioned below:

\[ R_n = \frac{D_{obs}}{D_{exp}} \]

Whereas

\[ R_n = \text{Nearest neighbour index} \]
\[ D_{obs} = \text{Mean observed distance} \]
\[ D_{exp} = \text{Hypothetical distance} \]

\[ D_{obs} = \frac{X_1X_2X_3\text{etc}}{N} \]

\[ D_{exp} = \frac{1}{2} \sqrt{\frac{N}{A^2}} \]

\[ N = \text{Number of settlements} \]
\[ A = \text{Area of the unit.} \]

Results (obtained by the formula) are recorded in Table 5.4.

1. Mohmmad A. 'Statistical Methods in Geographical Studies' p.72
2. ibid. p.72
## Table 5.4

Settlement Pattern (Nearest Neighbour Technique)

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Dobs</th>
<th>Dexp</th>
<th>Rn</th>
<th>Pattern (Clark &amp; Evans)</th>
<th>SE</th>
<th>Z</th>
<th>Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rajapur</td>
<td>0.97</td>
<td>0.31</td>
<td>3.1</td>
<td>Clustered</td>
<td>1.94</td>
<td>0.34</td>
<td>Clustered</td>
</tr>
<tr>
<td>Kalan</td>
<td>1.01</td>
<td>0.29</td>
<td>3.48</td>
<td>&quot;</td>
<td>2.08</td>
<td>0.34</td>
<td>&quot;</td>
</tr>
<tr>
<td>Harpalpur</td>
<td>0.9</td>
<td>0.29</td>
<td>3.12</td>
<td>&quot;</td>
<td>1.22</td>
<td>0.5</td>
<td>Mod_Clustered</td>
</tr>
<tr>
<td>Rajpura</td>
<td>1.34</td>
<td>0.27</td>
<td>4.96</td>
<td>Nearly Random</td>
<td>1.45</td>
<td>0.73</td>
<td>Dispersed</td>
</tr>
<tr>
<td>Gunnur</td>
<td>1.14</td>
<td>0.28</td>
<td>4.07</td>
<td>Clustered</td>
<td>1.47</td>
<td>0.53</td>
<td>Mod_Clusr.</td>
</tr>
<tr>
<td>Junawai</td>
<td>1.08</td>
<td>0.31</td>
<td>3.43</td>
<td>&quot;</td>
<td>1.73</td>
<td>0.83</td>
<td>&quot;</td>
</tr>
<tr>
<td>Sahaswan</td>
<td>1.11</td>
<td>0.3</td>
<td>3.7</td>
<td>&quot;</td>
<td>2.54</td>
<td>0.31</td>
<td>Clustered</td>
</tr>
<tr>
<td>Ambiapur</td>
<td>1.25</td>
<td>0.28</td>
<td>4.46</td>
<td>&quot;</td>
<td>1.54</td>
<td>0.62</td>
<td>Small Dispersion</td>
</tr>
<tr>
<td>Bisauli</td>
<td>1.13</td>
<td>0.31</td>
<td>3.64</td>
<td>&quot;</td>
<td>2.06</td>
<td>0.41</td>
<td>Mod_Clusr.</td>
</tr>
<tr>
<td>Asafpur</td>
<td>1.18</td>
<td>0.3</td>
<td>3.93</td>
<td>&quot;</td>
<td>1.58</td>
<td>0.55</td>
<td>&quot;</td>
</tr>
<tr>
<td>Wazirganj</td>
<td>1.28</td>
<td>0.29</td>
<td>4.4</td>
<td>&quot;</td>
<td>1.51</td>
<td>0.65</td>
<td>Small Dispersion</td>
</tr>
<tr>
<td>Binswar</td>
<td>1.17</td>
<td>0.31</td>
<td>3.7</td>
<td>&quot;</td>
<td>1.59</td>
<td>0.54</td>
<td>Mod_Clusr.</td>
</tr>
<tr>
<td>Ujhani</td>
<td>1.29</td>
<td>0.3</td>
<td>4.3</td>
<td>&quot;</td>
<td>1.88</td>
<td>0.52</td>
<td>Mod_Clusr.</td>
</tr>
<tr>
<td>Jagat</td>
<td>1.14</td>
<td>0.3</td>
<td>3.8</td>
<td>&quot;</td>
<td>1.59</td>
<td>0.52</td>
<td>&quot;</td>
</tr>
<tr>
<td>Usawan</td>
<td>1.21</td>
<td>0.26</td>
<td>4.6</td>
<td>Nearly Random</td>
<td>1.3</td>
<td>0.73</td>
<td>Dispersed</td>
</tr>
<tr>
<td>Datagenj</td>
<td>1.12</td>
<td>0.32</td>
<td>3.5</td>
<td>Clustered</td>
<td>2.32</td>
<td>0.34</td>
<td>Clustered</td>
</tr>
<tr>
<td>Mau</td>
<td>1.14</td>
<td>0.3</td>
<td>3.8</td>
<td>&quot;</td>
<td>1.7</td>
<td>0.49</td>
<td>Mod_Clusr.</td>
</tr>
</tbody>
</table>
Clark and Evans\(^1\) derived a scale of randomness as under. This classifies the settlement pattern into three groups.

<table>
<thead>
<tr>
<th>Rn Value</th>
<th>Pattern</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Clustered</td>
<td>Closely spaced</td>
</tr>
<tr>
<td>1.0</td>
<td>Random</td>
<td>Randomly distributed</td>
</tr>
<tr>
<td>2.5</td>
<td>Uniform</td>
<td>Uniformly distributed giving high spacing.</td>
</tr>
</tbody>
</table>

Reddy\(^2\), in determining poli nucli urban zones postulated a modified scale of nearest neighbour which divides the pattern as (i) Absolute concentration (ii) High Concentration (iii) Random (iv) Low concentration (v) Uniform (vi) Dispersion. Aslam Mahmood have more precisely proposed to calculate the index of spacing after getting standard Error (SE) and Standard normal variate (Z). These are calculated by the formula given below and results are used to classify settlement pattern of the region (T. 5.4).

\[
SE = \frac{N}{\sqrt{N A}} \quad \text{Whereas} \quad SE = \text{Standard error}
\]

\[
Z = \frac{d_{obs} - d_{exp}}{SE} \quad Z = \text{Standard normal variate}
\]

Settlements are divided into four groups (on the basis of standard Normal variate).

\(^1\)Hagget, P. "Locational Analysis in Human Geography" Vol. II, Arnold p. 70-71.
RURAL SETTLEMENT TYPES (SEMI-COMPACT)
<table>
<thead>
<tr>
<th>Pattern</th>
<th>Z Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clustered</td>
<td>3.4</td>
</tr>
<tr>
<td>Moderate/clustered</td>
<td>4.6</td>
</tr>
<tr>
<td>Small Dispersion</td>
<td>6.7</td>
</tr>
<tr>
<td>Dispersed</td>
<td>7.8</td>
</tr>
</tbody>
</table>

(i) Areas of clustered settlements - Clustered settlement pattern is observed in Rajapur, Kalan, Sahaswan and Dataganj blocks because the value of observed distance and mean nearest distant are significantly different. Standard normal variate is calculated for the group ranges between 3.4.

(ii) Areas of moderately clustered settlements - It covers the major portion of doab area. Z-Value ranges from 4.6 to 6. Really speaking the area provides suitable sites for nucleated settlements due to various physico-cultural attributes. With the advent of quick means of transportation and application of scientific methods in agriculture, cultivators are shifting towards their fields resulting into slow process of dispersion.

(iii) Areas of small dispersion - In some blocks like Ambiapur and Wazirganj the process of dispersion is geared up due to comparatively old settlements, better irrigational facilities and high productivity of soil, standard normal variate ranges from 6.7.

(iv) Areas of dispersed settlements - Rajpura and Usawwan clearly show tendency of dispersion. These
blocks are mostly affected by Ganges Khadar. Accessi-

bility in the area is comparatively less, therefore
people live in small hamlets and isolated dwellings
(vide map 5,8).

**TYPES AND MORPHOLOGY**

Ahmad in his empirical study of rural settle-

ment in Uttar Pradesh, shows an interesting correlation
of physical and cultural factors responsible for
nucleated dispersed dichotomy, compact villages are
generally seen in Gangetic plains. The effect of
environmental influences is most clearly shown in
form of rural dwellings. In Ganges Khadar rivers
create natural levees due to volume of transported
sand and shift of channels. This close relationship
of micro topography, flooding, settlement and land
is quite apparent in this flood affected area. With
the advancement of cultivation no patch of fertile
land is left uncultivated. Early settler considered
favourable sites as physique of the land availability

1. Ahmad E. 'op. cit.' p. 223.
3. Oya, Masahiko. 'Rural settlements in Monsoon Asia' (edi) Varansi p. 35.
4. Brisault & Hubbard 'An introduction to Advanced Geography p. 139.'
SETTLEMENT PATTERN

Nearest Neighbour Analysis

12 0 12 kms.

Clustered
Mod. Clustered
Small Dispersion
Dispersed

FIG5.13
of water, easy means of transportation etc. to establish a rural dwelling. Villages (650-325 B.C.) were found enclosed by walls or stockade, beyond which arable lands were located, protected from pests and beasts. 

Apart from the statistical analysis the generalization is necessary for comparative assessment of different physical attributes. The classification of rural settlements is based on spatial organization, structure and compactness of dwellings. Rural settlement types in doab area are discussed below.

**COMPACT SETTLEMENTS**

Physical landscape of the region (Relief, climate, soil) however, favours the compact settlements throughout the region. High water table in Bhur and Ketehr tract allowed normally circular settlements. According to sample fertile soil near by water supply, command of natural highway leads nucleated settlements. Singh discussed the factors of grouped living because of the need of defence. Villages, being a natural units were once forest covered areas, are most productive for agriculture. Highly productive soil provides a base for the establishment of compact settlements are In Khadar

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5. Dutt, B.B. 'Town Planning in Ancient India' 1925 p. 196.
CORRELATION BETWEEN POPULATION & NO. OF VILLAGES

X Villages in %
Y Population in %
N Negative
P Positive
Average

FIG. 5.14.
tract compact settlements are located to face the natural havoc of floods. These large villages are located at distant places; on hard and high grounds. On the other construction of roads attracted nearly village sites to be shifted close to roads to take advantage of traffic going both ways. Compact settlements in the southern part of doab area emphasizes the location of settlements at wet points.

**SEMI-COMPACT SETTLEMENT**

With the advancement of knowledge construction of roads and feeling of security the process of diffusion of settlements is geared up controls of economic factors have compelled man to live near the agricultural fields. It tends to semi compact settlements. In Sahaswan block (especially in Khadar part) small hamlets are often named after the land lords as Ram Sewak Ki Madeian (huts)(Refer to topp sheet 53L/6).

**DISPERSED SETTLEMENTS**

In Rajpura block where scattered patches of dense vegetation is frequently observed, recent clearing of arable land and availability of water facilitated inhabitants to live in isolated dwellings. In some parts of Ujhani and Uswan blocks very slow process

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LOCATION OF SELECTED VILLAGES & TOWNS

FIG. 515
of dispersion is observed.

Physiographic effect in the development of rural habitations may be analysed on the basis of place names. In khadar areas settlements are established at some high and pukhta grounds. The names of places with suffix (i) Pukhta constitute villages above flood level and (ii) Kham village below flood level—generally uninhabited—are found in khadar areas. Some of these are Jaitpur Pukhta, Kachcha Pukhta, Nankhera Pukhta, Palia Pukhta & Bela Pukhta. These also bear the parallel names with suffix kham. These ‘Kham’ villages are obviously situated near the ‘Pukhta’ villages. In the southern part of Doab area where Ramganga changes its course on both the sides, these flood affected villages are known with appellation ‘Katri’ or ‘Sailab’. Some of these are Jamalpur, Jijonda, Maidpur, Nagla Azmeri. The word ‘Pukhta’ has its synonym ‘Khera’ in the southern part. Especially in Kalan block they are Chahar Khera, Kanua Khera, Barkhera, Ikh Khera, Kurkhera etc.

Important rural markets are known as ‘Kalan’. Bara Kalan, Rafiabad Kalan, Keelarpur Kalan are important markets. In Bhur tract where sandy soils are prevalent, some villages are found with appellation, Bhur namely Dehra Bhur, Ruchpuri Bhur, Kupri Bhur etc.
LAY OUT PLAN OF RURAL HOUSES

1. Stores (grains)
2. Ladies Apartment
3. Thatched Roofing
4. Cattle shade
5. Courtyard
6. Bath & latrine
7. Stores (ag. imp)
8. Guest room

FIG. 5.16
Analysis of village morphology on the basis of case study:

Rural settlements in the vast Indo Gangetic plains have invariably observed almost similar morphological development. Settlement outgrew in form of hamlets due mostly to increase in population and occasionally on the basis of different castes. Morphological pattern of rural dwellings represent that central place is generally inhabited by higher caste families while peripheral zone is occupied by low caste families. Caste system have long affected the pattern mainly due to their occupations. Generally these low caste families as chamar-who extracts skin from dead animals, Teli-who expells oils from country made instruments, Dhobi or washerman, Kumhar or potter, Dhimar, Dhanuk, Bunker and Gadariyas etc. are engaged in such economic activities which cause environmental pollution and therefore can not be allowed in congested residential areas. The low caste families are financially weak and depend on hand to mouth therefore have least social effect. This socio-economic factor inclusive of prevailing emotions of untouchability caused to develop sectoral pattern in village morphology (Fig. 5.18).

In selecting villages for field study three variable were considered viz. population size, physiographic region and means of transport. These are listed in table 5.5 along with the occupational breakup and landuse. In khadar tract which covers considerable
portion of the region two types of villages are observed viz. (i) Located at higher grounds as Useaht (Photo 31) and (ii) Small villages which change their habitable area due to flood, as Aligarh a village on the right bank of river Ramganga shifted their built up area owing to damage caused by flood. It has recorded population 891 in 1971 but now gained impetus due to hydro electric distribution centre and adjacent location of Rajapur block headquarter. Usehat an old village (Large size) is situated at higher ground only three Kilometres east of river Ganges. It is linked with Budaun have substantial facilities like Hospital, Police Thana, Town Area, Village Market and as number of Cottage Industries. Samrer-a block headquarter a compact village is situated only 5 Kilometres north of Dataganj is a medium size village resembles the seclusion of low caste dwellings at the outer zone (Fig. 5.19).

Generally the villages are observed as cluster of rural houses with haphazard construction except a Central place or Chaupal-the residence of Gram Pradhan. Lanes and by-lanes are dirty, muddy and full of stagnant water where epidemics may frequently flourish (vide photograph 13) Munjaria-a road side village (Bhur tract) at Ujhani Sahaswan state highway 18 have shown the trend of modern pacca house construction with some
sanitation and planned look. In recent village upliftment programme industrial activities are geared up mainly in road side villages. That have tilted their look towards urbanization as in Sakhanu—a village at Budaun-Ussavan road (Katehr tract) recorded population more than 4000 in 1971 have only 70% workers engaged in primary activities.

Village built up area is left unplanned. It nowhere causes clear cut demarcation of roads, lanes and drainage of stagnant water. These rural houses are kept neat and clean through cow dung paste or muddy soil, but the lane are left unplanned and dirty to lack of community sanitation programme. It is surprising that no records of habitable area of villages were kept since the beginning of this century.

**Demographic structure of sample villages.**

<table>
<thead>
<tr>
<th>Villages</th>
<th>Usehat Sakhanu</th>
<th>Samrer Kunwar</th>
<th>Munjaria Aligarh Gaon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tehsil</td>
<td>Dataganj</td>
<td>Budaun</td>
<td>Dataganj</td>
</tr>
<tr>
<td>Tract</td>
<td>Khadar Katehr</td>
<td>Khadar E.,low- Bhur land</td>
<td></td>
</tr>
<tr>
<td>Village size</td>
<td>Very Large</td>
<td>Large</td>
<td>Small</td>
</tr>
<tr>
<td>Area in Hectares</td>
<td>540.6</td>
<td>609</td>
<td>463.7</td>
</tr>
<tr>
<td>No. of house</td>
<td>565</td>
<td>667</td>
<td>230</td>
</tr>
<tr>
<td>Population</td>
<td>3905</td>
<td>4324</td>
<td>1093</td>
</tr>
<tr>
<td>Male</td>
<td>2150</td>
<td>2281</td>
<td>672</td>
</tr>
<tr>
<td>Female</td>
<td>1755</td>
<td>2043</td>
<td>421</td>
</tr>
<tr>
<td>S.C. in %</td>
<td>9.1</td>
<td>14</td>
<td>8.6</td>
</tr>
<tr>
<td>Literate %</td>
<td>16.7</td>
<td>11</td>
<td>14.2</td>
</tr>
<tr>
<td>Workers</td>
<td>1120</td>
<td>1274</td>
<td>427</td>
</tr>
<tr>
<td>Works in primary activities in %</td>
<td>71.7</td>
<td>68.8</td>
<td>97.1</td>
</tr>
</tbody>
</table>
FIG. 5.20

VILLAGE SAMRER

FUNCTIONAL BREAKUP

Workers

Cultivated land

LAND USE

Agriculture
Industry
Other services
Nonworkers

Wells
Tubewells
Tanks
Unirrigated
Cultivable waste