SUMMARY AND CONCLUSION

The Chhattisgarh region (19°47' - 23°14'N and 80°17' - 84°24'E), practically the upper Mahanadi basin, comprises four eastern districts of Madhya Pradesh, viz. Raigarh, Bilaspur, Raipur, and Durg (including the present Rajnandgaon district). It extends over an area of 73,315 km². Its rural area is 72,793 km². The districts of the region are divided into 21 tahsils.

The region is formed by a fan-shaped structural-cum-erosional plain surrounded by an upland rim. The upland is further divided into the northern upland, extending in the northern parts of Raigarh and Bilaspur district, the Maikal range, stretching on the western border of the region, and the southern upland, occupying the southern part of Durg district and south-eastern part of Raipur district. The river Mahanadi, along with its tributaries, like the Shynath, the Hasdo, the Mand, the Paire, etc., drain about 94% area of the region. The entire region lies south of the tropic of cancer and has the typical tropical monsoon climate with a seasonal rhythm. The temperature normally does not go below 17°C even in December, which is the coolest month, and does not go above 36°C in May, which is the hottest month.

The annual rainfall ranges from nearly 120 cm in the west to about 170 cm in the north-east. About 92% of the annual rainfall is obtained between June and October. The forests cover about 38%
area of the region, but they are confined mainly to the upland.
The region lies in the area of red and yellow soils. The soils are locally classified into Bhatha, Matysi, Dorsa and Kanhar according as they are at different elevations. Bhatha soils are barren wastelands occupying higher grounds. They are unfit for agriculture but provide good site for settlements.

The region is a densely settled section of the state.

Its population is 87,95,089 (1971 census), and the density of population is 120 persons per km². The region is basically rural, with 77,32,882 persons residing in 13,631 villages. The rest of the population resides in 34 towns. Scheduled castes and scheduled tribes constitute 13.94% and 21.22% of the rural population respectively. Chamar and Satnami are the main scheduled castes, and Gond, Kawar, Oraon, Halba and Bhaina are the main tribes. The tribes occupy mainly the upland. Other important castes of the region are Brahmin, Kurmi, Telhi and Rawat (Ahir).

Agriculture is the mainstay of the people, as 86.28% of the total workers and 90.86% of the rural workers are engaged in agriculture. Paddy is the dominant crop having no close rival. It is grown over 86% of the total cropped area, and as such the region is reputed as the 'rice bowl' of Madhya Pradesh. The natural resources of the region support a number of small and large scale industries. After the Independence some large scale industries were established in the region, such as Bhilai Steel Plant; Bharat Aluminium Co., Korba; and cement factories of Mandhar, Tilda and Jamul; all based on the mineral resources. There is
a cotton textile mill at Rajnandgaon. Besides, there are many small scale industries also, such as rice mills, 'dal' mills, saw mills, 'bidli' making, Rose industry, etc. Roads are the chief means of transport. Two national highways and the Howrah-Bombay trunk railway pass through the region.

The Chhattisgarh region has a very long history of human occupancy. Originally it was inhabited by some Kolarian and Dravidian tribes. The Aryans entered the region quite late, perhaps in the later Vedic period. The tribal and Aryan cultures existed side by side. With the incursion of the Aryans, the aboriginals were either enslaved, or Aryanised or compelled to take refuge in the inhospitable hilly forested tracts. The Aryan settlements must have been more planned than those of the tribals, as the former had developed the art of village planning. In the early medieval period the region experienced political instability, which must have hampered the growth of settlements. But in the late 9th century the region passed under the control of the Kalchuri (Haihaivanshi) Rajputs, who ruled over the tract up to the mid-18th century. Far removed from the routes of armies and protected from invasion or disturbance by the surrounding precipitous ranges, the Kalchuri kingdom of Chhattisgarh continued to enjoy a peaceful and uneventful existence. The period was thus congenial for the growth of settlements. The Kalchuri rulers established a few beautiful towns also, such as Ratanpur, Jajallapur (the modern Janajir), Raipur and Khatvatika (the modern Khallari). The kingdom was divided into thirty six garha (fords), each garha controlling perhaps eighty four villages.
In the middle of the 18th century the region was annexed by the Bhonsales. The Maratha period was a period of insecurity, disturbance, plunder, terror and chaos, due to which many villages were deserted. The region went under the control of the British in 1818 but was again restored to the Maratha rule in 1830. Before the advent of the British rule there were 3,300 villages in Chhattisgarh subah of the Bhonsales, out of which 1,300 villages were uninhabited and deserted. 203 villages were deserted at the time of the transfer of power from the Marathas to the British. The density of population during that period was very low, only 30 persons per sq mile. The famines of 1836 and 1845 were also disastrous to villages. Unstable settlements were also in existence in the forested areas. In 1854 the region was annexed to the British dominion. The British administrators tried to resettle some deserted villages. Some forests were clearfelled to settle new villages and for the construction of roads and railways. The Independence brought complete political stability and security in the region. The settlements swelled in size and unstable settlements were replaced by permanent settlements even in the remotest tribal areas.

There are at present 13,631 rural settlements in the region. The average density of rural settlements is 19 settlements per 100 km². But the distribution is very uneven, which has been caused by a number of physical and cultural factors. Agriculture is the mainstay of the people. Hence the quality and quantity of agricultural land and the factors affecting the availability of agricultural land, such as physiography, soil,
climate, etc. largely determine the density and size of rural settlements. The Chhattisgarh plain, with extensive agricultural land, is more densely settled than the upland, where rugged terrain, extensive forests, thin soil veneer and difficult water supply condition have been the repulsive factors for settlements. Bhathe land is preferred for the siting of settlements, because it occupies higher ground, has good drainage condition and provides solid base for foundation. Climatic variation is not much marked, yet the tract just in the west of the Maikal range receives the lowest rainfall and has the highest probability of drought, and hence the density and size of rural settlements in this part of the plain are medium only. Coefficient of correlation of +.61 between the percentage of agricultural land to the total area and density of rural settlements in the tahsils of the region shows a substantial relationship, thereby indicating that the extent of agricultural land is a dominant factor influencing the distributional pattern of rural settlements. Political stability, land tenure system, clan ties and caste system have also played significant role in affecting the distributional pattern of settlements. Density of population and population size of villages are responsible for the variation in the density of rural settlements.

The density of settlements may be expressed by the area-size of villages also, because the average village size increases with the decrease in the rural settlement density. In the region the average village size varies from 2.56 km² in Sarangarh to 8.06 km² in Katghora tahsil.
Spacing is another way of expressing density. The author adopted the formula devised by Mather to calculate the spacing, which is based on the assumption of triangular arrangement of settlements as conceived by Christaller. The average distance between rural settlements varies from 1.72 km in Sarangarh to 3.05 km in Katghora.

The author also analysed the location of rural settlements in relation to each other. Three techniques were used for this analysis: nearest neighbour analysis, point pattern measurement by quadrats, and chi square analysis. Twenty 1" topo. sheets were selected by random sampling for the study. According to nearest neighbour analysis four sheets show random distribution and the rest sixteen sheets show more uniform than random distribution of settlements. The other two techniques give a little different result. The quadrat technique shows more clustered than random pattern in five sheets, which include the sheet No. 64 C/14, where the nearest neighbour technique shows the highest regularity (uniform) in the distributional pattern. Two sheets show random pattern and the rest thirteen sheets show more regular (uniform) than random pattern. Chi square results follow the pattern shown by the quadrat method. It may be noted that uniformity in the distribution of settlements is nowhere of high order. Generally the distribution of settlements is more uniform in the plain than in the upland.

According to the characteristic groupings of dwellings the rural settlements were divided into four types: 1) compact,
ii) semi-compact, (iii) hamleted, and (iv) dispersed. In the region compact settlements are the rule, as out of 13,631 settlements, 10,424, i.e. 76.47%, are compact in nature. The number of semi-compact settlements, i.e. the settlements with one main nucleus and one or two subsidiary hamlets, is 2387, and that of hamleted settlements, i.e. the settlements with more than three hamlets (including the main nucleus) is 730. There are 90 settlements of very small size, i.e. with one to four huts each.

Uniformity of relief, fertile soil, low water table, need for cooperation in agriculture which is based on paddy cultivation, need for defence at least in the past, less rigorous untouchability, fragmentation of holdings and preference for Bhatha land for the settlement siting are the responsible causes for agglomeration. The process of hamlet formation gradually gains ground towards the upland. The hamleted settlements of the region are mostly found in a belt in the northern upland along the northern boundary. Semi-compact settlements occupy transitional positions. Dispersed settlements are small in number, but they may be seen in the north-eastern upland. Dissection of topography and social groupings (including the caste system) are the main factors responsible for hamleting and dispersal of settlements.

The rural settlements may be classified according to population size also. There are 2,520 settlements with less than 200 population (class 1), 5,321 settlements with 200 to 499 population (class 2), 4,078 settlements with 500 to 999 popula-
tion (class 3), 1,462 settlements with 1,000 to 1,999 population (class 4), and 250 settlements with 2,000 or more population (class 5). The shares of the different classes in the total villages vary from one tahsil to another. Coefficient of variation was calculated for the share of each class in the tahsils. The 'V' values come to 55.2%, 0.2%, 23.3%, 58.3% and 83.8% in classes 1 to 5 respectively. It shows that the variability increases with the decrease in village frequency in the classes. With the help of chi square analysis the grouping of tahsils with similar distributional pattern of villages in different classes was attempted, and it was found that the tahsil-groups do not follow physiography or other physical features in all the cases, and so the physical factors alone do not determine the distributional pattern of villages in various population size classes. Cultural and to some extent change factors are also important in this regard.

Changes in the population size classes of villages between 1961 and 1971 were also analysed. Because of rapid population growth the villages have swelled in population, due to which the class 1 villages have decreased in number during this decade. Class 2 has also shown a slight decrease. At the cost of these two classes, other classes have shown an increase in the number of villages.

Most of the rural settlements of the region do not exhibit any definite pattern, or show only irregular or amorphous patterns, but in some cases the following patterns have been
evolved a rectangular, square, hollow rectangular, linear, chess-board, 'L' and 'T' shaped, circular, hollow circular, oval, radial, semi-circular, fan shaped and triangular.

The single predominant function of villages is agriculture, but a few villages provide the services of trade and commerce, education, health, transport and communication, and administration to the surrounding villages. Identification of rural service centres and determination of their hierarchy have also been attempted in this study. Weightages for the services of various hierarchies were determined and then the weightages secured for different services by each service centre were aggregated to obtain the total weightage of the centre. The weightage of service centres varies from 3.15 to 259.24. On the basis of the weightages the rural service centres were put in six-tier hierarchy. The number of centres decreases as we go up in hierarchy. In all, 658 rural service centres were identified in the region. The distribution of service centres is very uneven and far from being hexagonal as conceived by Christaller. The distribution of rural service centres follow, to a large extent, the pattern of population distribution, which is indicated by +.80 coefficient of rank correlation between the rural population and the number of rural service centres in the tahsils. Rank correlation coefficient was computed between the total weightages and the rural population of the tahsils. The resultant coefficient, +.69, shows a substantial relationship, but the relationship is not as strong as in the above
mentioned case. A comparison between the ranks occupied by
the tahsils in rural population on the one hand and in number
of rural service centres and total weightage on the other shows
that six tahsils are lossers in the number of service centres
and weightage both, thereby indicating that not only the number
of centres should be increased but also higher order functions
need by developed in these tahsils. Four tahsils occupy lower
ranks only in regard to the number of centres, and so there
should be developed more centres. Another four tahsils are
lossers in respect of total weightage, and so there should be
developed higher order functions. In the rest seven tahsils
the condition is satisfactory seen from the regional standard.

Morphogenesis of six rural settlements was studied
in detail. The analysis indicates that the morphology is guided
by site and situation of the settlement, and a number of histo-
rical and cultural factors. The caste system of the Hindu
society produces two forces opposed to each other. The notion
of pollution based on the untouchability acts as a socio-fugal
force and compels the so-called untouchables to live outside
the main village inhabited by the caste Hindus. On the other
hand, based originally on the principle of division of labour
the caste system produces economic cooperation and thus acts
as socio-petal force to bring the people of various castes
together. Untouchability exists in the region also, but it
is not as much pronounced as in many other parts of the country.
Therefore Chamars and Sataamis do not necessarily make separate
hamlet, although they live in one side of the village. There is sufficient mixing of different castes, although castewise wards may also be seen. Tendency of formation of hamlets or wards on the basis of social groups is more pronounced among tribes than in other Hindus. Each tribal group makes its own hamlet or ward. The analysis of the morphology of Nagarkund, Banseoni, Tilora and Gujabahar (which are semi-compact and hamleted settlements) indicates that hamlets are the result as much of caste system and tribal groups as of the dissected site which divided the settlements into smaller hamlets. The 'L' shape of the compact settlement Mohad is the result of the 'L' shape bend of the river Shivanath, along which it is settled. Morphogenesis of the compact settlements Mohad and Bangoli indicates that compact settlements do not necessarily originate at and expand from one nucleus. Sometimes more than one nuclei evolve and then with the expansion of village population the infilling of gaps takes place. It may be noted that none of the six settlements is more than three centuries old.

Houses are the basic unit of settlements. Form, function, material and pattern are the major characteristics of houses to be studied. Caves were the first form of human dwelling and the house may be considered as an extension of the cave. Gradually man learnt the use of materials easily available from nature, such as leaves, branches, reeds, bamboo, mud and straw for artificial dwellings. The existing variations in the house types of various socio-economic groups indicate different stages
of development in the house-architecture.

There are 12,43,916 rural houses in the region, each house sheltering on an average 5.75 persons. The density of rural houses closely follows the pattern of rural population density in the region. Mud is the most universal and most easily available building material. It provides wall material to 82.65% rural houses and roof material in the form of tiles to 90.25% rural houses in the region. Unburnt and burnt bricks, which are also made from mud, have been used in 3.70% houses as wall material. Grass, leaves, reeds, and bamboo provide building material to poor people mainly tribals. They have been used as wall materials in 4.11% rural houses and as roof materials in 8.75% rural houses. Khadar grass is the most common thatching material. Stone has been used in the walls of 7.31% rural houses.

On the basis of the study of the houses of ten sample villages, namely Mohad, Bangoli, Magarkund, Banseoni, Tilora, Cinabahar, Singhanpur, Jhalmais, Konkan and Suplikonha, the following house-types have been recognised: i) the mud wall and tiled roof dwellings, numbering 322 and constituting 34.83% of the total 959 dwellings in the ten surveyed villages, ii) the mud wall and thatched roof dwellings (67 - 6.91%), iii) the log or wattle wall and thatched roof dwellings (2 - 0.21%), iv) the brick wall and tiled roof dwellings (67 - 6.91%), v) the brick wall and cemented roof dwelling (1 - 0.10%), and vi) stone wall and tiled roof dwellings (10 - 1.02%).
Houses can be classified according to size, especially number of rooms, also. About 35% population of the region resides in dwellings with one or no regular room. Such dwellings constitute 45.7% of the total dwellings in the region and 16.92% in the ten surveyed villages. Dwellings with two, three, four, and five or more rooms constitute 34.11%, 12.53%, 4.57% and 3.07%, respectively of the total dwellings in the region, and 26.21%, 24.36%, 16.00% and 16.51% respectively of the total dwellings in the surveyed villages.

The most predominant use of houses is dwelling, as 73.80% houses of the region are used exclusively as dwelling, 2.76% houses are used as workshop-cum-dwelling and 0.64 as shop-cum-dwelling.

The most elementary form of rural dwelling is the single rectangular room. Walls of such dwellings are of mud, in some cases of log and wattle, and roofs are of thatch, Khadar grass being the main thatching material. The roof slants down on front and back, and such roofs are locally termed as dandraiya or sari. The next stage is marked by a verandah placed in front of the single room. Doors are often made of split bamboo. Sometimes a kitchen garden, locally termed as Bari is attached in the rear. With the improvement in socio-economic condition and increase in needs of the household, the number of rooms increases. Courtyard (Anaan) is a common feature in the dwellings with three or more rooms. Functional differentiation becomes more prominent with the increase in the number of rooms.
In the big-size dwellings of richer people roofs slope on all the four sides. Such roofs are known as chankhadi or konia. A special feature of bigger houses is ratao (on upper room), which is built above one of the big size rooms with wooden beams, half split bamboo pieces and mud. Ratao is used as store room for grains. Bari is attached in almost all the dwellings. Good size windows are conspicuously absent in the houses. Only a small hole or a small size window is provided in some rooms. Consequently ventilation is poor in the rural dwellings. There is no provision for lavatory, the part necessity of which is fulfilled by bari. There is no proper arrangement of sewerage also, and wastes and filth drains on the surface by the side of the house.