SETTLEMENT STRUCTURE IN THE NORTH KOEL BASIN OF BIHAR

Dissertation submitted to Jawaharlal Nehru University
in partial fulfilment of the requirements
for the award of the Degree of
MASTER OF PHILOSOPHY

RAVI SHEKHAR

CENTRE FOR THE STUDY OF REGIONAL DEVELOPMENT
SCHOOL OF SOCIAL SCIENCES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI-110 067
INDIA
1993

जवाहरलाल नेहरु विश्वविद्यालय
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI - 110067

CENTRE FOR THE STUDY OF REGIONAL DEVELOPMENT
SCHOOL OF SOCIAL SCIENCES

JULY 21, 1991

C E R T I F I C A T E

This is to certify that the dissertation entitled "**SETTLEMENT STRUCTURE IN THE NORTH KOEL BASIN OF BIHAR**" submitted by **RAVI SHEKHAR** in partial fulfilment of requirements for the **DEGREE OF MASTER OF PHILOSOPHY**, has not been submitted earlier for any other degree of this or any other University and is his own work.

We recommend that this dissertation may be placed before the examiners for evaluation.

PROF. HARJEET SINGH
(SUPERVISOR)

PROF. G.K. CHADHA
(CHAIRPERSON)

IN THE MEMORY OF

GRAND FATHER

ACKNOWLEDGEMENTS

To my supervisor Professor Harjeet Singh, a wonderful teacher with a complete social science vision, guided me at every step of my research whatever I have been able to achieve in the form of this dissertation, it could not have been possible without his help. At every stage he made me feel incomplete about my work. And it was this sense of incompleteness, which inspired me to work. I am also grateful to Prof. Amitabh Kundu and Prof. Sudesh Nangia for their help.

To my teacher Dr. Kamal Narayan Sharma and his wife Ms. Chinta Sharma, in my college days in Bihar University, who not only nurtured my elementary understanding of geography as a subject, but also encouraged me to pursue its study at the higher level.

My parents deserve special mention whose unfailing love, constant vigil on my day to day activities made me overcome many a hurdle.

I also take this opportunity to thank my friends and colleagues Dinesh Kumar, D.K. Shahi, D. Tingal, S. Srinivasan, S. Singh, N.K. Singh, J. Singh, Suraj and Virendra Singh Negi for their help and encouragement.

I am also thankful to Mr. Chinmay Nath for photographic work, Mr. Hari Singh, Library Incharge, Sewa Bhawan, R.K. Puram, Mrs. Sheela Kakkar, School of Social Sciences. Om Prakashjee and Tiwarijee need special mention for their efficient typing.

Ravi Shekhar

RAVI SHEKHAR

CONTENTS

LIST OF MAPS AND GRAPHS

LIST OF TABLES

CHAPTER -I

INTRODUCTION

The ever wandering human society's first footprint on the path of development was the creations of permanent structure or shelter which attached him to the land for primary production during the Neolithic period. The carving out of the cultural landscape on the physical landscape was the first modification with the then available technology. With the passage of time, he upgraded the technology available to him and became better suited to interact with the nature. Thus, he carved out a better cultural niche in the form of permanent settlements for his living. It is in this context that settlements became the concrete expression of human occupance on the earth's surface.[1] Whatever is seen today in the form of human habitat is the outcome of the constant interplay of physico-cultural factors over time. That is why both temporal as well as spatial variation occur in human habitat.

---

1. Hagget, P.(1966)," Locational Analysis in Human Geography" London, Arnold/New York, st. Martin's press p-65.

The size, spacing, type and pattern of human settlements are the reflections of man's interaction with the nature and his adaptability to natural forces or moulding of natural elements according to his needs. The present study is an attempt towards examining the impact of physical as wll as cultural factors on rural settlements in the North-Koel river basin of Bihar. Man, by nature, tries to live in those areas where he can avail greater amount of facilities for comfortable living. It, thus, leads to the concentration of people in those place where resources and amenities are relatively more.

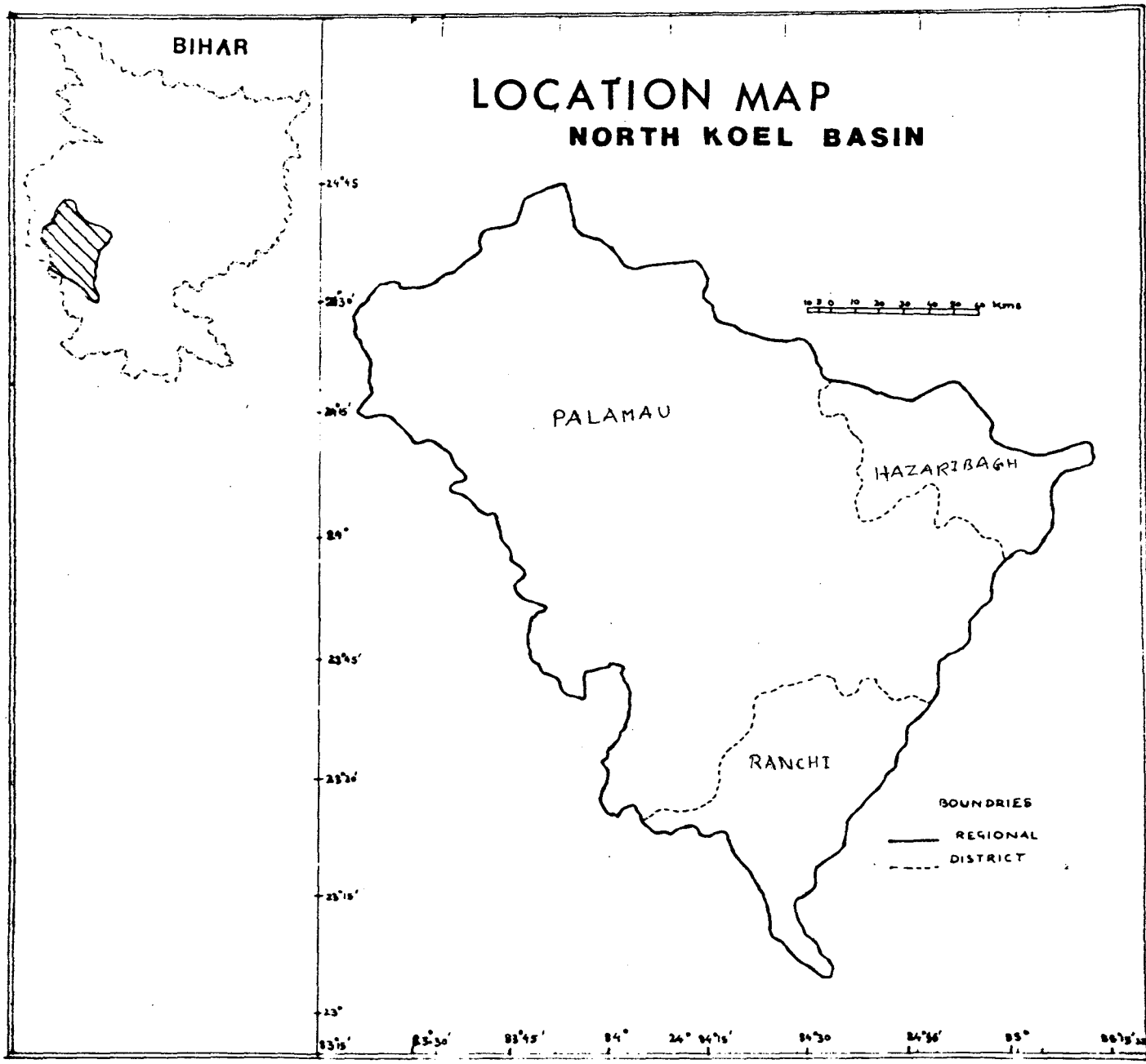
Earlier, in history the relationship of man with the nature were simple and the size of population smaller. With the passage of time, the degree of complexity in the size, forms and type of settlements became greater. The increasing population at a place attracted various amenities to satisfy their various necessities. Later on various sized settlements developed. This gave birth to hierarchy in settlements. Generally bigger sized settlements need greater and varying type of amenities. Hence the number of amenities, became greater and their levels higher in bigger settlement and vice-versa is not always found. This gap between population size and the number and level of amenities gives birth to the functional gaps on the basis of which

problem regions are identified.

THE STUDY AREA:

The delineation of North-Koel basin has been done on the basis of water divide of the North-Koel and its tributaries using Survey of India toposheet onthe scale of 1.250,000. Situated in north-western section of Chotanagpur Plateau. It stretches in Ranchi-Hazaribagh and Palamau districts. It includes the Bishunpur block and parts of Chainpur-Ghaghra, Senha and Kisko blocks of Ranchi district (presently of Gumla district), Simaria block of Hazaribagh district and whole of Palamau district except Hussainabad and Bhaunathpur in the northern part, Balumath and Chandwa (Partially) in south-eastern part - fall in the North-Koel Basin. The total area of the region is 9958.2 square kilometres. The regin is physiographically highly varried.

The region shows alternate belted arrangement of rocks of different hardness belonging to various geological ages. The Vindhayans in the north western corner of the Keol Basin are succeded in the south by the hard gneisses and granites which are further succeeded to south by the Gondwanas, particularly of the Amarnath basin. Again in Auranga and Huttar basins granites and greisses predominate. In the


BIHAR
LOCATION MAP
NORTH KOEL BASIN
PALAMAU
HAZARIBAGH
RANCHI
BOUNDRIES
REGIONAL
DISTRICT
24°45'
24°30'
24°15'
24°
23°45'
23°30'
23°15'
23°
83°15'
83°30'
83°45'
84°
84°15'
84°30'
84°45'
85°

extreme south we find the lateritized basalt of the 'pat' region. Amidst the 'Pat' region lies a saucer shaped chhechhari valley carved out by the Burha river.

All the streams in the regions have quicksands around thier channels. The important tributaries of the Koel river are the Auranga, the Hutar, the Amanat and the Burha streams. The area recieves rainfall of more than 170 c.m. in pat region but it gradually decreases from south towards north and near the son river, the amounts come to down to below 80 c.m.

Leaving the extreme south, the natural vegetation is of dry decidous type which includes bamboo, sal, khair-kusum, Shisham, sabai grass and palas among others. Forests form an important resources of the region covering over 50 per cent of its total area. The region enjoys important place in lac production and produces almost half of the lac produced in the state.

Presence of fertile alluvial soil allow paddy cultivation in its most parts. Other important crops of the region are maize, pulses, millets and oilseeds. Well drained soil make large scale cultivation of maize passible.

The region is rich in minerals wealth-coal is the most important mineral found in Auranga, Hutar and Daltanganj

coalfields. The coal mine in the region is not of good quality as it has high moisture content. Bauxite is mined near Neterhat plateau and the other mineral found are China clay, magnesite and strained mica.

The total population of the region was 13,93,620 persons with the density being 138 persons per sq. km. The density of population even within the region is higly unven - it varies from 201 persons per sq. km. in the northern plains to only 60 persons per sq. km. in the southern hilly tract. The region represents the most sparsely settled part of the state.

Except the valley, the surrounding forested and dissected uplands are ratehr isolated with very limited communication linkages. Out side the valley, the railway lines have been extended upto mineral sites only. Otherwise, railways and metalled roads are highly under-development in the region. This is one of the most important factors for the backwardness of the region. The undulating, highly dissected surface and dense forest cover pose problems inthe development of means of transportation.

Unlike the remaining part of the Chotanagpur Plateau the North-Koel Basin does not have heavy industries. Only forest based industries are found on a small scale. People

are still largely engaged in their traditional occupations.

Therefore, lack of industrialization, means of transport and communications and of levelled agricultural land, highly erratic nature of rainfall coupled with lack of irrigational facilities make the region poor. The lack of development due to above mentioned factors, is highly reflected in the settlements and these highlight the supermacy of physiographic factors over the cultural factors in this backward region.

OBJECTIVES & HYPOTHESES:

In order to understand the role of environment of the settlements and the impact of limited development in the recent past, the following main objectives were kept in mind for the present study:

(1) To comprehend the extent to which the drainage affects the size, density, type, spacing and patterns of settlements.

(2) To find out whether any hierarchy has emerged in the size of settlements and in the amenities available therein; and

(3) to identify the functional gaps in the hierarchy in order to locate more backward pockets within the region.

With the above objectives in mind, the following hypotheses were formulated:

(1) with the descent of the valley to lower parts the density of settlements increased.

(2) Bigger settlements shall have greater intro-settlements spacing.

(3) Lower course of the river will show more regularity inthe occurance of settlements.

(4) Bigger settlements will attract higher amenities.

DATA BASE

In order to achieve the above mentioned objectives and to test the hypotheses there is need of specific data. The present study is based on secondary source of information.

These include:-

(1) District Census Handbooks of Palamau, Ranchi and Hazaribagh districts published for 1981.

(2) As the study focuses on the factors affecting the spatial pattern of settlements, large amount of information has beeen tsken from the topographical sheets of the survey of India on the scale of 1.50,000.

(3) For the demarcation of the region, the topographical sheets of the Survey of India on the scale of 1:250,000 has been used.

METHODOLOGY:-

In order to achieve the set goals with specific theoretical framework, the use of certain research methods is necessary. The types of tools of analysis used in the present study are of two types-cartographic and statistical methods.

To study the spacing of settlements Mathur's method has been used.[2] The pattern of settlements has been analysed with the help of the nearest neighbour analysis.[3] Hierarchy of settlements has been calculated using Spearson's rank correlation.[4] In order to find out hierarchy of amenities some weightages are given to each amenity according to their respective importance: weightages to these amenities were

---

1. Mather, E.C.(1944) A line distance map of farm population in U.S. AAAG, vol.34p-171.

2. Clark P.J.& Evans F.C, (1954) Distance to nearest Neighbour- a Measure of Rrelationship in Population." Ecology, vol. 35 pp-445-453.

3. Mahmood, Aslam (1986), Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.

given following Bhatt's method.[1] Giving their due weightage a composite index has been prepared in order to rank the settlements accrodingly. Then coefficient of correlation has been marked out for the population of settlements and the amenities.

Survey of Available Literature:

The form of settlements reflects the entire history of civilization. It is in this context that the curiosity to know the various aspects of settlements becomes quite natrural. Various attempts, in the later half of the 19th century, were made to know the evolution of settlements and the underlying causes their of in Europe especially by French geographers. In first half of the 20th century various studies appeared in Geographical review which dealt with spacing, size, patterns types and later hierarchy of settlements. In India a few attempts, in this directions were made in later half of the present century. Today numerous studies are available which describe size and spacing, pattern, types and hierarchy of settlements. Here

---

1. Bhatt L.S. et al (1976): Micro-level Planning- A case study of Karnal, Haryana. K.B. Publications, New Delhi. p-45

an attempt has been made to review a few important relevant studies.

Types and patterns or distributions of settlement is controlled by various factors. Their growth is never a chance factor. In this regard various studies have been undertaken. Demangeon states that evolution and type of settlement is determined by numerous factors! He mentioned that among the natural conditions the surface configuration-soil condition and water resources are important[1] The plains are more important for larger villages while mountains and broken hills encourge hamlets. Settlement forms are also determined by inherent tendencies which respond to the need of defence. According to Demangeon, social organization also affects the organization of settlement. Landholders according to their needs have given birth to agglonerated or dispersed type. Modes of livelihood have a great role i.e. The nomadic herding due to its lnature of economy encouraged isolated or dispersed whereas in the case of settled cultivation dispersed tendencies have been replaced by agglomerating one

---

1. Demangeon, A. (1927) "La geographie de l' habitat rural" Annals de geographie xxxvi pp 97-114 translated in "Readings in cultural geography" ed. by Wagne, P.L. and Mikasell M.W. The University of chicago press, Chicago, 1962 pp. 506-516.

but in the stage of specialization dispersal tendencies are encouraged. As this brings cultivator closer to his farm and protects him from the inconveniences of the community life. The consequences of this agricultural revolution was a settlement revolution, a shift from agglomeration to dispersal. Thus settlements are mainfestations of human enterprise that are not necesarily determined by physical factors. Panda.P. and Rai, R.K made an attempt to find out the links and the influence of regional geomorphological factors on the distribution of rural setlements in khasi and Jaaintia Hills of Meghalaya.[1] They based their study on the topOographical sheet of India on the scale of 1:50,000. After analysis they found that ecological factors mainly relief plays important role: They concluded that hilly terrain and steep slopes are the main factors which control the shape and size of settlements in the studied basins. Asthana,V.K. applying garnet's formula in the hilly area of Almora, describes how the general selection of settlements sites depend upon the duration of sunshine in the winter

---

1. Panda, p. and Rai, A.K. "Land forms and Rural Settlements- A case study of Drainage basin in Khasi and Jaintiya hills, Meghalaya" in India: Culture, Society and Economy" ed. by Mukerjee, A.B. and Ahmed. A. Inter-India Publications. New Delhi 1985, pp. 160-175.

solstice.[1] The area affected by forenoon and afternoon are generally devoid of settlements. Birch, John. L. finds that the location of cultural features and distribution of population are controlled by numerous factors among which topograhy , climate, the occupation of the people and the grade of civilization are perhaps most important.[2] The factors which have more influence include relief, slope and exposure. The result con not be applied without modification to regions whose topograhpy is complicated by remnants of surfaces belonging to times or more cycles or to those whose climatic and cultural conditions are notably different. It is doubtful if it can be applied at all to regions of which topography is not definitely a product of normal cycle of stream erosion and such regions make up a very considerabel portions of the earth's surface. Thus it can be stated that topogrophic control over the location of cultural features is exerted mainly through the agency of slope supplemented by relief and to a lesser degree by exposure. kharkwal, S.C.

---

2. Asthana, V.K., " Influence of Attitude and Influence on Settlement in Almora and its environment" in " Applied Geography ed. by R.L. Singh et al- National Geographical Society" Varanasi, 1977. pp- 270-275.

3. Birch, John, L. " Cultural Features and the Physigraphic cycle" Geogrophical Review, 1917 pp-297-308.

using statistical methods make an attempt in order to find out the relationship between settlements and morpormetric elements.[1] The settelment map was superimposed over each morpho region (relief, relative relief, dissection index region, drainage texture region) the settlents of each morpho regions have been counted and the summarises that the topographic control over the location of cultural features is exerted mainly through the agency of slope supplemented by relief and to a lesser degree by exposure. High frequency of settlements is mainly found in areas of moderate to high absolute relief, moderate dissection index, coarse to moderate drainage texture and moderate slope. He concluded that there exists a dire of impact of morphometric elements on the distributionn and pattern of settlements in the area. vats and singh have quantified the distribution pattern of rural settlement in relation to its geolmorphologicval aspects.[2] Analysing the aerial photogrophs they point out that alluvial plains of varied types represent uniform

---

1. Kharkwal, S.C. "Impact of Morphometric elements on the Distribution of settlements in Nainital and its environs". Geographical Review of India, 1970, vol 32 no.3 pp-141-156

2. Vats, P.C. & Singh.S. " Geomorphic Influence on Settlements- A Quantitative Approach" Deccan Geographer, 1976, vol-xiv No. 2 pp-27-33.

distribution inplace of random wheras sandy plains are more random than uniform. Favourble physical conditions like fertile soil, less erosion, availability of water and high water table have provided better condition for promoting the growth of compact and linear settlements.

Rowlands M.J. has stressed the importance of defence in settlement type, pattern and distribution.[1] The poper has been divided into four sections- The first section discribes the aim of defence- the reasons that influence people to defend a particular place or territory one complex- even them eeconomic-political and territorial factors are important. The second section describes the factors that influence the manner of defence- among the environmental factors differences in topography, climate, vegetation and soil influence the siting and arrangement of settlements. Technology and raw material, subsistence economy socio-political organization, influence of warfare and that of military tactics are important. The third section deals with the cultural response to defence- where as the fourth and final section describes the in fluence of warfare on

---

1. Rowlands, M.J." Defence: A factor in the organisation of settlements" in Man. settlement and Urbanisation" ed. by p. Ucko et al, London, 1971 pp 447-462.

settlement systems. the intensity of warfare can quite clearly have a considerable impact on thge socio-political structure of societies. Warfare can impose limitations on social activities which may be reflected in the structure of settlements.

Size and spacing the settlemets are closely related to each other. These time elements are to a greater extent determined by the socio-cultural elements. Thus, understanding of the size and spacing of settlemts to a great extent help in planning process of a settlement. Size of settlement is an expression of cultural background of the people. In terms of the life of settlemts the significance of its size changes continuously with the changes in the character of the region in which the settlement is located. Mann,R.S. taking into consideration three factors population, areal size and occupied houses comes to the conclusion that the higher spacing between settlements is associated with large sized settlements.[1] Large sized settlements are associated with fertile soil zone and culturaly (industrially) developed areas. Small sized settlements are characterized in sanddune zones . Due to low water table and

---

1. Mann R.S.(1974), " Rural settlements size in Hansi Tehsil (Haryana)" Deccan Geographer , vol.12 pp-27-32.

sand hills the size of rural settlements could not grow in this part of the region. The daily needs of the people particularly water, economic and cultural factors conbined with historicval lineaments and terrain attributes produce different categories of settlement sites.

Mukherjee, A.B. tried to identify the regional pattern of spacing between rural settlements in upper Ganga Yaamuna doab and explained the pattern through arial- convariance of characteristic determinants or associated areal attributes and finally to evolve the manner in, and the extent to which the spatial pattern of spacing contributes to the character of the areas.[1,2] The productivity of land as a control of spacing becomes all the more significant in the upper doab because of its inherent rural and agricultural nature of economy and in general of living. Low values of spacing are correlated with widespread availability of water of shallow depths, small size of villages, low density of rural population and a very high density of scheduled castes

---

1. Mukerjee, A.B. "Spacing of settlement in Upper Ganga-Yamuna Doab" Geographical review of India, vol.36, pp 155-164.

2.---------- "Spacing of Rural settlements in Rajasthan: A Spatial Analysis" Geographical Viewpoint, 1970, vol.1-pp 1-19.

population. In those areas where village are small and closely spaced, the threshold value of population is needed to sustain a service centre.

The term 'type' identifies the relaltionship between settlemtns within space. Trewartha.G.T. made an attempt to know the growth of varying types of settlement patterns during colonization of America. The compact settlement in New England was not merely due to defence needs[1] but evolved as a natural process in possessing and developing a land. It was designed to meet the needs of religions and social minded englishman struggling to take root in a strange and relatively hostile physical and social environment. The landgrant was given to groups rather than individuals-the estabilishment of village community, the generation of centripetal forces by Puritan ideals and education funded to hold to settlement together and retard disintegration into isolated farsteads. Settlement types in Middle Atlantic colonies was quite different from the New England due to various factors:- land grants were made to individual rather than groups, lack of homogeneity in the colonists, mixture of

---

1. Trewartha, G.T. (1946)" Types of Rural settlement in colonial America" Geographical Review, vol.36 pp 568-596.

religious faiths and creeds resuting into centrifugal forces. The settlement in southern plantation colonies. the chief stronghold is that of dispersed settlement where individuation was strong. The land being cheap, economic motives frequently outweighed the appreciation of greater security.

Ahmed,E. finds out four different types of settlements but before giveng detailed account he de scribes the various factors which have contributed to the agglomeration or fragmentations or spreading of settlements.[1] Uniformity of relief and soil fertility, comparative lack of surface water, cooperation in agriculture, clan solidarity, social and economic bands and state of in security in the past have given compact settlement form in Upper doabal trans- Yamuna plain, Almost regular inundation during rains appears to have caused nucleation rather than spreading. the small upland available in a mauza are sufficient to accomodate all its inhabitants in this less densely populated tract. Dispersed stttlement is charactersed in lesser Himalayas, the duns, the Bhabar, the Siavalik range, and the khadar of

---

1. Ahmed, Enayat," Rural Settlement types in Uttar Pradesh" (United province of Agra and Oudh) AAAG 1952vol. XVII pp 223-246.

some rivers. cluster and hamleted type ccupy an intermediate zone-the settlements are an expression of wingled influence of agglomeration and disintegration forces. Fragmented type is the characteristics of eastern part of the Ganga-Yamuna doab, the douthem half of the trans- Ganga plain and the Vindhyan uplands.

Verma, L.N. analysed the variation in types of settlement and stated that these varriations are the product of human groups adjusting symbiotically with the local environment.[1] The soils and the sub-soil resources of area and the agricultural practices of the farmers have far reaching effects not only on the economuy of human groups but also on their habitation including the process of settlement, Jaiswal S.N.P. describes the various types of settlement and their areal distribution in the Ganga Yamuna doab along with the underlying causes behind the spatial variation in settlement types.[2] He finds that socio-economic factors have much more determing role than the

---

1. Verma, L.N. "Types of rural settlement in Gondwana basin of south Baghelkhand, Madhya Pradesh" Geographical Review of India, 1985 vol. 47 pp. 91-95.

2. Jaiswal, S.N.P. (1972) Rural Settlement types in Eastern part of Ganga. Yamuna Doab " in" Rural settlements in Monsoon Asia" ed. by R.L. Singh et.al NGSI,pp 333-336.

physiographic factors. Caste system is found to be one of the most important determining factors.

'Pattern' means a design made up of an arrangement of laneas ,especially one in which the same shape is repeated at regular intervals over a surface.' Pattern of settlement is the product of a long process of development and changes, the interplay of physical factors i.e. surface configuration, relief, source of water supply, drainge and edaphic conditions and the socio-economic factors ie. land use, land tenure crop association, means, of transport and communication and security prospects. In this regard the study of pattern owes an important place in any study related to settlement. Hall, undertakes study of Japan taking into consideration the general distributional pattern morphology of agglomerations or pattern of lacal dissemination and the morphology of local occupance unit.[1] On the basis of local phyisico-historical cultural studies finds four form - in the vamoco basin the exceedingly compact of rectangular form representing a checker-board pattern- well adjuted to the mode life of paddy areas.

---

1. Hall, R.B. (1931) Rural settlements Forms in Japan" Geographical Review, 1931, vol. 26, pp 93-123.

Satsuma type embraces a relict cultural form. The disseminated form here is markedly different from Vamaco basin. Echigotype involves a dry point settlement which is serpentine in form owing to location upon ancient dunes and active and abondened levees, aparticular distribution of land ownership. Takachi type is of recent development and adjusted to the extensive agricultural system and the cold winters of Hokkaido frontier. The structure of the local patterns to artificial forces. The Japanse rural house is distinctly an implement of agriculture and as such varies with agricultural systems. It is also a product chiefly of its local envirnment and so varies in construction and form with the heterogeneity of the Japanese cultural complex.

Jones, E. using topogrophical sheets for different time periods finds that differences in pattern can best be discerned in times of cultural element rather than in time of geomorphic factors.[1] The rural pattern must be distinguished and classified in timme of social organisation. Relief and soils exposure and accessibility have all played their part in determining local details. He at last concluded that in Teify valley the overriding factor

---

1. Jones,E (1945) Settlement pattern in the middle Teify Basin Geography, vol. 30 no. 150, pp-103-111

in nature and distribution of settlement was cultural, According to Ahmed, Nafis -The conditions of terrain and climate in combination with certain economic and cultural factors have made a distinctive pattern in East Pakistan.[1] Due to high water table seattered type of settlement is found. compact collection of houses are regarded as uncomfortable. Settlement in South Eastern distiricts-basically innundated tracts almost continuous linear but in the low lying marshy areas North-Eastern and Mymensingh each housestead consists only of a single hut and thus are clusterd as mounds of artificially raised earth so as to accomodate the greatest possible number of persons. Over most of the Sylhet dispersed type is found, lhouses mainly around paddy fields. In South-Western districts settlement in found in linear fashion on natural levees.

Ahmed. E.[2] states that although there is not any planned rural settlement development, there 'exists an unmistakable connection between the suface configuration of the site, surface water, soil, shape of the field and

---

1. Ahmed, N (1950) The pattern of rural settlement in East Pakistan Geographical Review, vol. xlvi pp 388-398.

2. Ahmed,E. (1962) Indian village patterns Geographical Outlook, pp-5-15.

pattern. The state of in security in the past and present social make up of the village are significant factors in development of village pattern. He finds nine types of settlement patterns and describes their spatial distributin along with the underlying causes. Anas, M.[1] identified four types of settlement pattern (a) a zone of compact settlement in the Tarai region (b) the clustered and hamlet type of settlement in Bhat region (c) the fragmented type in southern region of Trans-Ghaghra plain and (d) The dispersed type of khadar portion in Eastern Uttar Pradesh.[2] Chatterjee and Das describe the pattern of settlement in Puri-chilka coastal tract which conform to the physiographic nature of the terrain.[3] Coastal dune belt displays linear settlements developed between two recessive ridges of sand dunes. South of the chilka lake isolated settlement prevsail due to the in accessibility and the poor quality of sandysaline soil whereas north of the lake dispersed pattern prevail in hilly

---

1. Anas, M. (1954) The pattern of rural settlement in the sub- Himalayan Region Geographer vol. 6 no.2 pp-23-34.

2. Chatterjee, A.B. and Das. M. (1964) Settlement pattern in Puri Chilka coastal tract Geographical Review of India, vol.26 pp 149-152.

3. Singh.R.B. (1969) Rural settlement types and their distribution examples from Varanasi district. India, NGJI vol. 14. pp-91-104

region due to relative relief. Singh analyses that the opportunities of site aring out of local physiographi advantages, have much more determining role than positiona values on the settlement poattern of the area. distribution have been recognised using Barnes and Robinson method. These have been greatly in fluenced by the type of landuse. agricultural field patterns and land tenure. He finds that the loosening out of rural agglomeration is under the impact of land consolidation and community development programmes. The highway orientation urban sprawal and development of large industrial complex is transforming the landscape. Kumbhar[1] and Deshmukh, Bhattercharya[2] and Birch[3] have also studied the pattern of settlement in various regions.

The concept of hierarchy is the outcome of theories of peroux and Bondevillabent the formation and spatial growth of economic development poles, of christler and Losch settlement size, location distribution and clustering of economic

---

1. Kumbhar, A.B.& Deshmukh P.W. (1958) Rural settlement pattern in Nira valley, Maharashtra Geographical Review of India. vol.50 pp. 87-91

2. Bhattacharya, R., (1975) Settlement pattern in Deltaic West Bengal Geographical Review of India, vol.37 pp. 305-308.

3. Birch,B.P. Pattern and process in frontier farm settlement NGJI vol. 21 pp. 168-171.

activities" Hierarchy of settlement has been studied specially in two contexts- hierarchy of population and the hierarchy of social amenities. Moreover recently efforts have been made in this direction to find out correlation between these two hierarchy in a region and to know the underlying causes if there exists any break. The following are notable studies in this direction-

Aurousseau finds arrangement as the characteristics groupings of dwellings.[1] The geographic study of the arrangement of population must proceed hand in hand with that of the historical and economic aspects of the question. He further discribes the various types of agglomeration, agglomerations and disseminations i.e. complete disseemnation linear dissemination, incomplete and enforced dissemination and the causes fo their present state. Moreover, he finds that definite groupings of rural population conscrious human response to a number of factors in a region- The quality of the soil, nature of ground water supply, rainfall and surface water, minimum size of holding, space econmy, any special local physiographic canditions, the topography of the region

---

1. Aurousseau,M (1920) The arrangement of Rural population Geographical Review, vol. 10 pp-223-240

and the type of pursuit to which the area is best adapted. The writer also makes an attempt to find the relationship between the arrangements and their response to geographic environment.

Jana[1] and Bagchi in order to determine the hierarchy of settlements, have calculated the centrality scores by considering all functions performed by the settlements of the region. The centrality scores, of functions have been worked out using weightages according to Bhatia's method. Thus, higher degree of positive correlation between population and centrality scores have been found. Higher the density of population higher the demands of different functions. On this basis five levels of hierarchy have been found out' Nityanand analyses both the problems of distribution and spatial arrangement in a small region of North western India.[2] Among the factors controlling distribution of population- physiography of the region is more important. Rainfall and fertility of soil are also important. Among

---

1. Jana, M.M. and Bagchi, K., (1978) Hierarchy of settlement in lower Silabati Basin, Geographical Review of India, vol. 40, pp 386-399.

2. Nityananda. (1966) Distribution and spatial arrangement of rural population in East Rajasthan, India" AAAG, vol. 56 no. 1 pp 205-219.

human factors various communities such as ahirs, Jats and Meos of the Trans-Yamuna plain are famous for traditional skill. Three types of densities for the region as a whole- rural physiological and agricultural have been calculated. Various indices of physical and cultural environments reveal that agriculture shows mature adjustments to land forms and water resources and rural population distribution follows production possibilities. An analysis of the trends of food productions and population increase in this area indicates that the already densely populated areas have a greater potential for population increase in the sparcely settled areas. Har Parshad while calculating centrality for the determination of hierarchy of settlement identified types and levels of central functions and their associated establishment alongs with population service areas.[1] The functional relation between population and number of establishment of a particular function has been estabilished using the law of allometric growth. On this basis functional gaps, ill served areas have been recognised. Drainage, disseted terrain and transport routes are the main influents

---

1. Har Prasad. ( ) Dehradun- A methodological study in study of growth/service centres in Geographic Dimensions of Rural settlement ed. by R.L Singh et al. N.G.J.I. Varanasi pp. 51-54.

in the growth and distribution of service centres. Singh ranks settlements on the basis of hierarchy of functions.[1] based on the operational characteristics of central place theory. As the hierarchy of settlement is closely related to hierarchgy of central function. The levels of functional hierarchy have been determined and identified on the basis of threshold of functions which have been determined on the basis of Read-Muench Method- which is defined as the minimum number of consumers required to support any given service. This population threshold helps in the identification of functional gaps in a regional settlement system. It evolves to propose that all settlement having higher population than the threshold and yet not having the function, should have it. Using the method he finds four levels of hierarchy and concluded that centrality is being positively affected by thelevels of functions performed rather than variety of functions available. Kayastha undertook methodological approach to identify the functional hierarchy of rural settlement using methods of population threshold and

---

1. Singh. R.Y. Hierarchy of rural settlements and identification of locational functional gaps in upper chamanvati Basin in Geographical dimensions in rural settlement ed. RL. Singh et al pp 177-183.

measurement of centrality of settlements.[1] The growth foci have been identified with the help of five components- functional presence, functional dependency, funcitional status, interdependency and service potentiality. Based on these components five levels of hierarchy have been identified- The studies of various levels (of levels) of growth foci are interlinked with one another. The article proposes establishment of new small scale industries at the highest level of hierarchy.

Singh in studying the settlement in upper Damodar valley has laid particular emphasis on geopgrphic conditions determining evolutions, distribution functional character and morphology of the rural and urban settlements.[2] The study analyses how the impact of industries have changed the cultural landscape. The histogenesis of the settling process has been traced out. Service centres have been indentified and studied within spatio-functional systems. The problems

---

1. Kayastha, S.L. etal (1981) A Methodological approach to identify the functional Hierarchy of Rural settlements- a case study of Karakat Tehsil in a middle Ganga plain in "New perspective in geography ed. L.R.Singh, Thinkers library, Allahabad, pp. 123-133.

2. Singh, J. (1985) Upper Damodar Valley- study in settlement Geography" Inter India Publications, New Delhi

of the region have been identified. John.R.T studies the distributional pattern of river basin in coastal kerala taking into consideration various spatial aspects of settlements pattern but she fails to corralate problems of the people with the settlement size and failed to find out any problems in the existing set up.[1]

Having an overview of the above literature it comes to the fore that if the entire history of civilization is reflected in the present forms of settlement attempts in the direction to identify the the problem zones, the factors responsible for this problem and in the light of these problematic factors to choose the methods to find solutions should be made the present study is an attempt to fill this gap.

Organisation of the materials:-

Any study must have some relevance to the society. It is in this context the problem has been stated in the introductory chapter. Moreever, the chapter also deals with

---

1. John Raechal Tara (1991); Distributionn of settlements in the Periyar Basin Unpublished dissertation, CSRD, J.N.U. New Delhi.

the objective and data base. It includes the hypothesas and methods to test these hypotheses. A review of previous works available on the subject has also been done in order to show how this work is distinct from the earlier one's.

People since time immemorial tend to estabilish themselves in those areas where they were better placed in physical set up. To a greater extent, even today physiography controls the various aspects of settlements. Moreover, it also follows the resource potential of the region. Other geographic aspects such as natural resources, transport and communication have major role on the type, spacing and pattern of settlements. To have some idea of these aspects, geographical setting of the region has been discussed in second chapter.

As the relief, climate, soil, irrigation, transport and communication and the type of farming to a greater extent control the size and density of population as discussed in the second chapter. The third chapter had been devoted to study the size and density of settlements.

Physico-cultural features of a region find expression in the spacing of the settlements and spacing in turn and contributes significantly in understanding of the settlement chara cter in a region. This provides the settlement pattern

which has been attemted in the fourth chapter.

Varying physico- cultural condition of the region gives birth to the varying size, spacing and pattern of settlement. In this context, there exists a higher degree of probability of hierarchical nature of settlements. Moreever, the settlements attract amenities according to their size. Hence, it is also hoped that there would be some relation between hierarchy of settlements and that of amenities. The fifth chapter deals with these aspects.

Finally, a summary and main conclusion has been presented .

CHAPTER II

Geographical Background of the Region

Settlements are "the crystalization of the civilization of the region,the complex of natural and manmade phenomena of land."[1] The variation in settlement types can be attribited to a host of factors of the physical and cultural environment of the region. Amongst the factors that"determine the character of human settlement the most important are 1)climate (2)geologico_topographical conditions and (3)the degree of material culture ..."[2] Climate plays a decisive role by suppying water,determining natural vegetation and the nature of the crops to be sown. Thus,it indirectly controls agriculture.In rugged areas, relief appears to be more importannt physical factor influencing the distribution,grouping and, morphology of settlements. Slope also affects the soil characteristics which in turn alongwith the earlier mentioned factors determine the distribution and

---

1. Ahlmann, H.W. (1928), Geographical Study of Settlements : Examplesfrom Italy, Germany, Denmark and Norway," Geographical Review, Vol.XVIII, p.93.

2. Ibid., p.94.

nature of agricultural fields and crops, the influence of the physical factors depends upon the level of economic development and cultural advancement of the region. The effects of physical factors on the settlements are more pronounced in economically and culturally backward regions. Minerals also contribute to the origin of some settlements as these provide source of livelihood. Transport and communication facilitate movements of people and goods from one place to another. Therefore, people at times like to settle near the transport routes. These two alongwith the availability of minerals led to industralization and urbaniation. It is in this context that the study of various elements of geographical set up of the region becomes significant.

LOCATION AND EXTENT:

The North Koel Basin lies between 23^{0} 4′N and 24^{0} 32′N latitides and 83^{0} 25′E and 84^{0} 59′E longitudes covering an area of 9,997 sq. kilometers in the North-Western part of Chotanagpur Plateau. This triangle shaped region is drained by the North-koel and its tributaries. The region stretches in Palamau, Ranchi and Hazaribagh districts. The northern boundary is delimited by the Sone rive and the southern by the Sankh river. The western boundary is marked by the Kanhan

interfluve while the Damodar Basin is situated to its South-East.

Geological Structure:

The geological formations of the region comprise Archean, Gondwana, Upper cretaceous, Tertiary and recent rocks. Archeans are the oldest geological formations of this region. These are represented by Dharwar sediments-the gneiss and granites which are the most prominent rocks in the region. The Archeans can be grouped into-

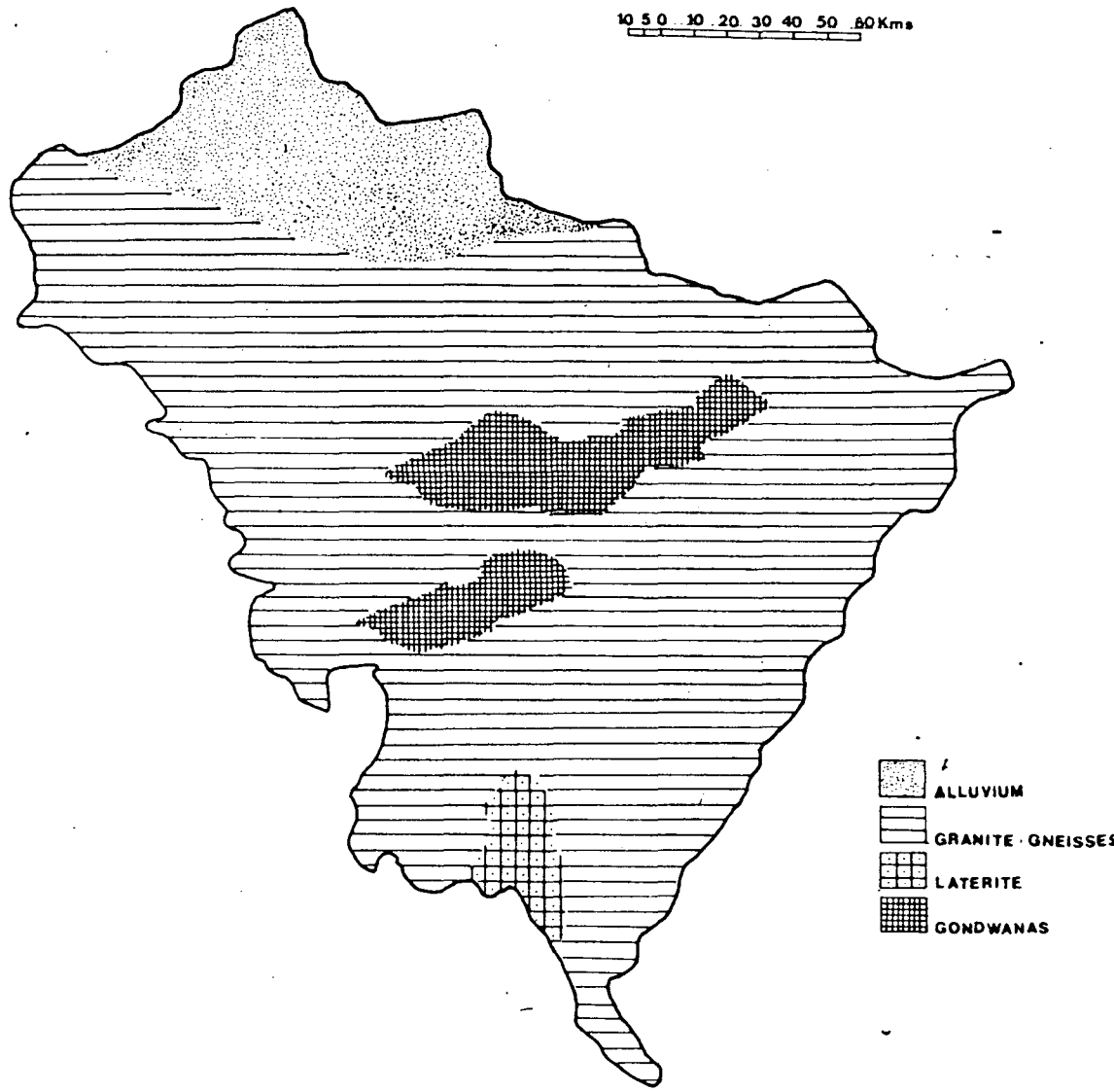
(a) Crystalline limestone, marble and calc sillicate the first two occur near Latehar where these form a belt from Bhoosor to Narayanpur. Calc sillicate are found near Daltonganj at Chando, Datam and Rerma and near Satbarwa.[1] (b) Amphibolites dense dark-grey and black coloured rocks are found in many pockets. (c) Pegmatite veins have marble and are found between Daltongaj and Lesliganj and also at Kine and Kohari.[2] Magnetite ore deposits occur in Lade Estate near Datonganj- one near Gore and the other near Biwabathan.[3] Four

---

1. Bihar District Gazetters, Palamau, 1961, p.20.
2. Ibid., p.21.
3. Ibid., p.23.

GEOLOGICAL STRUCTURE

North Koel Basin



MAP 2·1

out of the five hills have beds of magnetite associated with a certain amount of haematite at their top having an estimated reserves between 300,0000 400,000 tons.

Gondwana rocks are found in the region in the form of coal bearing Damuda strata in three separate areas. These are Auranga, Hutar and Daltonganj. These are represented by Talchir, Barakar, Raniganj Mahadewas and Panchet series. Rocks of Talchirs are found only in few places while those of Barakar are most extensive. In the Hutar coalfield, the Mahadevas lies directly on the Barakars and appear to be conformable to them. Although these areas of Gondwana stata are now isolated from one another, their distribution is such as to suggest "that they are remnants of a much larger spread of Gondwana strata and indeed were probably a westward extension of the Gandwana of the Damodar valley."[1]

There are a few small exposures of gritty impure limestone and ferruginous grit at the base of Deccan trap flows. The main outcrops are on the narrow ridge south of Netarhat, Southern slope of Sisitongri and on the northern slopes of Jamira Pat.

---

1. Ibid., p.24.

Deccan Trap outcrops are very limited. However in the south western section lies sandwiched between the overlying laterites and the granite gneisses. These fringe margin of plateau.

The laterites ranging in age between tertiary to recent are found in the pat region. These are the residual product of the trap and occur as flat-top plateaus, Segregation of bauxite at the upper portion of the laterite capping and the bands of fire-clay (lithomorge) at their base is a comman feature.

At places recent alluvium is found which is mostly residual soil derived from the decomposition of granites. It occurs in the form of coarse sandy soil. It is very rich in nutrients and well suited for agriculture.

From the above, it can be said that the region is geologically very varied. Rocks of the region vary from old Archean to recent hard, highly indurated granites to soft pliable alluviums, This high degree of variation in the geological formations has striking impact on physiography as well as on the economic activities of the people residing in the region.

PHYSIOGRAPHY

The North-koel river from its source to mouth passes through a highly varied physiographic setup. This include hills or higher erosional surfaces in the southern part to fragmented, highly dissected zone in central part and low lying lands near the mouth of this river. The releif ranges from less than 150 meters in the north to more than 1100 meters in the pat region. In between these two there is a highly eroded dissected plateau. The region may be physiographically divided into three sub-regions.

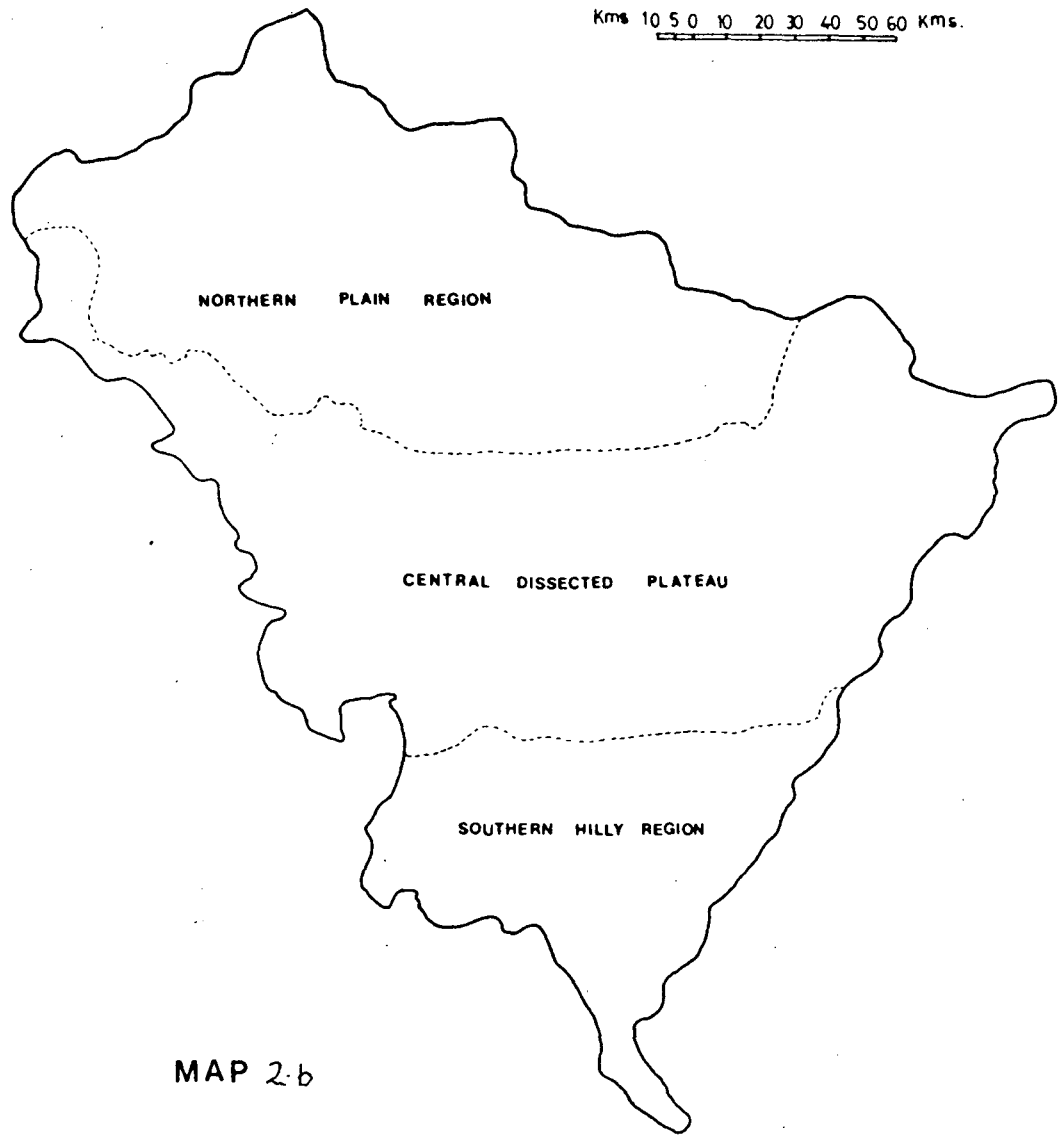
These are

1. The high pat region.
2. The Central disssected plateau,
3. Northern plain Region

1. The High pat region:-

It consists of dissected plateaus or pats and the basins of varying orders. "Horizontal lava flows over the denuded granite gneiss country formed the structural forms of the pats. The lava clad surface was elevated and disected to

PHYSIOGRAPHIC REGIONS
North Koel Basin



MAP 2.b

produce numerous dissected plateaus or pats"[1] The dominant rocks of the region are granite and gneiss which have been lateritized. These appear as domes, tors, hillocks and the area presents a rock country in uplands. There are three distinct surfaces at different altitude. These are Jamira at 1070 Netarhat at 1054 metres and pakri pats 990 meters. The region may be further subdivided into plateaus, scarps, Hills and valleys. Higher Plateaus form a group of laterite capped surfaces. Scarps are highly dissected and appear almost in a continuous line in the east and run from north to south along the extensive plateaus. These have developed along the western boundary of Barwa plain. The lave scrps break the monotony of the higher plateau. A limited area under scarps is also formed in Sisitongri and to the west of Jamira pat.

The two basins which fall in this region are

(a) Bahar Barwa Basin bound by the imposing scarps of higher pats. It is predominantly rolling upland. This is an area of

---

1. Dunn, J.A. "The Economic Geology and Mineral Economics of Bihar Province", Mem. G.S.I. Vol. 78, p.6.

moderate drainage density.[1]

(b) The Burha Basin can also be divided into two upper portion known as the upper basin and the lower section known as the Chhechhari basin; the later being a soucer shaped forms centipetal drainage.

(ii) Central Dissected plateau:-

It lies north of the region. It is a higly dissected surface and makes very difficult for the people to settle in the region permanently. It is one of the most densely forested part of the Chotanagpur plateau. The land forms in this area have been carved out of the gneissic surface with the esxception of Gondwana outcrops which form distinct but isolated basins such as Auranga, Hutar and Daltongang. These constitute undulating surface lying below the gneissic country.

Lower North-koel Basin:-

It constitutes the plains lying below 300 meters.

---

1. Kumar, A. & N.P. Singh, "Quantitative Classification of landform region of the western higher plateau, Bihar", Geographical Reveiw of India, Vol.4, p.383.

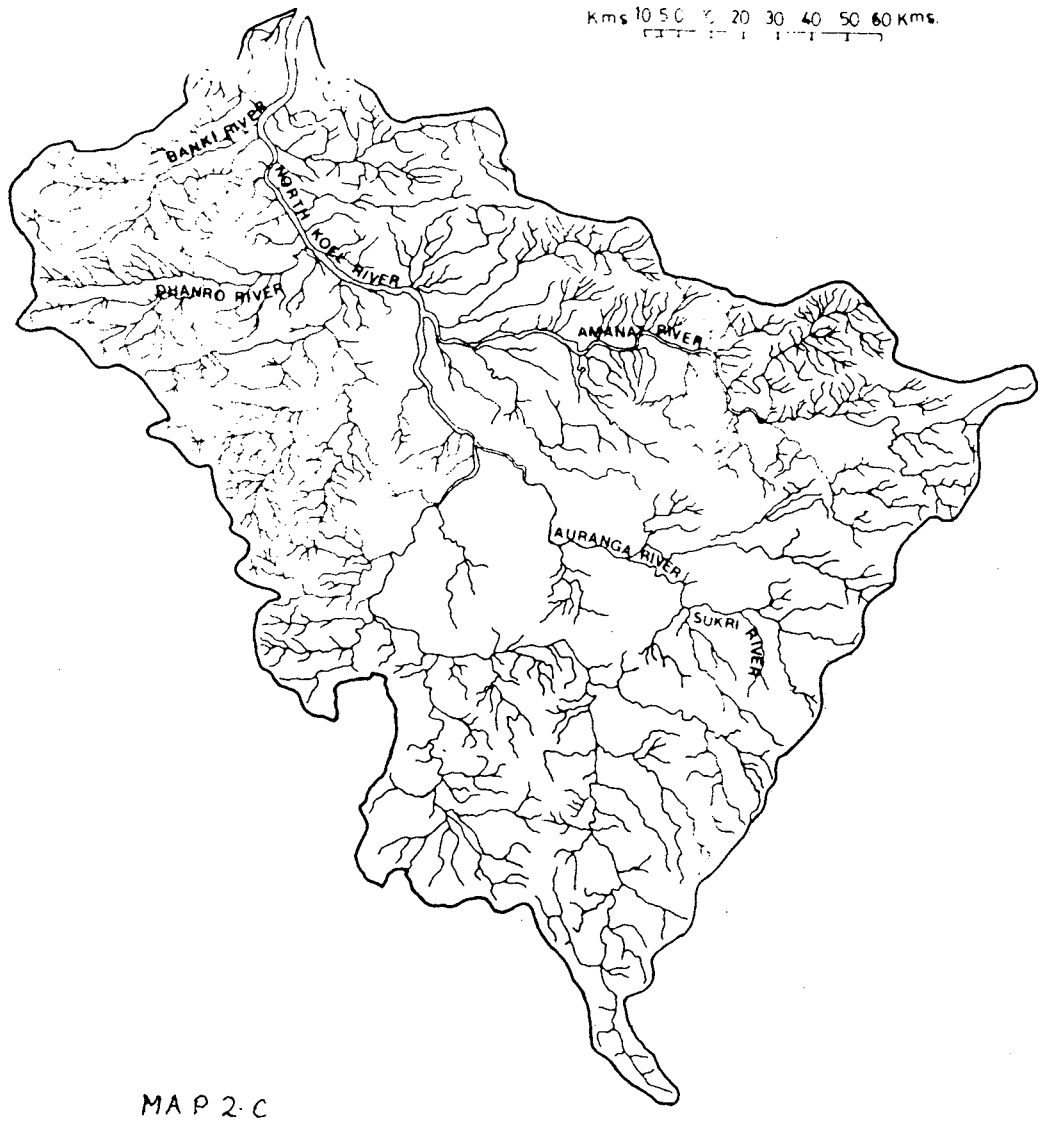
This flat country has a thick cover of alluivium. The surface is generally even with the exception of a few rock out crops and hilly spurs. It is the most densely populated tract of the Koel basin as it is more suitable for cultivation.

It can be seen from the above that the forces of denudation has been active for a very long period and have succeeded in carying out distinct features depending on the underlying rocks. The hard granitic and gneissic county has been least affected and are standing as erosianal surface whereas the land having moisture mixed of granite gneiss, and Gondwana rocks have undergone extensive changes resulting in the emergence of various scarps and valleys. The less hard rocky surfaces have been eroded away and they form the lowlands in the formation of which the North Koel and its tributaries have played important role.

Drainage:-

The drainage of the region has been greatly affected by the physiography. The southern tract is made up of hard gneiss-schists and granites and it has been weathered to a greater extent. As stated earlier, the Koel river divides the region into two almost equal parts, The Burha, The Phuljhar, the

DRAINAGE PATTERN
North Koel Basin



MAP 2·C

Ghaghra and the Bariq streams join the koel in the pat region. The Burha is the most important tributary in the pat region which has formed a saucer shaped chhechhari basin forming centripetal drainage in nothern part. The Dhardhari stream originates in the southern part of Mahuadanr to the south of Netarhat plateau and joins the koel river south of Chainpur. In the central part of the region- the Auranga is the chief tributary joining koel south of Daltonganj. It originates near Sataiya hill in Gumla district. The sukri is the chief tributary of the Auranga. The Sathami and the Saphi are the cheif tributaries from the western section. In the low lying plains, the Amanat is the main tributory which joins the koel to the north of Daltongan. It orginates near Edla in Hazaribagh district. The Runti and the Banki are two other important streams which join the Koel north of Amanat. The Danr and the Satbahini are other important streams joining the koel from the west. Physicography to a greater extent controls the drainage density as can be seen in map no. 2.3. Wherever the topographical resistance is less the number of streams increases. The map shows that the streams are more numerous in the North western part of Daltonganj because of flat terrain. The number of streams is least in the southern part.

Climate:

On the whole, the climate of this region is dry and bracing. The high southern part of the region due to elevation has cool and pleasant climate. It experiences uniform temperature throughout the region. The year is divided into three seasons, - The Cold Season- from November to March, the Hot season from March to May and the Rainy Season rom June to September. October is a transitional month between rainy and winter seasons.

The average annual rainfall of the region as a whole is 145 cms. The northern portion receives comparatively lesser rain than the southern area. The eastern part is covered by the isohyte of 120 cm. The region south of Barwadih receives more than the average rainfall. The south-western corner between Garu to Netarhat plateau receives higher rainfall ie, more than 180 cm in a year. The rainfall again decreases. to the south of Netarhat.

The number of rainy days follw the same pattern. They vary from 60 days in the north-west to more than 80 days in Netarhat plateau. Bishunpur situated to the south of Netarhat has more rainy days than the Netarhat Plateau.

The average annual humidity is above 80% for the region as a whole. The relative humidity is usually high between July to September and lowest recorded in the month of April. The relative humidity is high in the southern areas whereas lowest in the northern part.

Depressions originating in the Bay of Bengal during Mansoon seasons affects the region during their west ward movement. It causes gusty winds and widespread heavy rains. Thunderstorms sometimes accompanied by squalls and less frequently with hail occur during the period between February to June. The rainfall in the monsoon months are often associated with thunder. Hail, duststorms and fog are a rare phenomena.

The cold season starts from November and lasts till the end of February. The average mean temperature in the cold season to 11 ^{0}c in the southern part whereas it goes to 8 ^{0}c in the northern part. December and January are the coldest months. In association with the occasional cold waves the minimum temperature sometimes goes down to freezing point on a few days during these two months. The highest temperature is experienced in the month of May. Again the maximum temperature is higher in northern region viz,41 ^{0}c Daltonganj.

The diurnal range of temperature is about 12 ^{0}c in southern and 16 ^{0} in northern parts.

Climatically, the intra regional variations are not much except in the amount of rainfall received. The southern part of the region due to its height and dense vegetational cover presents rather equiable climate. The northern plain area due to lower height, lack of vegetational cover, high diurnal range of temperature which result in harsh clamatic conditions.

Soils:

The North Koel Basin is characterized by a greater degree of heterogeneity in the soil types varying from deep to light loam. The main soil types found in the region are.

Heavy Clay :- Locally known as 'kewal' is considered quite rich. It is capable of holding moisture for longer priod. The soil becomes hard where dry and very sticky in wet conditions due to high percentage of clay.

Sandy soil:- Locally known as Balsundar contains admixture of coarse sand. With the aid of irrigation facility this soil is capable of producing crops like paddy fruits and vegetables.

Loam is commonly known as Dorasa which is mixture of sand and clay. This soil is suitable for, paddy and sugar cane.

The soil of the southern part except in the valleys is mostly lateritic. Due to its gneissic origin the soil is rich in potash but deficient in lime and phosphates. Though great degree of variation is found in the chemical composition of the soil in different parts but the potash content is always high.

The parent rock has a dominant role in the soil types of the region. The fragmentation of gneiss and granites in the southern region has resulted in the formation of sandy soil while the eroded materilas accumulated in the northern portion forms heavy clay.

Vegetations:- The North Koel basin had long been a virgin land covered with dense forest. But this was disturbed with the intrusion of the Britishers and subsequent arrival of people from the plain areas. The forest has been exploited to such an extent that the forest cover of Garhwa, Nagar Untari, Lesliganj and Bishrampur has been rudeced to thorny bushes. The forest cover lies intact only in high'pat' region. The Government efforts of protecting certain parts as reserve forest have given some relief to the conservation of the forest. The largest compact forest area occures in

Chainpur, Bishnupur, Garu, Barwadih, Ranka and Mahuadanr blocks. Forest of the region fall under dry deciduous type with the predominence of sal trees. Sal at places cover 50 per cent of the forest land. It grows very well on the fringe of Nalas and the lower slopes of hills. The usual associates of sal are karam, Asan, Kend, Guri, Girjan, keonjhi and siris etc.

But the major part of the region is covered with miscellaneous trees with a sprinkle of sal. These trees consist of khair, Asan, Sidha, Karjat, Kekar, Palas, Mahua Gamhar, semal, Medh, piar, bel, dhautka, salai, kusum and sisam. Bamboo is ubiquitous throughout the region. The eastern part is especially rich. Khair is widely found and is very costly.

There are several minor forest products which are exploited from the forests of this region. Kendu leaves, Mahua flowers, honey, sabai grass and lac are noteworhy among these.

It is seen that today forest cover is confined only to areas where the terrain is rugged or, in other words the land is unfit for cultivation. Wherever land is even the forest cover has been removed in order to cultivate the land. Forest cover, in fact, provides livelihood to only limited people hence only small huts or hamletted settlements are

characterized in forested tracts.

Population Distribution.

The North Koel basin due to rugged physiography, lack of minerals unlike other part of chotanagpur plateau has limited avenues of livehood. Therefore it failed to attract people from plain areas. That is why this region is repesentative of the least densely populated tract of Bihar. The average population density of the region as a whole is 140 persons against 402 persons per sq. kilometre in the state.

Even this population density becomes more alarming where we come across intra-regional variation. The southern region has the density being only 60 persons per sq kilometer whereas the northern plain region has the average density about 210 persons per sq. kilometre. The level land, thick soil cover lack of forest cover are the factors which help easly cultivation in the region which attract people. Hence density is relatively high.

The concentration of population is mainly around the source of water viz. The Koel river is one of the important population controlling factors. The forest cover and the adverse relief, lack of water facility are the chief deterrents of population concentration in the southern region.

ECONOMY

The rough terrain, in accessibility which was there till the rcent past and the neglect by the colonist has left the people of this region mainly dependent on land for their livelihood. Lack of minerals unlike the other parts of chotanagpur plateau also have contributed to the backwardness of the region. Excepting some forest based industry cultivation is the only occupation from which people earn their livelihood.

Agriculture is the most important source of livelihood in the North Koel basin. There are two zones important for agriculture

a. River valleys of Amanat and Koel which produce different varieties of rice and to a lesser extent sugar cane, wheat, barley, kulthy and surguja.

b. The hilly region where the soil is granular the area mostly covered with thick forest. Civilization is limited only narrow valleys situated in Ranka, Bhandaria, Garu, Mahuadanr , Latehar and Balumath. The Bhadai crops are also grown in this region. Maize, Jowar, Marua, Kodo and Urid are important Bhadai crops.

Kharif and Rabi are two important cropping seasons Kharif season extends from the middle of June to mid-October. More than 90% of rainfall occurs in this season. Rice, Maize,

Jowar and Bajra, are important crops. Rabi crop is sown in the middle of October and harvested in February. Khesari and mustard are important rabi crops. During the hot weather season china, maize and boro paddy are grown.

Principles Crops:-

Rice is the most important crop in the rgion. Bhadai and Aghani are two important cropping seasons of rice. The latter is more important. Rice is ubiquitously grown in river valleys where water is easily availble.

Maize:- is grown in upland where rain water doesnot stagnate. It is important crop in the hilly areas. It is sown in June-July and harvested in August-Septmeber.

Marua: is an important Bhadai crop. It is very hardy crop once established can very well stand the drought of whatever intensity may be.

Gram:- is the most important rabi crop grown as a single as well as mixed crop-sown in October-November and harvested in March April.

Barley:- is the second most important rabi crop and is grown in the whole region except the hilly-southern tract.

Oilseeds:- Among the oilseeds til is the most important crop grown on the worst type of soil. Surguja and mustard are grown on upland. linseed and caster are other oilseeds.

Sugarcane:- is grown in central and northern section of alluvial lands.

Lack or irrigation facilities coupled with low and uncertain rainfall in the state, the region is notorious for the worst type of drought. Agricultural is confired areas situated near sources of water.

Minerals:-

Although Chotanagpur plateau is a treasurehuse of minera, this part is relatively poor in this respect. Some minerals are found here. Among these coal and bouxite occur in abundance. Other minerals are dolomite, graphite, iron and fire day. Three important coal fields are found in the region are Auranga coalfield around the Auranga river, Daltonganj coalfied near the confluence of Auranga and the north koel rivers, the Hutar coalfield situated south of the Daltonganj coalfield.

Auranga coalfield is named after the Auranga river,. It is represented by the coal bearing seams of Talchir, Barakar, Raniganj. Panchet and Mahadeva. Coal is worked at Jegaldaga near Latehar. Seams found near Tubed and near Rajbar are upto 40 feet thick but are of poor quality.[1]

---

1. Ibid., p.24.

Hutar Coal field covers an area of about 40 sq kilometrs in eastern part of the basin. It lies just 20 kilometers north of Auranja coalfield. The total estimated reserves of coal have been estimated to be around 32,000,000 ltons in the area of just 10 square kilometers between the Deoni and the North koel river above Sindhganj from two seams. Hutar, Harta and Bijika are important coal mines.[1]

Daltonganj coal field extends over 512 square kilometer around Daltonganj, coalfield of this area are of Talchir series. pandwa is the chief coalmine. Rajhara and Lahada are other mines. The coal is of non-cocking category.

Bauxite:- Bauxite is a gray colored compact ore and it occur mostly along the margins of laterite cappings on the flat top plateau of the pat region. Its occurance is confined mainly in three areas.

a. Jaraduma and garitanr pahar:- Here, bauxite is found in small isolated pockets in the south-east and north west corner of Jaradumar Pahar and on the north west slope of Garitanr in samll quantity.

b. Jamira pat:- bauzite lies in between the state boundary in the west and the chhechhari valley which runs paralled to

---

1. Ibid., p.25.

pakari pat and netarhat plateau. It is a potential source of bauxite. The bauxite seams are loOcated in three parts (i) Tamolgarh in tamoli village-the estimated reserve of bauxite is 50,000 tones. (ii) Cental part known as chiro-kukud- The estimated reserve is 150,000 tones and exposed at the head of the stream situated south of Anlakatoli and in the scarps of the Bara Nala. The estimated reserve are over 150.000 tones. c. In Netarhat plateau bauxite occur at Daswan pat and at Rachang. The estimated reserve of good quality bauxite are 15,000 tones.[1]

Dolomite:- Dolomite occurs at Bakaria, Sadhwadih, Chanpahis, Banapahar, Harhi Pahar, Kathila, Balumath Pandwa and Hajhauli. It is associated with calcyphyre or other cale silicatc rocks but at placces it is found in pure form.

Graphite:-- Graphite is found at Sokra, Khamdih, Kui and Ajlata.

Iron Ore:- It's important deposits occur at Gore, Datum, Biwabatham and sua. At Gore reserve of good quality magnetite iron ore estimated to be around 400.000 tones. Iron-ore is also found at a few other sites but their quantity is small and quality poor.

---

1. Ibid., p.26.

Some fire clay and mica are also found in the region. Fire clay occurs at Rajhara and Latehar and Mica near Daltonganj, Khorsi and Bandua.

It can be observer from above that the abundant quantity of bauxite is found in the pat region, coal in the Auranga and North Koel river valleys. The lower plain are is almost devoid of minerals. So far as the availability of markatable ore is concerned this is only of bauxite and coal. The exploitation of other minerals are economically not viable.

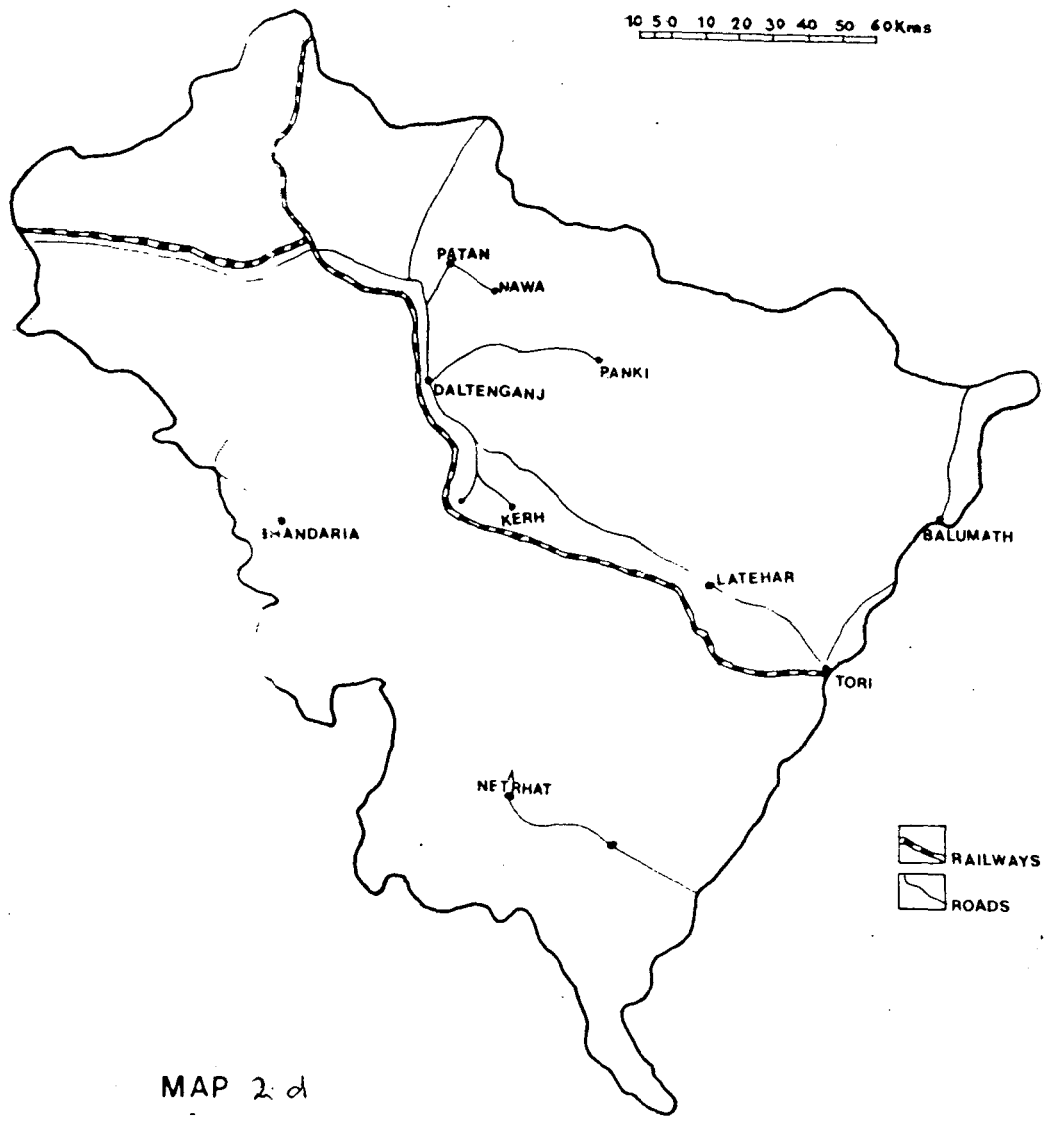
Means of Transport:- Both rail and road transport facilities are found in region. Only two railway lines pass through the region-one passes through the region from North-west to south east and the other is the link route which joins Delhi, to Calcutta.

Although roadwauys have not developed at par with the state as whole even then some road has been constructed. The important state roads are Daltonganj Ranchi which is 88 kilometers long. Daltonganj- Aurangabad road Daltonganj panki road and Garhwa-Bhandaria road. Some non-metalled roads are also found in the region.

The region is not well served. the relatively poor in transport facitlites.

To sum up, it can be inferred from above that the

RAILWAYS AND ROADS
North Koel Basin



MAP 2.d

region highly varied Geologically and physiographically. It has thin soil cover which is highly susceptible to erosion in the south and has thick alluvium in the northern part. Natural vegetation covers more than half of the total area in the south and is almost dissapearing in the north. Climatically-southern region receives more than the state average rainfall whereas the northern part receives the lowest rainfall in the state.

Thus, this physiographic variation has given birth to contrast in economic activities of the people. Settlements which are the result of constant interaction of cultural factor on the physiographic one, are expected to be highly varied.

CHAPTER III

SIZE AND DISTRIBUTION OF SETTLEMENT

Among the various attributes of settlement geography size occupies an important place. The size has an intimate association with the inner plan, morphology, settlement relief fabric and the pattern of physical growth. It is in some measure an expression of the cultural background of the people and the political exegencies of the time when the settlement was founded.[1] The size is highly dynamic which continuously changes with the changing character of the region. It is the outcome of the ecological, cultural, and historical factors. Thus it reveals many relationships between culture and nature and the manner of settling. Distribution or spatial variation is the core of geographical study. And it is through these, that the complex, region specific relationship between different phenomena needs to be recognised. Similarities as well as differenciations are identified from the distribution of a phenomena. "Distribution of settlement reveals that the lineament of the transformation of the natural landscape by different cultures resulting in the creation of rural settlement as well as

---

1. Mann, R.S. (1974), "Rural Settlements size in Hansi Tehsil (Haryana), The Decan Geographer, vol.xii no.1, p.27.

cultural artifacts".[1] Distribution has two expressions (a) relative concentration of settlements of areas and (b) spacing of settlements.

Size, density, and the spacing of settlements are closely related to each other. The increasing spacing leads to decreasing density. Therefore, an attempt has been made in this chapter to study size, spacing and density of settlements and in the last section the relationships between the above three elements has been seen.

Size of Settlements:

The size of settlements is expressed in various ways e.g. the population and territorial size of settlements, the number of occupied houses and households. However, the population size is the most crucial as it encompasses all aspects of size. It directly effects the shape, territorial size, the internal partitioning of the space and that internal morphology of a settlement. It is an effective indicator of both the process of settling andk their landscape results.[2]

---

1. Grover, Neelam (1985), "Rural Settlements: A Cultural Geographical Analysis; A Case Study of Northern Haryana, Inter-India Publication, New Delhi, p.74.

2. Ibid., p.102.

To bring out the spatial variation in settlement size, census data for each village at block level has been taken and classified into the following categories:

i) Very small settlements with population of less than 200 persons

ii) Small settlement having 200 to 499 persons

iii) Medium settlements having 500 to 999 persons

iv) Moderately large settlements having 1,000 to 1,999 persons

v) Large settlements having more that 2,000 persons.

The table 3.1 shows that the percentage of settlements of very small and small sizes is above 70 percent in the Southern hilly and Central dissected plateau but the percentage in the low alluvial plains of these two small size settlements is below 60 percent. The percentage of medium and moderately large and large sized settlements is higher in this region in comprison with above two regions. The percentaghe of medium size settlements in hilly and central dissected plateau is 21 percent whereas it is 26.56 percent in alluvial plains. The percentage of moderately large settlements is 12.84 percent in alluvial plain against 8.15 percent in central plateau and 5.07 percent in southern hilly region. The percentage of large size settlement was 3.79 in

Table 3.1 (a)

Population of Settlements Classified by Size Classes (Southern Hilly Region)

	<200	200-499	500-999	1000-1999	>2000	Total Population
Chainpur	1,145 (13.49)	6,775 (79.81)	569 (6.70)	-	-	8,489
Ghaghra	656 (7.03)	3,688 (39.51)	4990 (53.46)	-	-	9,334
Senha	1,716 (27.92)	3,390 (55.15)	-	1,041 (16.93)	-	6,147
Kisko	756 (10.75)	2,056 (27.61)	2,375 (31.89)	2,260 (30.35)	-	7,447
Mahuadanr	2,625 (6.08)	14,793 (34.28)	15,600 (36.15)	7,512 (17.41)	2,645 (6.13)	43,155
Bishunpur	1,510 (4.14)	11,712 (32.10)	15,413 (42.21)	7,876 (21.57)	-	36,511
Garu	643 (19.00)	1,474 (43.54)	1,268 (37.46)	-	-	3,385
Region as a whole	9,051 (7.90)	43,888 (38.33)	40,215 (35.13)	18,689 (16.32)	2,645 (2.31)	114,488

Note : Numbers in brackets denote percentage of population living in that size-class.

Table 3.1 (b)

Population of Rural settlements by Size classes (Central Dissected Plateau)

	<200	200-499	500-999	1000-1999	>2000	Total Population
Ranka	1,494 (2.38)	18,902 (30.17)	22,974 (36.67)	15,536 (25.44)	3,741 (15.97)	62,647
Balumath	3,536 (9.14)	12,348 (31.90)	9,818 (25.37)	8,130 (21.01)	4,870 (12.58)	38,702
Chandwa	367 (2.68)	1,967 (14.38)	4,507 (32.92)	6,839 (50.01)	-	13,674
Simaria	2,248 (8.56)	6,385 (24.32)	11,936 (45.47)	5,679 (21.63)	-	26,248
Barwadih	1,677 (3.16)	8,426 (15.90)	15,708 (29.64)	12,760 (24.08)	14,421 (27.21)	52,992
Latehar	6,196 (10.82)	20,482 (35.78)	19,254 (33.63)	9,058 (15.82)	2,261 (3.95)	57,251
Manika	2,970	11,991	15,294	14,588	2,231	47,074
Chainpur	1,077 (3.42)	5,727 (18.17)	10,606 (33.64)	7,722 (24.50)	6,392 (20.28)	31,524
Daltonganj	759 (4.90)	2,558 (16.50)	1,939 (12.51)	6,794 (43.82)	3,455 (22.54)	15,505
Panki	2,074 (12.00)	8,314 (48.29)	6,830 (39.67)	-	-	17,218
Lsliganj	707 (6.35)	2,974 (26.71)	1,480 (13.29)	5,973 (53.65)	-	11,134
Kisko	2,773 (41.74)	3,302 (49.71)	568 (8.55)	-	-	6,643
Garu	2,795 (26.69)	8,120 (77.52)	2,079 (19.85)	-	-	10,477
Regions as awhole	30,487 (7.41)	1,15,641 (28.10)	1,32,149 (32.11)	95,839 (23.29)	37,371 (9.08)	411,481

Note :- Number in brackets denote percentage of population living in that size class.

Table 3.1 (c)

Population of Rural Settlements Classified by Size classes (Northern Plain Region)

	<200	200-499	500-999	1000-1999	>2000	Total Pop.
Hussainabad	365 (2.54)	1,160 (8.08)	2,247 (15.66)	4,622 (32.21)	5,957 (41.51)	14,351
Majhiaon	2,552 (3.34)	13,063 (17.11)	29,558 (38.71)	26,655 (34.90)	4,537 (5.94)	76,365
Untari	1,617 (2.06)	12,924 (16.47)	21,612 (27.55)	19,233 (24.52)	23,059 (29.39)	78,445
Dhurki	184 (0.97)	2,490 (13.16)	4,170 (22.04)	9,733 (51.45)	2,340 (12.37)	18,917
Meral	1,872 (2.22)	8,072 (9.58)	18,557 (22.03)	22,857 (27.14)	32,876 (39.03)	84,234
Garhwa	2,063 (2.67)	15,086 (19.51)	25,230 (32.62)	26,398 (31.13)	8,561 (11.07)	77,338
Chainpur	3,022 (4.21)	12,445 (17.35)	17,563 (24.49)	21,137 (29.47)	17,548 (24.47)	71,715
Bishrampur	4,798 (3.72)	23,374 (18.14)	38,695 (30.03)	42,435 (32.93)	19,543 (15.17)	128,845
Chattarpur	478 (3.72)	4,750 (27.83)	8,222 (48.17)	1,123 (6.60)	2,496 (14.62)	17,069
Patan	4,628 (4.90)	15,286 (16.19)	36,532 (38.68)	35,602 (37.70)	2,397 (2.53)	94,445
Manatu	3,430 (7.61)	12,575 (27.91)	18,478 (41.01)	10,568 (23.46)	-	45,051
Panki	2,980 (3.24)	23,000 (25.01)	16,501 (17.94)	9,111 (9.91)	10,364 (11.27)	91,956
Lsliganj	3,359 (6.47)	12,832 (24.71)	22,103 (42.56)	9,591 (18.47)	4,038 (7.78)	51,923
Daltonganj	646 (1.41)	6,146 (13.43)	3,050 (6.67)	15,222 (33.26)	20,697 (45.23)	45,761
Region as a whole	31,994 (3.69)	1,63,203 (18.84)	2,62,518 (30.30)	2,54,301 (29.35)	1,54,415 (17.80)	866,437

Note :- Number in brackets denote the percentage of population living in that size class.

low alluvial plain against 1.32 percent in central plateau and 0.36 percent in southern hilly region. This indicates that the size of settlements goes on increasing as the height goes on decreasing.

The table 3.1 represents the number of people living in various size categories. It can be seen that the percentage of people living in villages having population less than 500 persons was 46.23 in the southern hilly region against more that 70 percent of the total number of villages in this category and in the central dissected plateau the percentage came down to just 35.51. In this region the highest percentage of population was living in medium size villages. The percentage of population living in moderately large size villages (23.29) and large size villages (9.08) was also high. The block level figures show that proportion in moderately large sized and large sized villages population much higher in chandwa (50.1%), Barwadih (51.29%), Chainpur (44.78%) Daltonganj (66.46%), and Lesliganj (53.65%).The northern region of alluvial plain has much more concentration of people im modertely large sized and large sized villages. The very small sized villages (3.69%) and small sized villages (18.84%) did not have more than one fifth of the total population living there whereas number of villages in

these sized categories was approximately three-fourth of the total villages. Here again the percentage was highest in middle sized vilages followed by moderately larges sized villages,. Even in large sized villages the percentage of people living goes up to 17.82 percent which was significently higher. If we take into consideration large sized village the percentage of people living comes up to 47.17 per cent. At lower levl it is found that the percentage of people living in moderately large sized and large sized vilages is much higher in Hussainabad. (73.73%), Nagar Untari (53.91%) Dhurki (63.82%), Meral (66.17%) Chainpur (53.94%) and Daltonganj (78.49%). Here we find that those blocks where proporation is extremely high are situated close to the North Koel river and are linked by various means of transport. One thing which comes to the fore is that even in rural areas people tend to cluster at places of easy sustainablity. Among all the three regions the means to attain good living goes on increasing in large sized classes.

The other method which is generally taken into consideration in size analysis is that of areal spread For conducting this study total area of the block has been divided by the total number of settlement in that block. The derived result has been clasified into five sized classes:-

(1) Vilages having less than 2 kilometers^2

(2) Villages having area between 2 and 4 kilometers^2

(3) Villages having area between 4 and 6 kilometers^2

(4) Villages having area between 6 and 8 kilometers^2

(5) Villages having more than 8km^2 of area.

(1) Villages having less than 2 kilometers^2 area.

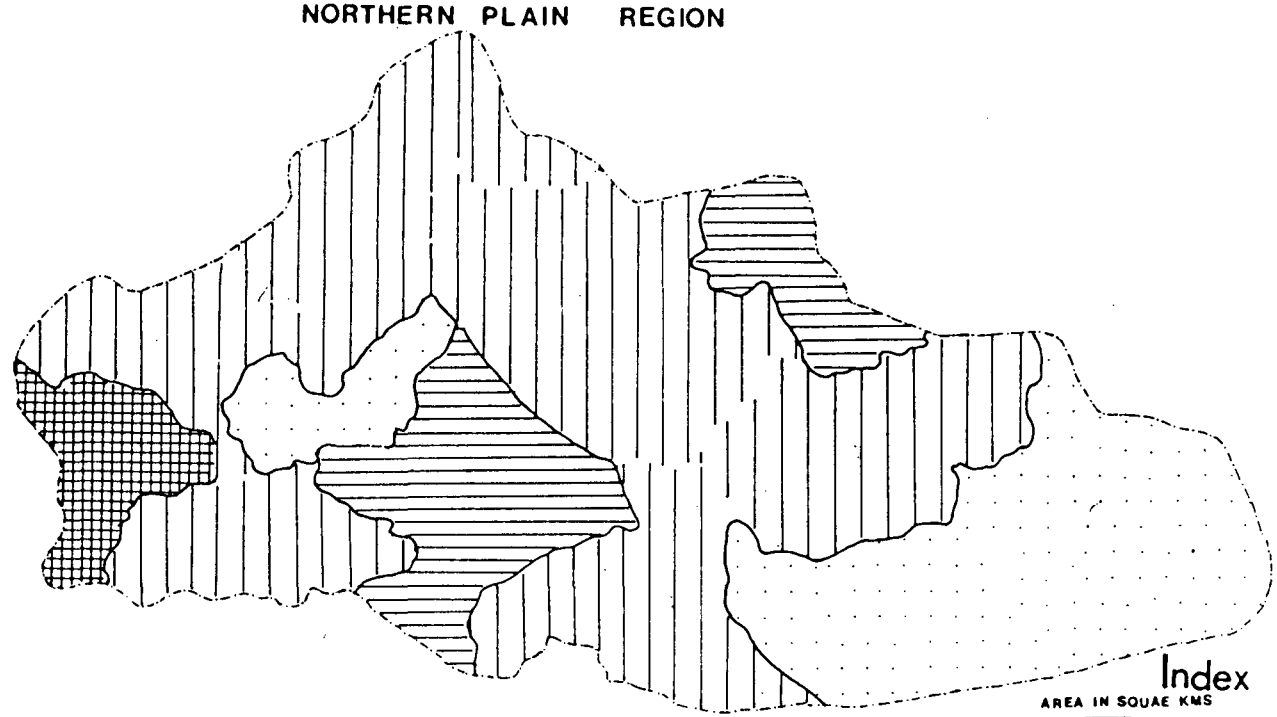
The smaller sized villages are found only in northern plain area and even that in a strip which starts from Daltonganj and goes upto Manatu including Lesliganj and Panki. These blocks are stuated in Koel- Amanat valley hence enjoys better irragation facility, lack forest cover and have better transport facilities which provide them to stay at their desired place.

2. Villages having area between 2 & 4 kilometers^2 are situated mostly in northern plains but some blocks in central dissected plateau zone also have this sized vilages Garhwa, Untari, Patan, Hussainabad, Bishrampur, Manjhiaon blocks in northern plain areas whereas Lesliganj, Panki, Daltonganj, Manika blocks in central dissected plateau fall in this category. These blocks enjoy the same condition except Manika and Panki which are rather forested tracts which prohibit free expansion of settlements.

3. Villages having area between 4 & 6 kilometers^2

SIZE CLASS OF VILLAGES

NORTHERN PLAIN REGION



MAP 3.2 C

in this category are located through out the region. In northern plain Chattarpur and in Central dissected plateau zone Garu, Barwadih, Ranka, Chandwa, Simaria, Balumath, Chainpur, Senha, Mahuadanr and Ghaghara have middle sized areal extent. The bigger sized villages in northern plain of Chatterpur are basically due to farther location from the North-koel river resulting in greater depth of water table which check the frequent occupance of site for settlement. Areas in central dissected plataue zone and southern hilly area are basically forested and somewhat hilly, facing problems of steep gradient, lack of cultivable land and lack of transport facilities.

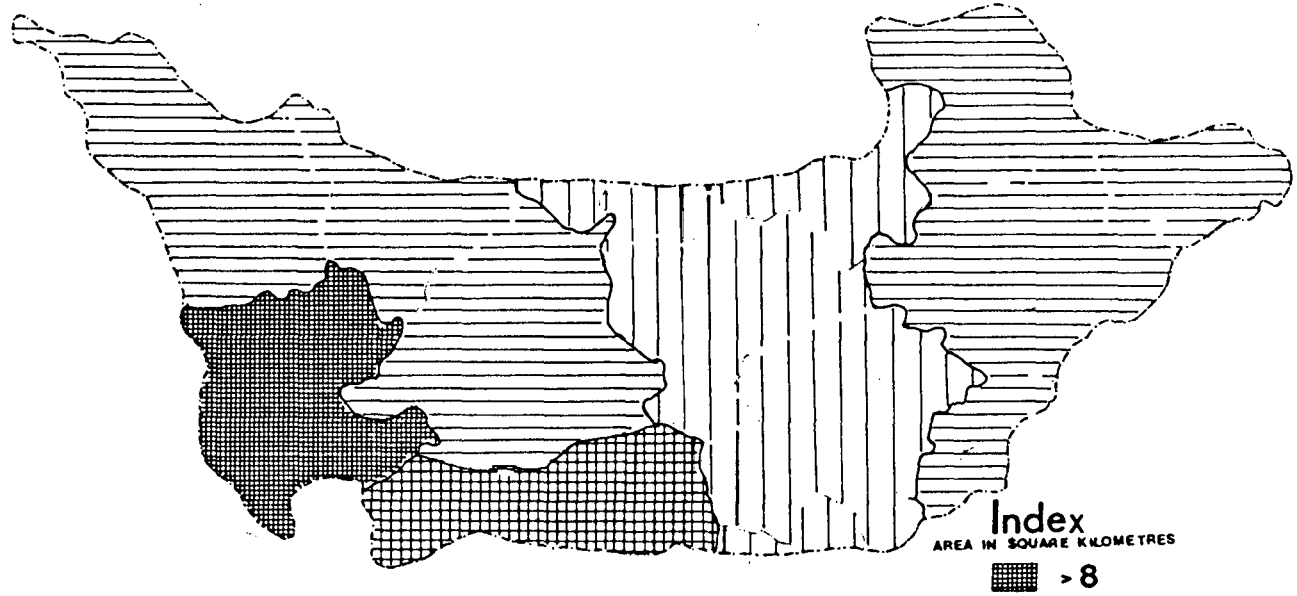
4. Villages having area between 6 & 8 kilometers^2 Ghaghra and Garu (section) of southern hilly tract and Dhurki of northern plain have large spatial spread of setlements. The underlying causes are the presence of the steep slope, high percentage of reserve forests, very small patches of cultivable land. The large spatial extent of villages provide the people living in the village even the facilities that are scarce.

5. Village having more than 8 km^2 of area:-

The blocks which have average areal spread above 8

SIZE CLASS OF VILLAGES

CENTRAL DISSECTED PLATEAU



MAP 3.4 b

kilometers^2 per settlements are found in Kisko and Bishunpur in Southern region and Bhandaria in central plateau region. The underlying cause in case of these blocks are almost the same only magnitude are higher in case of these blocks. Moreover, the proportion of tribes in the total population is rather high who by nature try to settle in remote areas along with their own clan.They don't like to mix with others. Hence, their settlement's are of small size and at farther location.

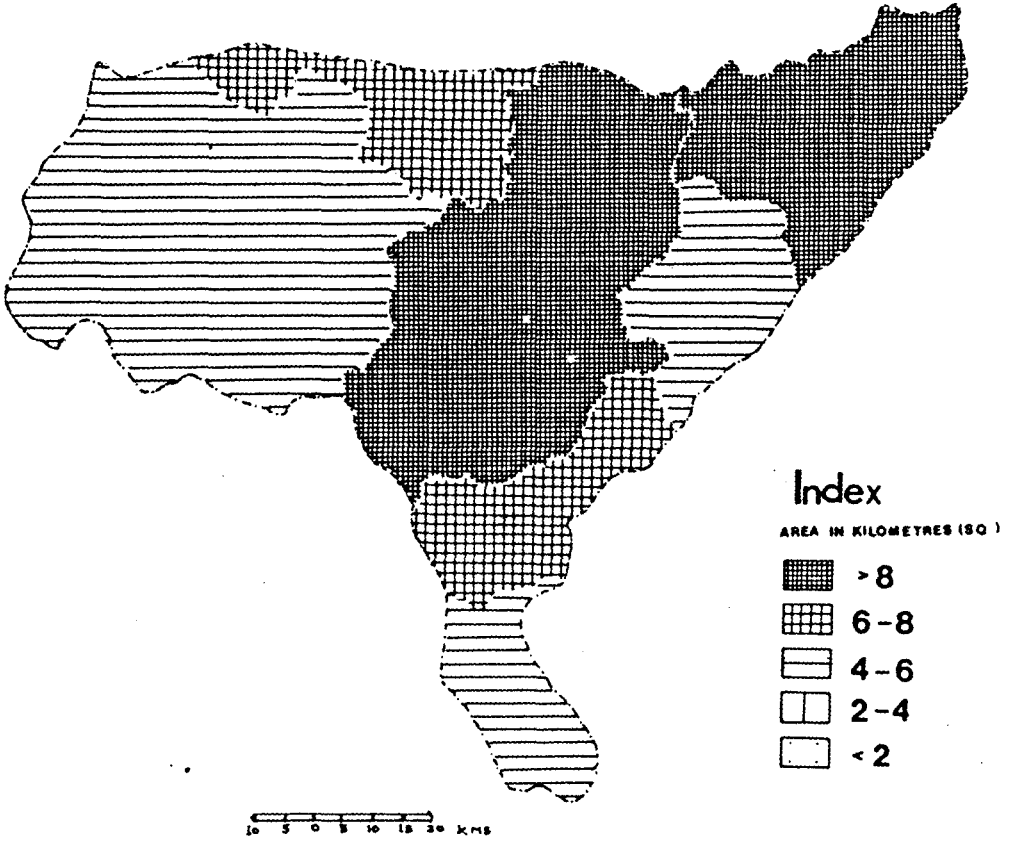
Thus, we find that various physiographic, cultural, ethnic factors areal size has higher degree of variation in different part of the Koel basin. The general trend is that the areal size goes on increasing from the North-Koel river to boundary zones.

Regional pattern of size of Settlements.

After taking into consideration the size of settlements and areal size of these villages three distinguished areas of large sized settlements come to the fore (1) The areas lying in the peripheral zone in northern plain zone (2) Areas lying on the both sides of the North-koel river, and (3) The low lying area lying between Amanat and North koel valleys . These regions of bigger sized settlements are related to

SIZE CLASS OF VILLAGES

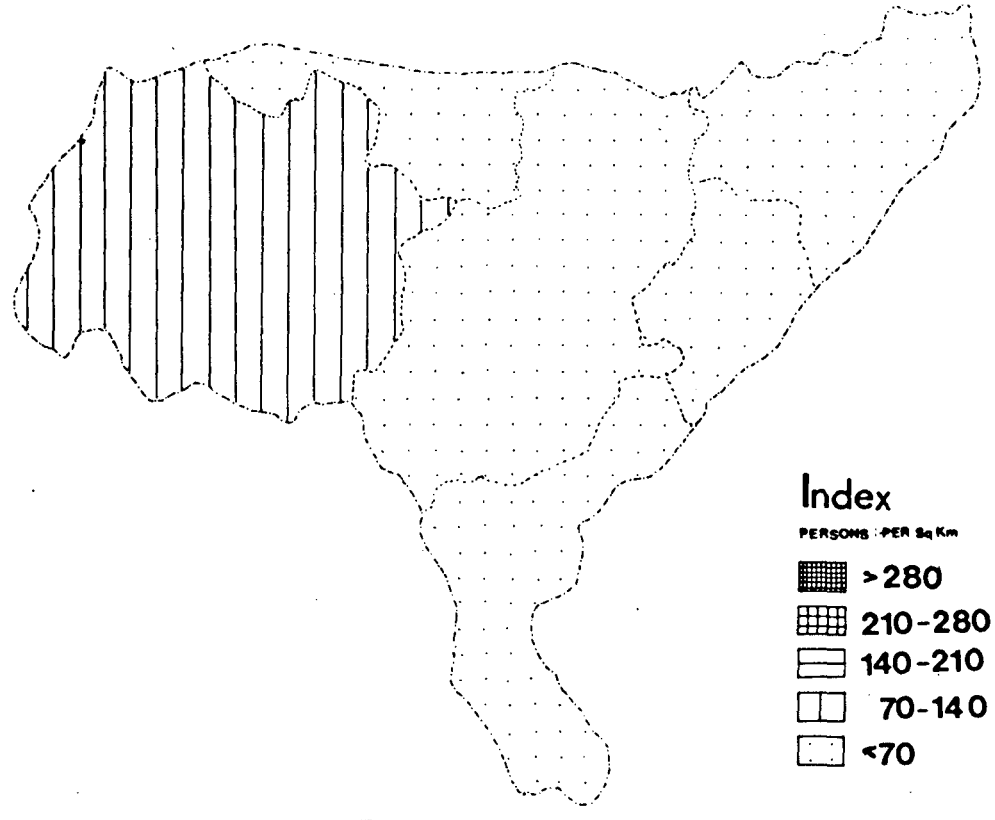
SOUTHERN HILLY REGION



MAP 3.1a

DENSITY OF POPULATION

SOUTHERN HILLY REGION



MAP 33a

certain significant factors.

The areas lying in the periphral zone are basically lacking the easy availability of water. The depth of under ground water table is also very high, hence the people accumulate in larger number at one place and the areal extent of that villagte is very large so that people residing in that settlement could get their livelihood. The bigger sized settlements Dhurki, southern Meral, Manatu and Ranka come into this category. The areas lying on both sides of the Koel river are highly fertile as the fertility is annually replenished by the floods of the river which bring alluvium alongwith. Hence, even the availability of small amount of land for cultivation sustains the larger number of people and provide livelihood. The areal extent of the villages along the river is very small contrary to the big sized settlements of the peripheral zone. Moreover, this zone enjoys the benefit of transport facility which has developed along the river on both sides. The third area of big size settlements has developed in the 'Doab' of the north- koel and the Amanat rivers. The avilability of low land being fed and replenished by these two rivers making the soil fertile for cultivation. The lack of near absence of forest cover which hinder the location of villages in this part of Chotanagpur

plateau, increase the proportion of land available for cultivation. Hence, people of the region naturally run to this zone where they can get some fixed source of their livelihood. Moreover, properly developed network of transport helps in their movement, the nearness of Daltonganj town (headquarter of Palamau district) the trickling down effect of the town to rural areas and the certain availability of jobs of varying types helps in the growth of large sized villages around Daltonganj. This belt of big sized settlements cover the blocks of Daltonganj in northern and central zones. Lesliganj, Panki, patan and western part of Manatu.

The middle sized settlements have much more areal extent in North koel Basin than the big sized settlements. The medium sized settlements have three distinguished areas.
(a) Areas lying between peripheral big sized settlements along the banks of the North koel Basin.
(b) Peripheral and mineral zone of central dissected plateau and (c) small area in Mahuadanr block in low lying plains. The first type of middle sized settlements are characterized by medium areal size between 4 to 6 square kilometers, the average availability of water facility and respectively low productivity of the soil. The areas nearer to the confluence of the North koel to the Son is characterised by middle sized

settlements not because lack of water but the frequent and easy availability of water facility, high water table induce people to have their livelihood apart. That is why people have not agglomerated in a single place rather than have their occuapance unit separated. To some extent, the ri caste structure which is almost absent in the southern part of the basin have contributed in the separated settlement. The areas under this are confined to northern plains only. The second belt which is located in peripheral zone of central dissected plateau has similar physiographic condition like that of northern frings zone. But the difference between the two is that latter is partially forested and relief is rugged. In the central part mainly Latehar, Manika, Chandwa, and Barwadih, the location of mines have induced people to accumulate near these sites. Hence, some bigger settlements have grown up. In Mahuadanr block in the western part, which is basically drained by tributories of North koel is low lying basin fit for agricultural work hence some cultivation is done Naturally the medium sized villages have grown up. The small sized settlements are characterized in the whole of southern hilly tract except some low lying portion of Mahuadanr block, Garu, Barwadih and southern portion of Latehar, northern part of kisko (central zone part) and southern The adverse physiographic conditions

i.e. steep slope, thin surface film even that is unfertile, hard rocky surface, dense forest cover resulting into acute scarcity of cultivable land, acute lack of transport network are the chief factors of the region being chazracterised by small sized settlements. Moreover, the higher proportion of people living in these areas are tribes who prefer to live in adverse physiographic condition and in small band rather than bigger sized settlements which is against their nature as each tribal village makes it own separate world.

Density:-

Like other parts of the world, population has gathered along the rivers in India. So far as the rural India is concerned, the only means of livelihood is agriculture. The density varies depending on local relief, availability of water, drainage conditions, soil fertility, forest coverings and transport facilities. Local relief and depth of water table are main cause of variation of population density. The density of population specially in rural India is basically determined by the availability of water for irrigation and soil fertility. So far as this region is concerned, is admixture of hilly tracts, dissected erosion surface and alluvial plains fed by the North koel and its tributaries. Consequently, higher degree of variability in population

Table 3.2

Density and Spacing of Settements in Different Region

S.No	Name of blocks	Density	Spacing
	Southern Hilly Region		
1.	Chainpur	6Ø	2.34
2.	Ghaghra	58	2.83
3.	Senha	45	2.37
4.	Kisko	37	3.51
5.	Bishunpur	6Ø	3.22
6.	Garu	59	2.51
7.	Mahuadanr	73	2.65
	Central Dissected Plateau Region		
1.	Ranka	98	2.62
2.	Balumath	74	2.49
3.	Chandwa	13Ø	2.46
4.	Simaria	75	2.26
5.	Barwadih	126	2.42
6.	Latehar	129	1.76
7.	Bhandaria	37	3.29
8.	Manika	125	2.13
9.	Chainpur	1Ø1	2.51
1Ø.	Daltonganj	298	1.49
11.	Panki	99	2.57
12.	Lsliganj	2Ø9	1.69
13.	Kisko	48	2.31
14.	Garu	58	3Ø3

Contd.....

S.No	Name of blocks	Density	Spacing
	Northern Plain Region		
1.	Hussainabad	175	2.12
2.	Manjhiaon	2Ø6	1.68
3.	Untari	27Ø	1.75
4.	Dhurki	1Ø4	2.85
5.	Meral	21Ø	2.1Ø
6.	Garhwa	264	1.61
7.	Chainpur	238	1.67
8.	Bishrampur	221	1.73
9.	Chattarpur	12Ø	2.11
1Ø.	Patan	24Ø	1.56
11.	Manatu	186	1.5Ø
12.	Panki	243	1.49
13.	Lsliganj	3Ø9	1.27
14.	Daltonganj	327	1.74

density in found i.e. 62 persons per km^2 in southern hilly region, 62 persons per km^2 in central disected plateaus and 212 persons per km^2 in northern alluvial plains. Moreover, higher degree of intra-regional variation is found. The study has bee conducted at the blocks level and five density classes have been taken which are as follows:-

(1) Very low density (below 70 persons per km^2

(2) Low density (between 70-140 persons per km^2

(3) Low medium density (between 140-210 persons per km^2

(4) Medium density (between 210-280 persons per km^2

(5) Moderately high density (above 280 persons per km^2

(1) Very low density:-

Excluding the Mahuadanr block the whole of southern region has very low population density. In the central dissected plateau region the blocks of Bhandaria and Kisko, the latter adjacent to the southern hilly region. Bhandaria which is located in peripheral zone is basically mountainous tract with high relative relief, steep gradient, making the cultivable land scarce. This scarcity is multiplied by the presence of reserve forest in the block, leaving very small amount of land on which people can sustain their living. The

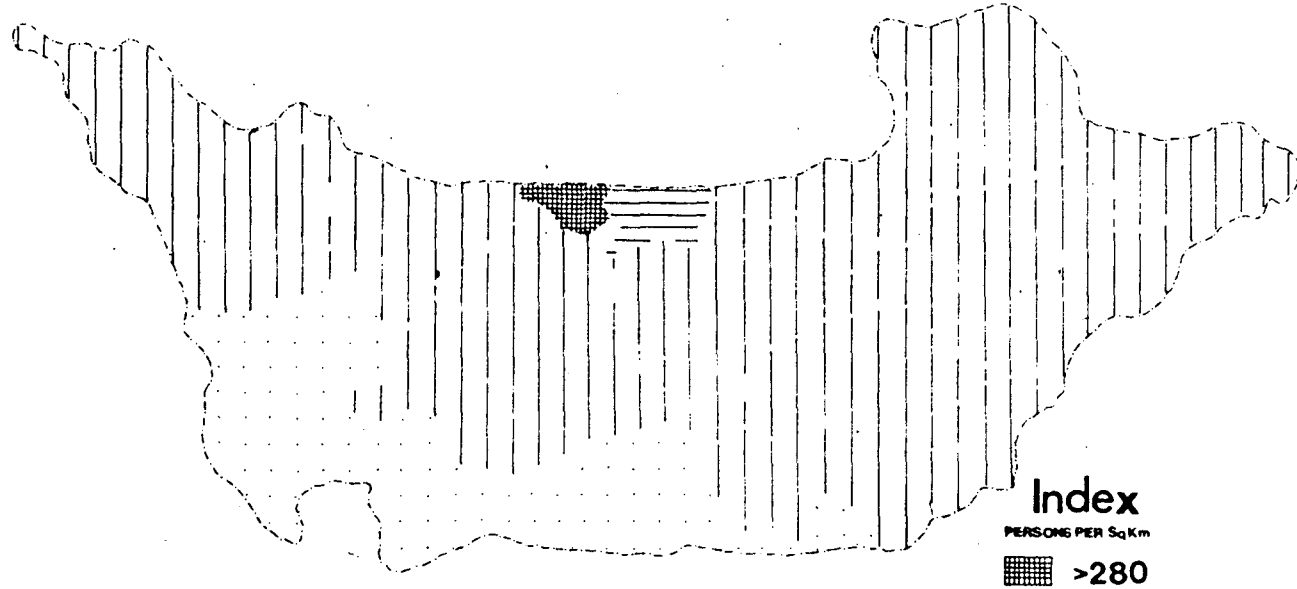
blocks of southern region are basically remanants of old Archean rocks, high erosinal surfaces locally known as 'pats' undulating surface configuration prohibit any large scale cultivation. Moreover, the whole region is clad with dense vegetation, most of the area is under resume forest. This forest covering makes the situation much more precarious. Even in this low density zone high variation is found i.e. 37 persons per km^2 in Kisko to 45 persons per km^2 in Senha and 60 persons per km^2 in Chainpur and Bishunpur blocks. In the last two blocks the Koel river passes through these central parts carving and small vallies where people have succeedded in cultivating whatsoever may be available cultivable land whereas Senha and Kisko are far off from the Koel river hence, people fail to muster any benefit. The inhabitant to this region are tribes who find the adverse relief conditions, dense forest coverings and rather neglected area as a they did not want to change the status quo and being numerically small, get their sustenance from forest tracts. Hence, the density is very low.

(2) Low density:-

The total number of blocks having population density between 70and 140 per km^T2^T is eleven out of which one

DENSITY OF POPULATION

CENTRAL DISSECTED PLATEAU

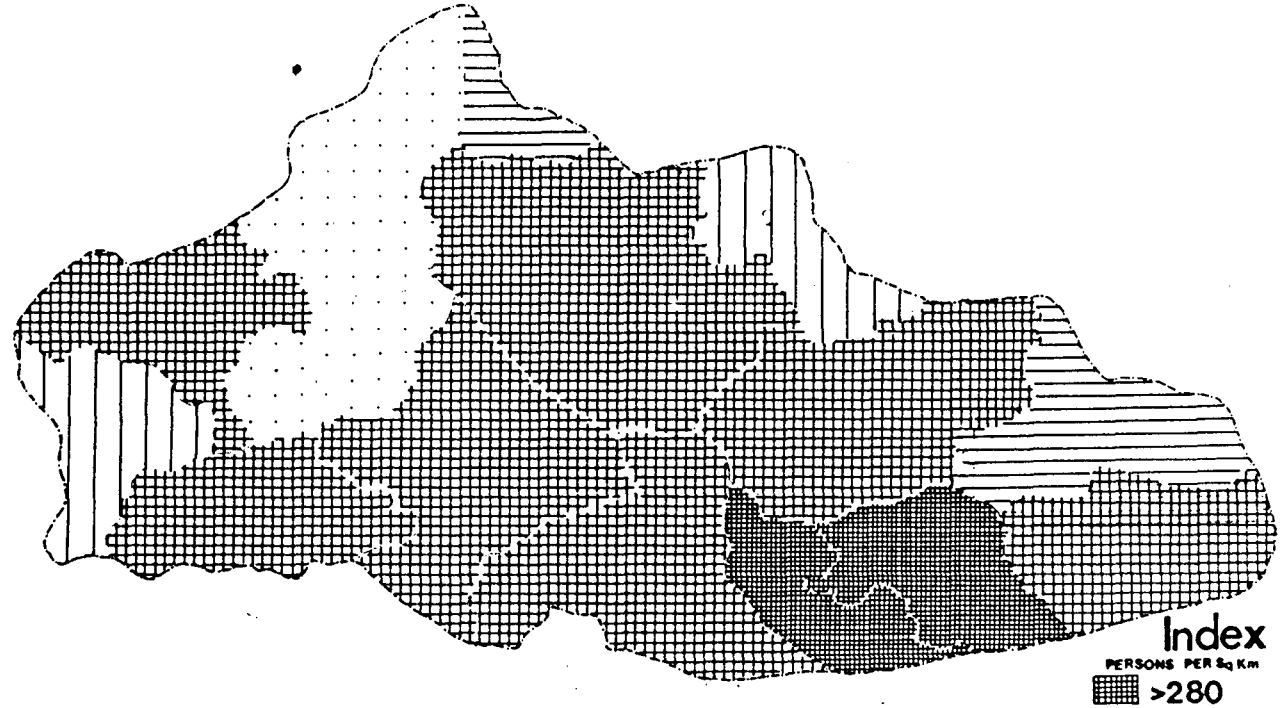


MAP 3.2.6

block i.e. Mahuadanr is in southern region. Ranka (98), Balumath (74), Chandwa (130), Simaria (75) Barwadih (126), Latehar (129), Manika (125), Chainpur (101), and Panki (94) persons per km^2 are in central directed plateau whereas in Northern plain surface Dhurki (104) and Chatterpur (120) fall in this category. The blocks of plain land which have low density are of basically peripheral location still proprtion of forest coverings is high. Moreover, the lack of irrigation facility makes the cultivation of crops rather difficult, hence in absence of cultivation and almost absence of other secondary and tertiary activities, makes sustainability difficult. Mahudanr in southern hilly tract fall in this category although the region is forest clad and frequency of high erosional surfaces makes cultivation of crops rather difficult but the presence of numerous streams in the central portion of the plain which form the low lying Chhechhari plain which form cultivatle land and attracted more people providing better condition for cultivation hence density is comparatinly high from the nearby blocks. The blocks of central dissected plateau are basically forested tracts and dissected surface where patchy settlements are found near plane surface or mineral sites or along the transporation routes. More than half of the area in Manika, Barwadih, Garu, Latehar and Ranka one forest clad.

DENSITY OF POPULATION

NORTHERN PLAIN REGION



MAP 3.1C

3. Low-Medium Density:-

The blocks having density between 140 and 210 persons per square km are situated only in central dissected plateau and northern plains. In the central plateau only Lessliganj (209) fall in this category whereas Manjhion, Hussaniabad and Manatu have low-medium density in northern plains. Significantly enough, leaving Manatu all the blocks whether it is Lessliganj, Manjhian or Hussainabad are situated on either side of the Koel river. Husainabad and Manjhiaon are still covered by forests. Hence, not more cultivable land is available although irrigation facility is available. Only that sections of Hussainabad block is included in this river basin which are forest clad. Hence, the density is naturally low, in Lessliganj block although density is not very low due to location near the Amanat river which meets the Koel in the same block and provide some fertile land for the cultivation. Manatu (186 persons km^{2}) is not only located in the periphery of the basin but also full of reserve forest leaving very few scope for agricultural activities hence the density of population is low.

(4) Medium density:-

The blocks having density between 210 and 280 persons

per km^2 are confined to the either side of the North Koel river and even that location is shrinked to low alluvial plain (264), Bishrampur (221), Patan (240) and Panaki (2$#). These blocks except Untari and Panaki are situated near by the Koel river are fed by the waters of this river, moreover, the development of transport network has taken alongwith the Koel river hence these blocks also enjoy the benefit of these transport networks. Nagar Untari isnot only plain land but well connected with Daltonganj through railways and road networks on the one hand and with Mugalsarai (U.P.) and Madhya Pradesh ;(with road ways only) railways and roadways. Hence, are better situated from the transportation point of view providing movement of people rather easy. Panaki located south of the Amant river is a plain surface completely devoid of forest covering providing good amount of cultivable land. Morever, this block is well joined by transport network. Southern section of the block is covered with dense forest that is why in that section density is low. Thus, we find that rather high population density is basically due to alluvial land on the banks of the Koel, irrigation facility are rather well developed means of transport.

(5) Moderately high density:-

Although North-Koel Basin is one of the least densely populated section of Chotanagpur plateau and Bihar, even then some parts are having same patches of rather high density. There are only two blocks having above 280 persons per km^T2^T Daltonganj (327) and Lesliganj (309). These two blocks are situated in northern aluvial plains. As their location denote, they are situated around the North Koel river they enjoy the benefit of location in alc ng valleys which are fertile luival land where agricultural activities are easily done with the availability of irrigational water from the Koel and the Amanat river. These two blocks are neatly connected with transport network by railway and roadways. One more benefit these two blocks enjoy over other blocks near Koel river is that they are located near Daltonganj town (headquarter Palamau district) which provide commuting facility from the rural people for two blocks. Moverover, the people can earn some money by tertiary and secondary activities. The nearby location is economically viable for the people hence rather dense population density is found .

Thus, we find that the variation is high in different

parts of this basin. The underlying causes are basically forest coverings, local relief, old structure, means of transport. The density of population in any parts of the basin.

Spacing

The element which greatly helps in the process of spatial differentiation is dispersion, denotes the extent of the spread of the feature relative to the size of the study area. Moreover, it helps in planning for providing suitable infrastructures, social and eonomic facilities and network of service centres. Social and economic provision derives its significance from the range of area which it commands and this is the function of spacing.

Spacing evolves in response to the manner in which settlements are created over the landscape. The creation of settlements takes place in response to the physiogrophic constraints and advantages, water facility availability of cultivable land land ownership and culture. In this way study of an area in its spacing indirectly throws light on the above mentioned elements. In this respect spacing, which seems a static process is truely a dynamic process. Undoubtdly, physiography to a greater extent controls the

spacing of settlements but its potentiality is neutralised by the historical and cultural elements.

In this study, the analysis of spacing has been attempted with the help of formula used by Mather[1]

$D = \sqrt{1.07\ A/N}$ in which A represents the area for which spacing is calculated.

N-is number of settlements.

The areal unit taken into consideration is block. The result received has been into five classes of spacing which are follow:-

(i) Areas of very high spacing (more than 3.10 kms)

(ii) Areas of highspacing (between 2.62 & 3.19 kms)

(iii) Areas of medinm spacing (between 1.72 & 2.72 kms)

(v) Areas of very close spacing (les than 1.72 kms)

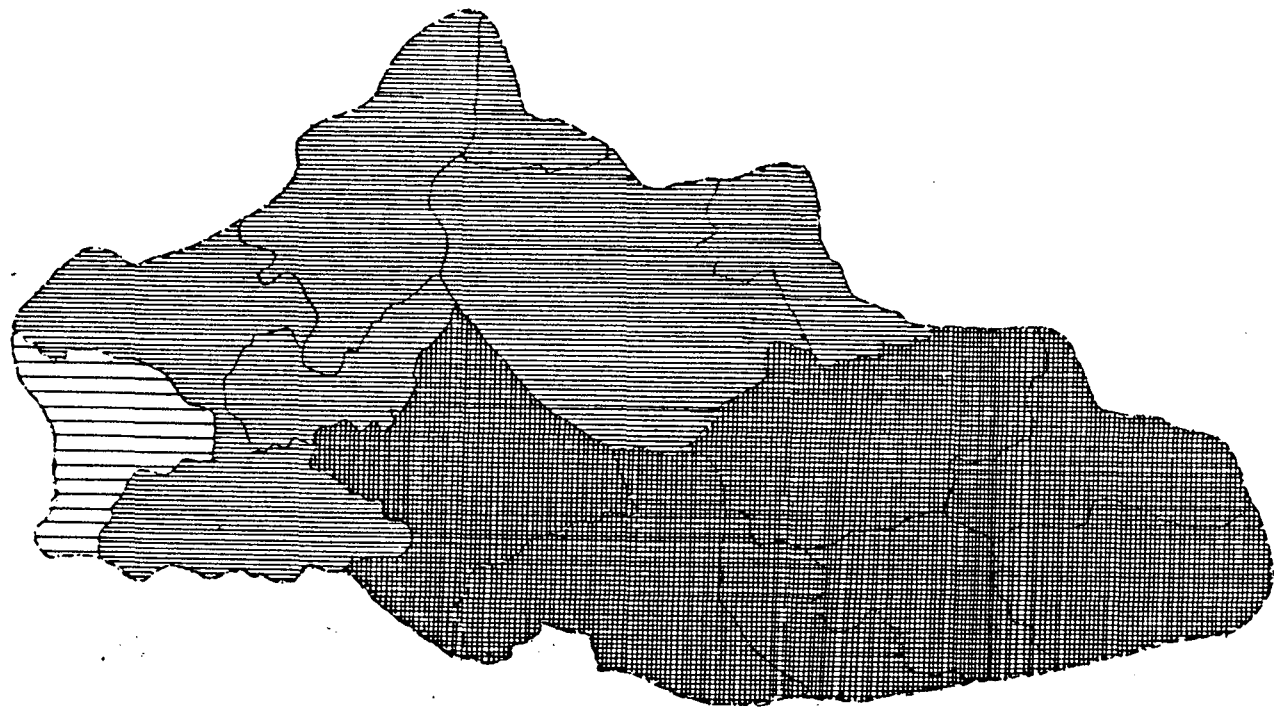
(1) Areas of high and very high spacing (more than 2.62 kms) The number of blocks having high or very high spacing is seven out of which four are in southern hilly tract i.e.. Bishunpur (3.22) Kisko (3.51), Mahuadanr (2.^5) and Ghaghra

---

1. Mather, E.C. (1944), "A Linear Distance map of Farm population in the U.S., AAAG, 34, p.174.

SPACING OF SETTLEMENT

NORTHERN PLAIN REGION



Index

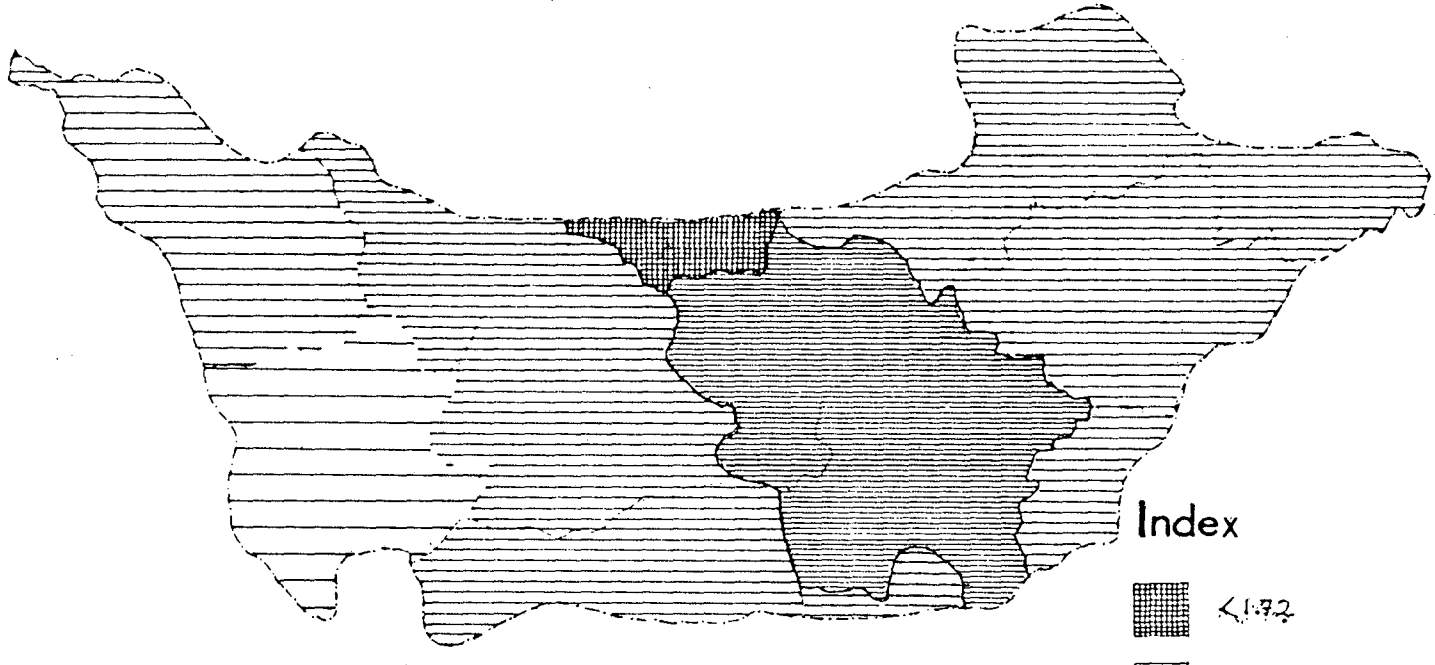
- < 1·72
- 1·72 - 2·17
- 2·17 - 2·62
- 2·62 - 3·10
- > 3·10

MAP 33C.

(2.83). There are two blocks in central dissected plateaud Ranka (2.62) and Bhandaria (3.29) whereas only one block that of Dhurki (2.85) in northern alluvial plain come in this category. The high spacing in the southern hilly tract is basically due to the adverse relief conditions, high erosional surface locally known as 'pats', the dense vegetational cover mostly reserve forests and almost negligble development of transport routes. But one remarkable point is that these blocks fall around the North-Koel river itself and the drainage density in these blocks is higher than the rest of the blocks in the southern hilly tract. The density of population is also comparatively higher in thi belt even then spacing is higher. The proportion of medium and moderately large sized settlements is higher is these blocks in relation to the other blocks of the southern hilly tract. Thus, high and very high spacing in the southern hilly tract is basically result of various factors. Ranka and Bhandaria blocks in the central dissected plateau are having peripheral location hence could not get the water of the North Koel river. Moreover, the strip is to a greater extent covered with forest of reserve category. The lack ofr irrigation facility and cultivable land has rendred the growth of only small and very small sized

SPACING OF SETTLEMENT

CENTRAL DISSECTED PLATEAU



Index

- < 1·72
- 1·72 - 2·17
- 2·17 - 2·62
- 2·62 - 3·10
- > 3·10

MAP 3·3 b

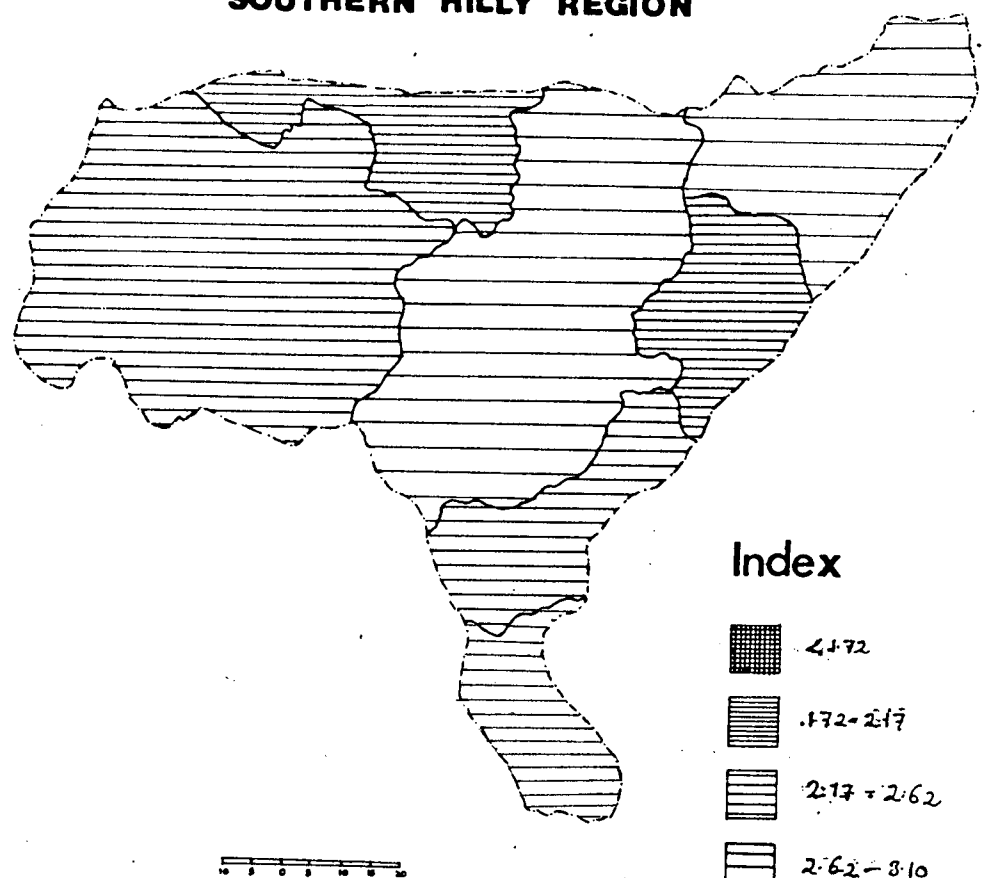
settlements even that at a high spacing so that the people could get their sustainability. Dhurki is the only block in northern plains where high spacing of settlements is found . This high spacing is perhaps due to frequency of medium and large sized settlements due to higher depth of water table and the lack of irrigation facility accumulated by forest coverings. The clearance of forest in recent years have given birth to a wider distribution of arable land ultimately resulting in rather bigger size of settlements.

The blocks with higher values of spacing in general have lower density of population.

(2) Blocks of Average Spacing (2.17 to 2.62 kms) The total number of blocks having average spacing is elevern out of which four blocks are located in southern hilly region and the remaining blocks in central dissected plateau. Most of these blocks are located far away from the north Koel basin, except the blocks of Chainpur. The blocks are studded with dense forest cover mostly of reserve category lacking in enough levelled surface for cultivation work. Moreover, what so ever forest clearance has taken place due to dubious role of contractor are not provided irrigation water so that cultivation on permanent basis is not yet feasible in these parts of the region. Moreover, the inhabitants of this area

SPACING OF SETTLEMENT

SOUTHERN HILLY REGION



MAP 3·3a

are basically tribes whose way of life is shifting cultivation which philosophicaly goes against permanent cultivation. On the one had could not provide sustenance to a large gatherings. That is why generaly a large number of hamletted or small sized settlements have gtrown up at rather small distances who can sustain, due to their smaller numbersm through shifting cultivbation and small amount of income received from the forest tracts. We find that percentage of small and very small sized settlements is more that 80 in swouthern hilly tracts zone of average spacing. The proportion in centrally dissected plateau is almost invariably the same.

(iv) Areas of close and very close spacing:-

The whole of northern plain except Dhurki block and the blocks of Daltongaj, Lesliganj, Manika and Latehar in Centralyy dissected plateau have close and very close spacings. Very-close spacing is characterised around the southern portion of the Northern plain the Koel river. Widespread availability of water at shallow depths has resulted in the fragmented distribution of arable land. Small patches of land distributed closely have helped inthe establishment of a network of closely-spaced villages. Lack of forest cover and hard rocks have also helped invailability

of unbounded arable land. Moreover, thepeople residing here are mostly caste Hindus predominantly Brahmins and Rajputs who carved out their independent territorial possessions which in due course, became independent census village and added to the number of evisting village. Moreover, the increase in the density of villages led to the reduction in thei spacing. The other important cast after Rajputs and Brahmins are Koeris who are traditionally hard working small scale, intensive vegetable farmers. This typical farmings prerequisite is the close and constant supervision of fields which is possible only when the villages are compact and the residential units are close to farming land. Moreover, the existing Jajmani system in rural areas has also help in the establishment of closely spaced villages.

The quantitatively derived and plotted on the basis of block level data on the choropleth maps reveal a high degree of spatial variation. The highest spacing is found on either peripheral zone of the basin or southern hilly tracts. The everage sized settlements are basically due to lack of arable land and due to reserve forests rocky structure, high depth of water table and numerically high tribal population who prefer a lonely place to reside in. The close and very close spacing is characterized mostly in northern plains where

availability of ground, availability of water at shallow depths, availability of water from the North Koel and the Amanat river for irrigation, unbounded alluvial plain, prevailing Jajmani system in the area and the existing caste structure have helped in the development of close and very close network of villages.

Relation between Size-Spacing and Density:

In general size and density have close relationship with the spacing. Here a quantitative effort has been made in order to find out whether there exists any relationship between these elements of settlements. The method in order to find out the correlation between these elements is that of linear correlation by Karl Pearson[1] defined by

$$r = \frac{\Sigma XY - \frac{\Sigma X \Sigma Y}{N}}{\sqrt{\Sigma X^2 - \frac{(\Sigma X)^2}{N}} - \sqrt{\Sigma Y^2 - \frac{(\Sigma Y)^2}{N}}}$$

Relation between Size and Density:

The value of correlation coefficient incase of southern hilly region is only 0.374 which is not even significant at the 10% level of significance. Hence there does not exist

---

1. Aslam Mahmood, (1986), Statistical Methods in Geographical Studies, Rajesh Publication, New Delhi. p.

any positive relationship between size and density in the southern hilly region. In case of central dissected plateau region the value of coefficient of correlation comes to 0.62 and the value of t is 2.74 which is significant at 2% level of significance. Thus, it may be stated that there exists positive relationship between the size and density in this region. In northern plain region the value of r is only 0.13 and that of t is 0.45 which is insignificant even at 10% level of significance. Thus, size and density of settlements are independent of each other.

Size and Spacing:

So far as this region is concerned the condition is quite different. In case of southern region, the value of r comes to -0.69 which is significant at 10% level of significance. In the central region the value of r comes to -0.35 of which t value is only 1.30 which is insignificant even 10% level of significance. In case of northern plains the value of r is -051 which is also significant at 10% level. For the region as a whole the value of r is -0.31 which is also significant at 10% level. Thus, it may be stated that unlike size and density, size and spacing are related to each other. With the increase in size the value of spacing goes an decreasing and vice-versa.

In the basin the points that emerge after analysis are -- the physiographic conditions i.e. steep slope, ruggedity, height, surface structure and the dense forest cover have major say in the occupance of settlement in southern region and the southern part of central dissected plateau. The ethnic structure of this region has also affected the size and spacing especially in the above mentioned part of the region. In the northern half of the central region and in the northern plains the size of settlements in the areas lying on either side of the river is controlled by the river and normally larg sized settlements are visible. So far as the relationship between the size, density and spacing is concerned, there does not exist any relationship between size and density. However, size and spacing are negatively correlated. There fore, it is observed that bigger the size of settlements closer would be the spacing.

CHAPTER IV

TYPE, PATTERN AND FORMS OF SETTLEMENTS

As seen earlier, the size of settlements is an effective indicator of the process of settling and add to the cultural landscape. The resulted landscape concerns with the degree of cohesion and compactness of the homesteads, the regularity and randomness and the arrangement and grouping of dwellings in a given piece of land. These three elements show the type, the pattern and the form of settlements respectively. At times, some scholars use these three elements interchangeably. The 'type' of settlements denotes the relationship between the number of sites and the number of houses. 'Form' stands for external shape and internal arrangement of buildings and the patter singifies geometrical arrangement of several settlements in an area. The arrangement is generally the result of several physico-cultural elements of the area.

These three elements are quite important as 'type' reveals various aspects of socio-morphological conlditions, ecology and the settling process. The 'pattern' is the result of interplay of physico cultural factors. The form is in a state of constant change alongwith the pace of development that is why Demangeon states: the entire history

of civilization is reflected in the present forms of settlements. It is in this respect the study of these elements becomes important.

Rural settlement 'type' signifies "the characteristic grouping of rural dewellings in that well defined parcel of ground which is known as'mauza'"[1] But, this definition may be applied only upto local consideration. In regional framework 'type'expresses "the relationship between the number of houses and the number of sites."[2] This site-house relationship persents a wide spectrum extending from agglomeate to dispersed settlements with numerous intervening varieties.

As stated earlier the types of settlements are strongly related with the ecology, settling process, history of the area and socio-morphological conditions. Thus, in this respect the analysis of settlement type unfolds various elements of geography of the region and in directly helps in the understanding of huyman society of the region.

---

1. Ahmed, E. (1965) "Bihar; A physical Economic and Regional Geography", Ranchi University press, Ranchi- p. 270

2. Grover, Neelam, (1985) "Rural Settlements; A Cultural Geographical Analysis A case study of Northern Harayana " Inter India publication; New Delhi, p.113.

Settlement types have been recognised using toposheet of Survey of India on the scale of 1:50.000. This identification of types has also been done with the help of mathematical analysis.

Although various methods have been tried in order to identify the rural settlement types in Europeans context, these are not applicable in the context of settlements of India. In order to distinguish the types attempts have been made by some Indian scholars like Singh[1] and Mandal[2] but these techniques fail to provide any significant result regarding types of settlements in the North-Koel Basin. Here an attempt has been made to recognise settlement types using the following formula.

$$\text{Dispersal Index} = \sqrt{\frac{\text{Average population size of the village}}{\text{Average spacing of villages}}}$$

With the help of this formula, values have been found out for all the blocks and then arranged in descending order

---

1. Singh, R.B. (1969), "Rural Settlement types and their Distribution" National Geographical Journal of India. Vol. xv. p.100.

2. Mandal, R.B.(1972); "Geography of Rural Settlements in Bihar Plain" unpublished thesis Patna Universtiy, p.148.

Table 4.1

Types of Settlements

Name of the block	Size	Spacing	Dispersal Index
Southern Hilly Region			
Chainpur	283	2.34	1Ø.99
Ghaghra	4Ø6	2.83	11.98
Senha	22Ø	2.37	9.63
Kisko	392	3.51	1Ø.57
Bishunpur	537	3.22	12.91
Garu	282	2.51	1Ø.6Ø
Mahuadanr	45Ø	2.65	13.Ø3
Central Dissected Plateau			
Ranka	592	2.62	15.Ø3
Balumath	412	2.49	12.86
Chandwa	684	2.46	16.67
Simaria	41Ø	2.26	13.47
Barwadih	654	2.42	16.44
Latehar	365	1.76	14.4Ø
Manika	5Ø1	2.13	15.34
Chainpur	584	2.51	15.25
Daltonganj	674	1.49	21.27
Panki	313	2.57	11.Ø3
Lsliganj	53Ø	1.69	17.71
Kisko	221	2.31	9.78
Garu	2Ø6	3.Ø3	8.24
Bhandaria	38Ø	3.29	1Ø.75

Contd.....

Name of the block	Size	Spacing	Dispersal Index
Northern Plain Region			
Hussainabad	718	2.12	18.40
Manjhiaon	570	1.68	18.42
Untari	754	1.75	20.71
Dhurki	788	2.85	16.63
Meral	839	2.10	19.99
Garhwa	639	1.61	19.92
Chainpur	646	1.67	19.67
Bishramapur	622	1.73	18.96
Chattarpur	502	2.11	15.42
Patan	556	1.56	18.88
Manatk	410	1.50	16.53
Panki	512	1.49	18.54
Lesliganj	406	1.27	17.88
Daltonganj	995	1.74	23.91

of importance and four type of settlements have been recognised.

These are:-

i) Compact settlements

ii) Semi-compact settlements

iii) Semi-sprinkled settlements

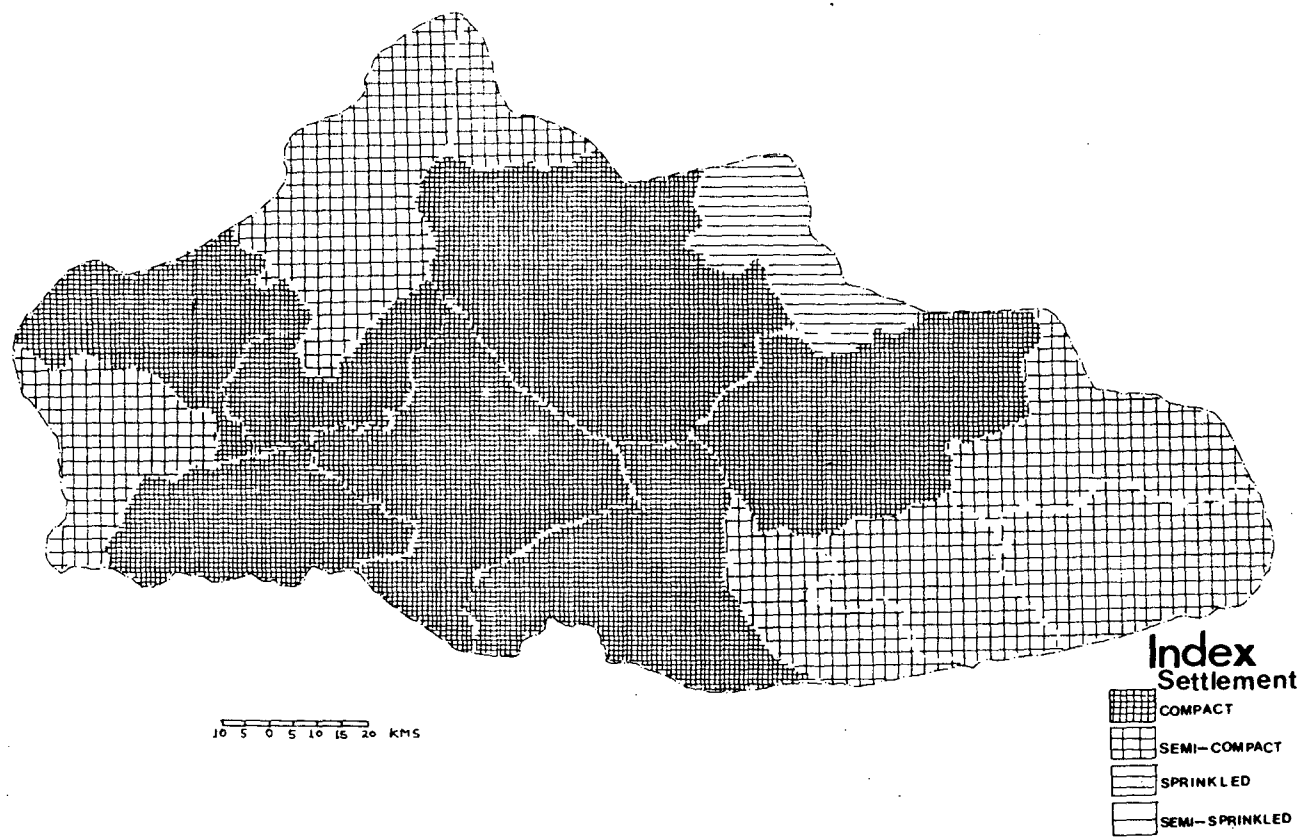
iv) Sprinkled settlements

Compact settlements:- These settlements have one main cluster of houses and more than one satellite settlements. The average population of these settlements is generally found between 500 and 1000 and average areal extent approximately 1.5 kilometers. Closely huddled houses and overcrowding is the chief characteristies of the compact type of settlements. The blocks of Patan, Untari, Bishrampur, Chainpur, Garhwa, Meral and Daltonganj are characterized by compact settlements.

These blocks are situated on either side of the Koel river and are characterized by relative everness of the surface, availability of good arable lands, less forest cover. These have long history of settlements, and are aligned along the major routes of historical migration, The sub-surface water table is high and these rocky surface provide better conditions for human settlement in the

TYPES OF SETTLEMENT

NORTHERN PLAIN AREA



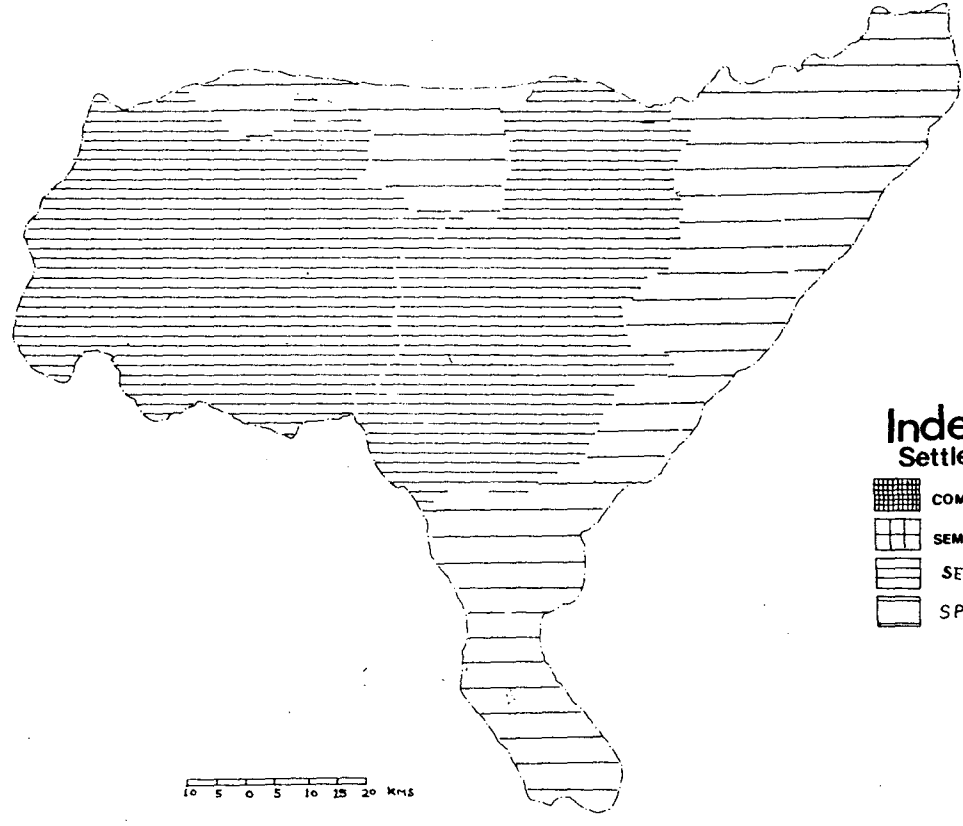
northern part of the North Koel Basin. North-Koel itself carries enormous water but people are unable to utilize it as the small dams are washed away during rainy season by flood. Thus the invaluable water goes waste. The ahars or pynes as the small streams are called and have higher location than the paddy fields are more useful for irrigation purposes. This consideration has influenced the settlements to be preferably located on the banks of minor streams in place of big rivers. location of sand strips on either side the rive has many thormy bushes and put hindrance in agricultural activity. Moreover, and frequently shift their positions.

Out of the seven blocks (anchals) having compact settlements Daltonganj is located in Koel Amoanant valley and is best suited from every point of view of human settlements in the Noth Koel Basin. The disperesion index value found is highest (....) Bishrampur and patan are located north of Amanat river basin. Garhwa and Chainpur form part of the Koel valley while Untasi and Meral are situated at the margin of the state boundary.

Semi compect villages are found adjacent to compact villages. The population of such villages ranges between 400 and 800 persons. The index of dispersal is found between

TYPES OF SETTLEMENT

SOUTHERN HILLY REGION



16.44 and 18.54. The anchals of Hussainabad, Manjhiaon, Panki, Manatu, Lesliganj, Barwadih, Chandwa and Dhurki have mostly semi-compact settlements. Semi-compact villages are of intermediate type between the zones of compact and sprinkled types. In this type houses are neither agglomerated nor dispersed in detached hamlets. On the other hand, are closely linked with the main site by footpaths. The various hamlets are inhabited by different caste groups of the village. ?Thus, here we find neither houses being huddled together like compact settlements nor hamletted settlements where no central points is found. The joining of varying hamlets with the main site denotes the existence of cultural point or foci . Tendency in this type of settlement which is completely lacking in sprinkled settlements. Hussainabad and Manjhiaon which form part of lower North Koel basin present settlements. Her every deep river chanels, discordant confluence of tributaries with the main stream highly amenable to erosion long stretch of ravines are found and these factors have reduced the habitability in the lower reaches of the North-Koel valley.

Lesliganj and Barwadih blocks are located in the North-koel- Auranga-Amanat basin. Lesliganj block located east of Daltonganj has level surface. Its northern part is free from forest cover whereas southern half is covered with thick

forest hence. Very limited land is left for human habitation. Barwadih situated in interstream of North Koel Auranga gets enough water for cultivation but frequent occurance of hillocks, undulation surface and forest cover are the main handicaps. The presence of coal fields has attracted people to this area. This have helped in general compactness. Moreover, the construction of rail route which passes through this block has also encourage human occupance. Chandwa anchal located in the upper reaches of Auranga valley is, to a greater extent, covered by forest. Hence very few patches of plain lands are found where settlements could come up.

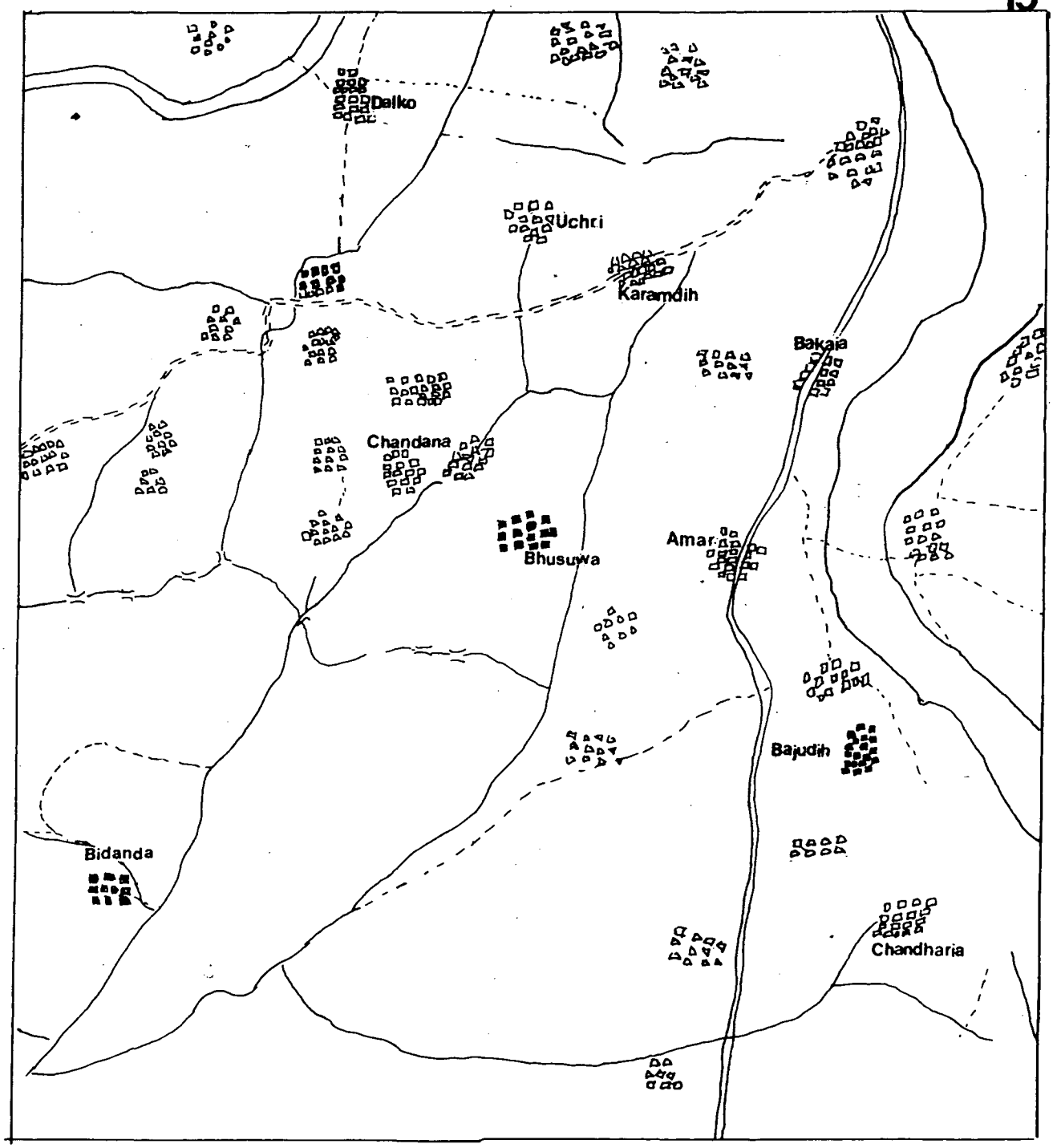
Panki and Manatu block are situated north of the Amanat valley and are away from the main koel channel. These blocks have plain surface but are covered with forest. Moreover, the area lack kin water.

Dhurki, is a peripheral anchal in the western part of Palamau district with relatively level surface and is suitable for agriculture . This has resulted in the concentration of people. But the houses are not situated very close to each other.

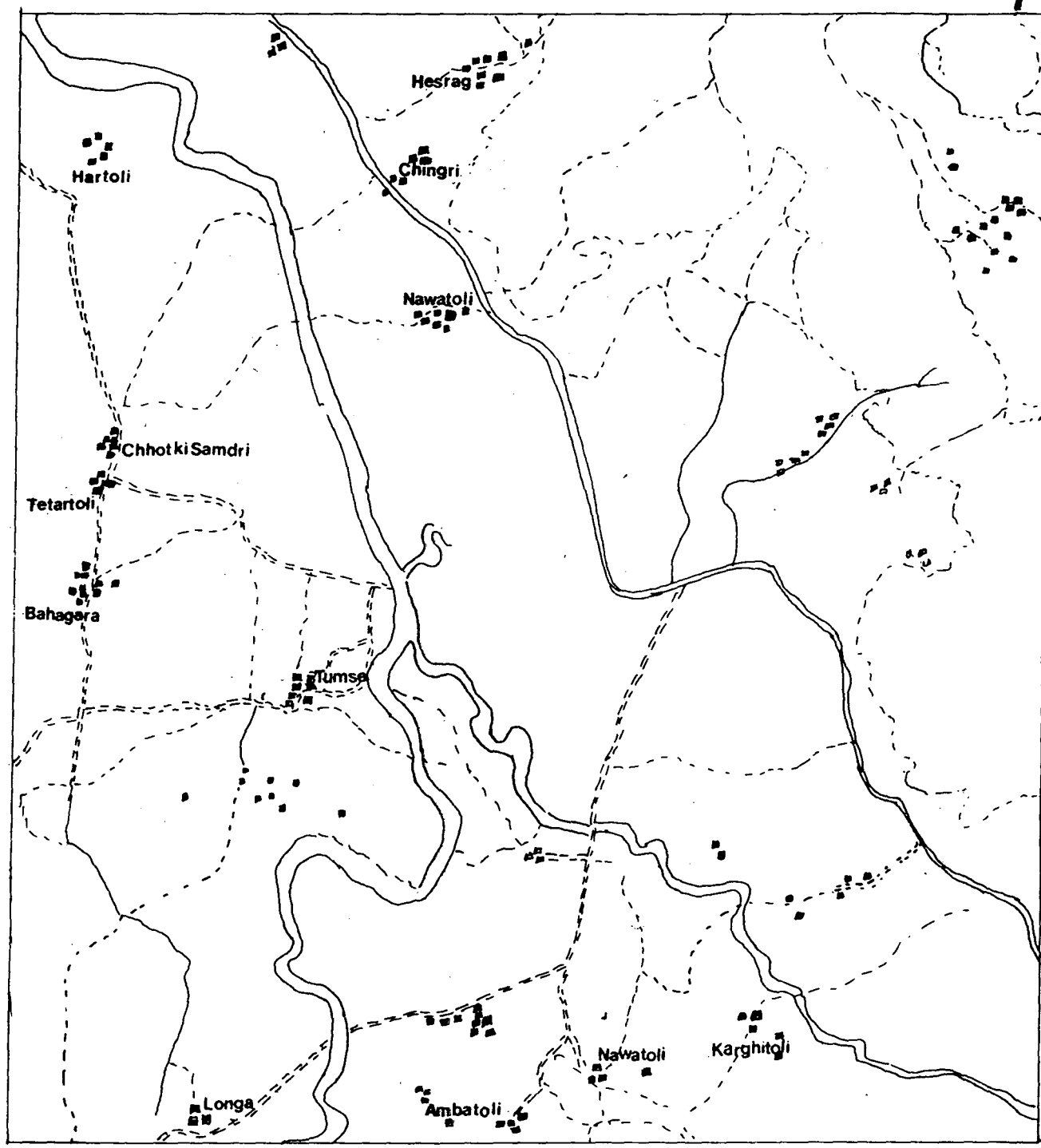
Semi-Sprinkled Settlement:-

The settlements have population of less than 500 persons and spacing of over two kilometers from each other

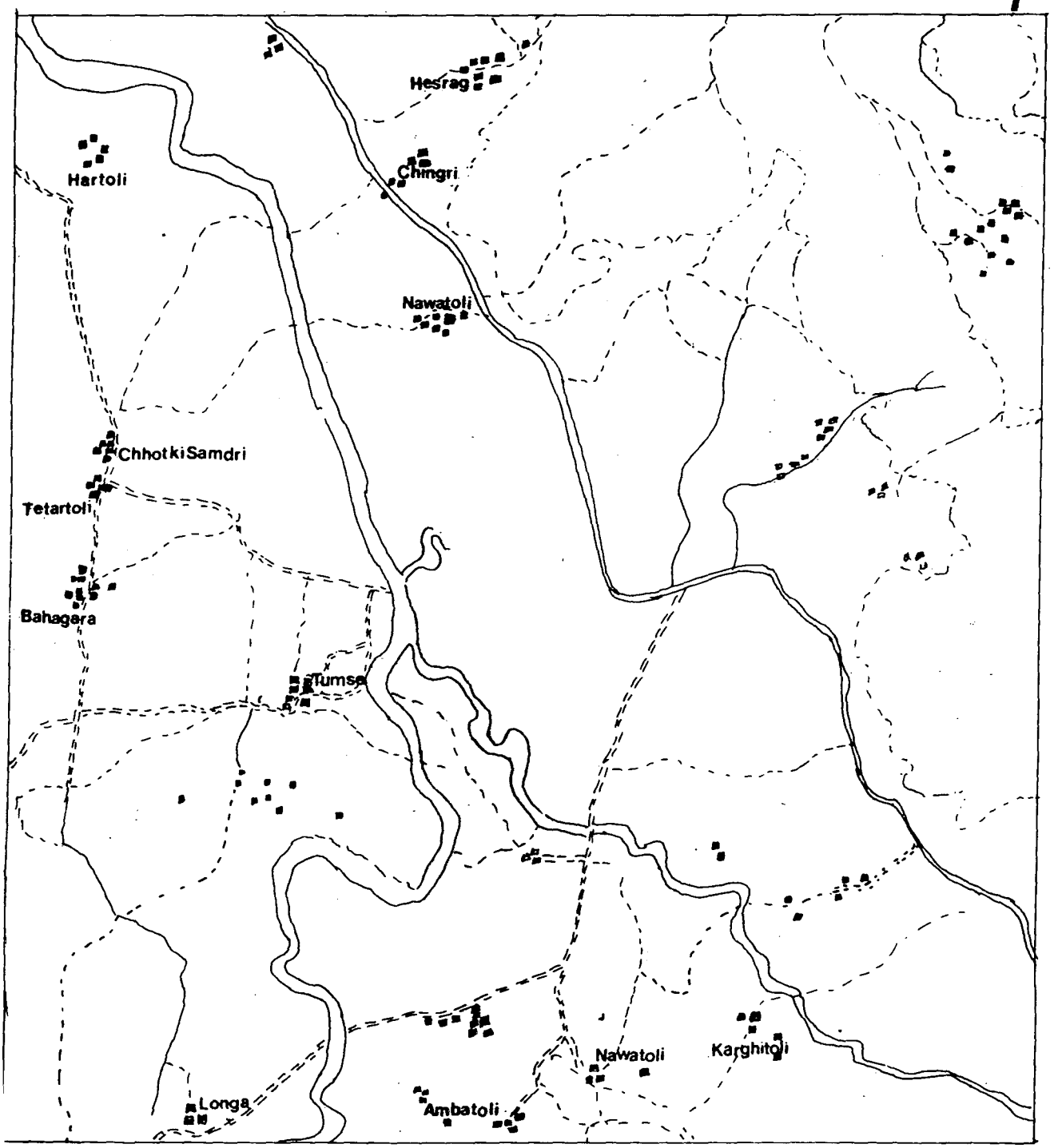
63 P/15



Compact Settlement



Semi Sprinkled Type



Semi Sprinkled Type

and have dispersal index varying between 12.86 and 15.42. It is difficult to recognise any central site in thses settlements. In place of bigger nucleation in compact villages, the sprinkled villages are characterized by small nucleation.

Semi- sprinkled settlements are seen more in Chattarpur, Simaria, Manika, Balumath, Latehar, Chainpur, Bishunpur and Mahuadanr blocks. Chattarpur block is characterised by elongated depressions, steep slope presence of large number of residual hills and ridges, large scale denudation resulting into bare stony surface, extensive wooded areas commonly covered by thorny bushes, acute water scarcity due to lack of rainfall, ill-fed, short and narow streams- All these factors have highly reeduced the economic capability of the area. Simaria and Balumath are located in the upper reaches of the Amanat river valleys. Simaria block (Hazaribagh district) is one of the highly dissected and rugged surface under thick forest cover with widely developed ravines. These mostly discourage settlements. Balumath is covered with dense reserve forests, wide ravines and undulating hills leave very little land for cultivation. Hence, only a few small sized settlements have developed in this anchal. Most of the area of Latehar and Manika blocks are covered by forest. This part is one of the most densely

forested part of the North-koel Basin. Moreover, the hilly terrain with rugged topography has only rendered negative land for settlements. Hence only small sized settlements have emerged in this region.

Chhechhari is a semi-circular basin where numerous tributaries to the Burha meet at the centre like the spokes of a wheel. Gently sloping surface, largely free from undulations, the settlements have emerged only on dry points. Ranka, although doesn't form part of the pat region, is densely forested and has highly rugged surface .It again provides negative sites for settlements. Hence small villages have developed.

When we put a glance at the settlement type map of the region we find that the semi-sprinkled settlements have peripheral location except the southern hilly tract.

Sprinkled Settlemets:-

The settlements having population less than 400 persons and the spacing between two nearest villages above 2.5 kilometers and the dispersal index below 12 are attributed as sprinkled settlements. The sprinkled settlements are mostly found in Garu, Kisko, Chainpur, Ghaghra, Senha, Bhandaria and

Panki anchals.

In the sprinkled settlements the houses are scattered all over the space and the inter-village distance is so large that it is difficult to recognise them as villages although tens of houses are seen huddled together. In its larger context "everything spells isolation and privacy"[1] - is a rule. Thus, there hardly exists anything like joint vilage community in sprinkled settlement zone.

Bhandaria block located in North Koel-kanhan interfluve-is a belt of extensive and dense forest cover mostly of reserve forest category, extensive gully erosion has resulted into large ravinous tracts, the wide valleys, sloping spur or circular broad divide of radial streams. These elements have discouraged coming up of large settlements.

Extensive zone of sprinkled settlements is found in the southern hilly area or upper reaches of the north-koel basin. The region is known as 'pat' region and is characterized by steep slope high ruggedity and rocky surfaces, soils are subject to heavy leaching. The thoroughly leached soils form

---

5. Paul Vidaldela Blache : (1962) " Principles of Human Geography" New York. p-316.

laterites which are unfit for cultivation. Thick forest cover mostly of reserve category have turned the region highly uninhabitable. These block form part of eastern part of 'pat' region which receives higher rainfall resulting into higher degree of dissection and large number of streams and hence higher degree of dispresal.

Panki, locates in the upper reaches of the Amanat basin is mostly covered with forest cover and surface configuration is highly uneven. Hence this is unsuitable from the point of view of human occupance. Only small settlements have emerged.

Thus we find that the compact type of villages are, in general controlled by the North-Koel river but the factors of plhysiography have much better control over the type of settlement in the region.

PATTERN OF SETTLEMENTS:-

'Pattern' refers to a design made up of an arrangement of settlements. It implies some sort of spatial regularity which in turn is taken as a sign of workings of a regular processes. Pattern of settlements is the end product of a long process of development and changes caused by the interplay of physical factors.

The techniques for the recognition and mesurement of pattern is basically the Nearest Neighbour Analysis, It was developed by two plant ecologists namely Clark and Evans(1954)[1]. It is especially designed for measuring pattern in terms of the arrangement of a set of points in two or three dimensions. It involves calculating the mean of distances between all points and their nearest neighbour. The Nearest- Neighbour formula is:-

$$Ra = \frac{\text{Distance}}{N}$$

$$Re = \frac{1}{2\ P}$$

Where, N=Number of settlement
A= Area of the place

$$R = \frac{N}{A}$$

$$R = \frac{Ra}{Re}$$

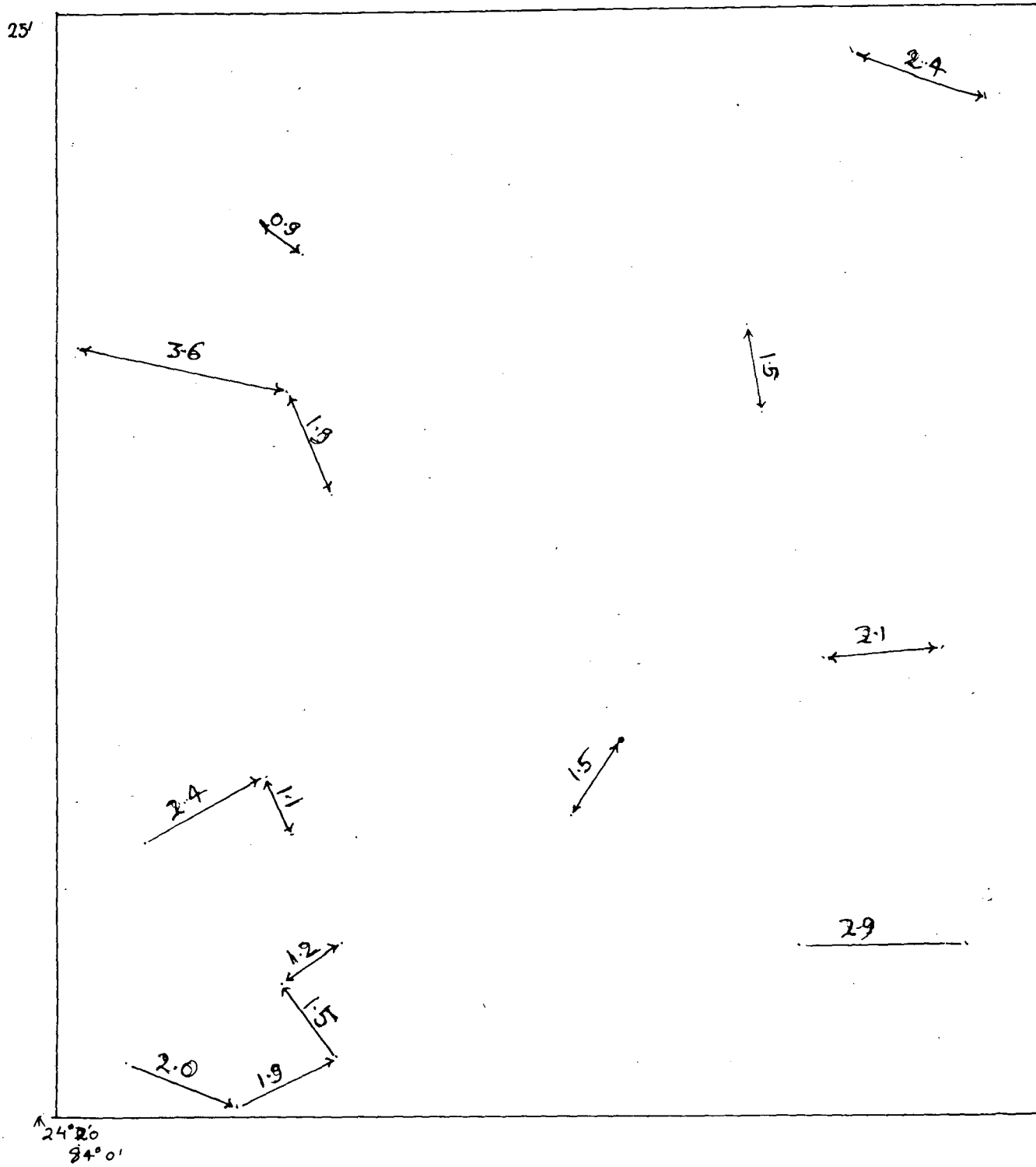
$$R = \frac{Ra-Re}{re}$$

Where $re = \frac{0.26136}{NP}$

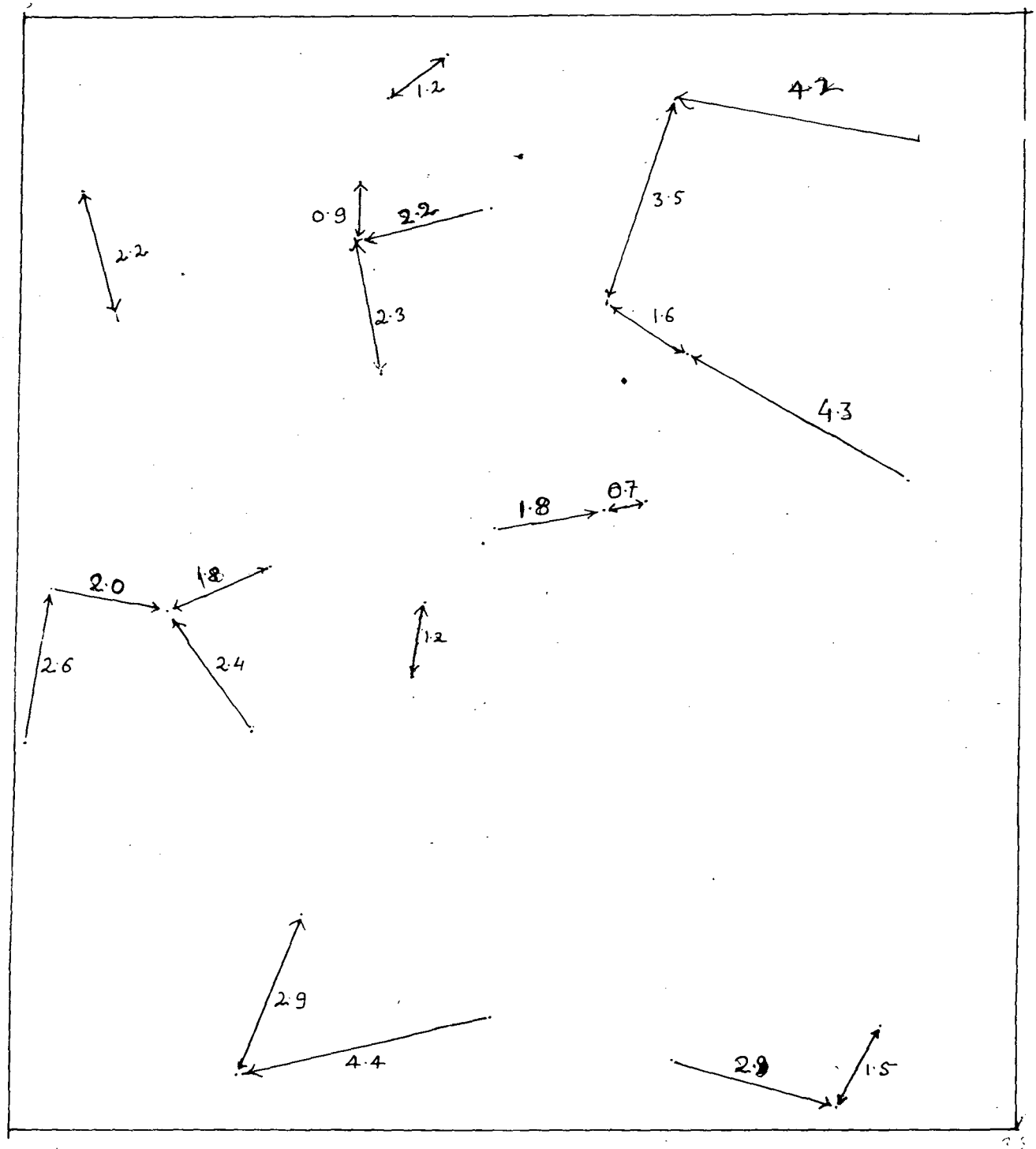
C = the test statistic

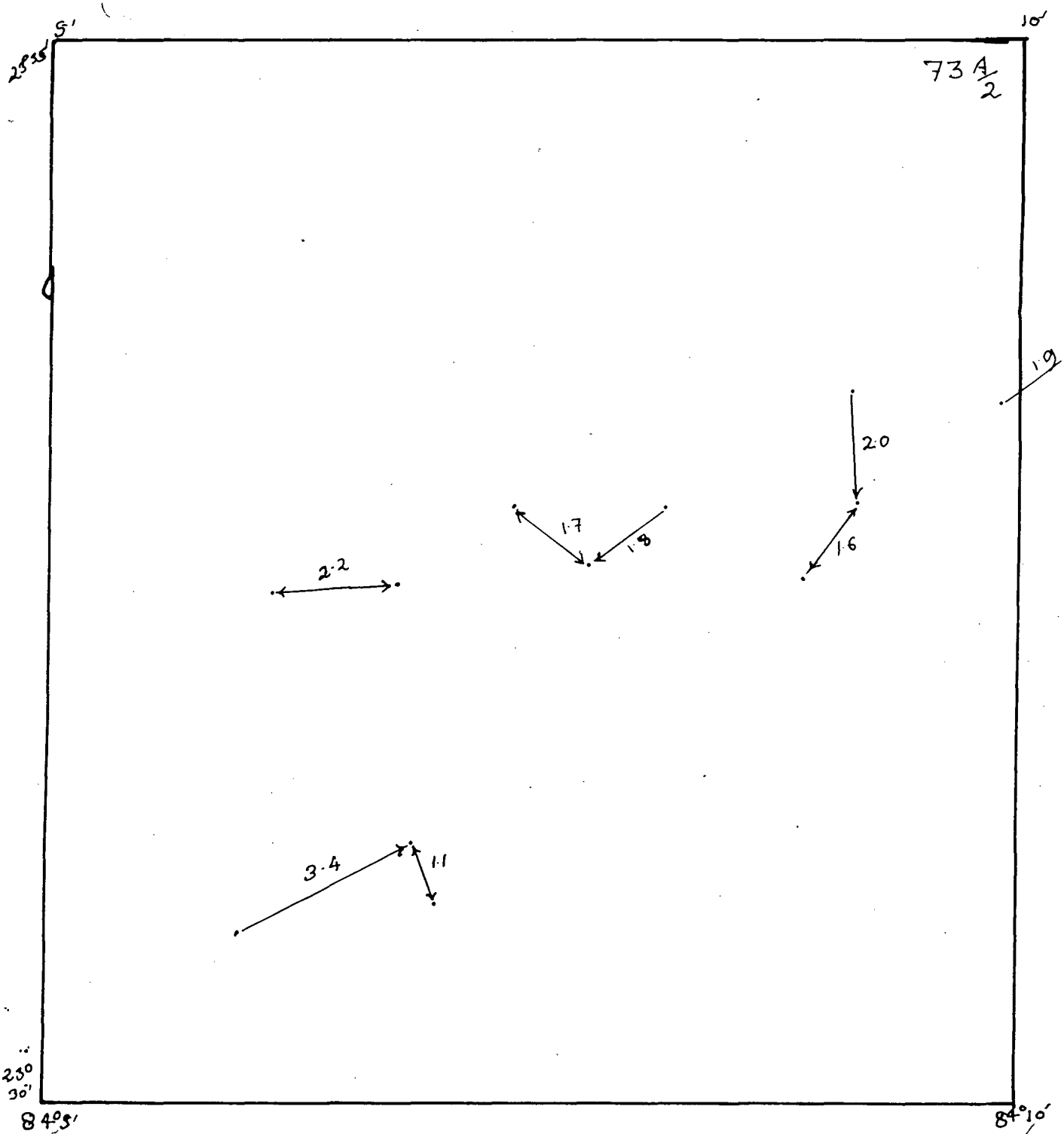
1. Clark, P.J. & Evans F C (1954) Distance to Nearest Neighbour as a Measure of Spatial Relationship in Population. Ecology vol35. pp.445,453.

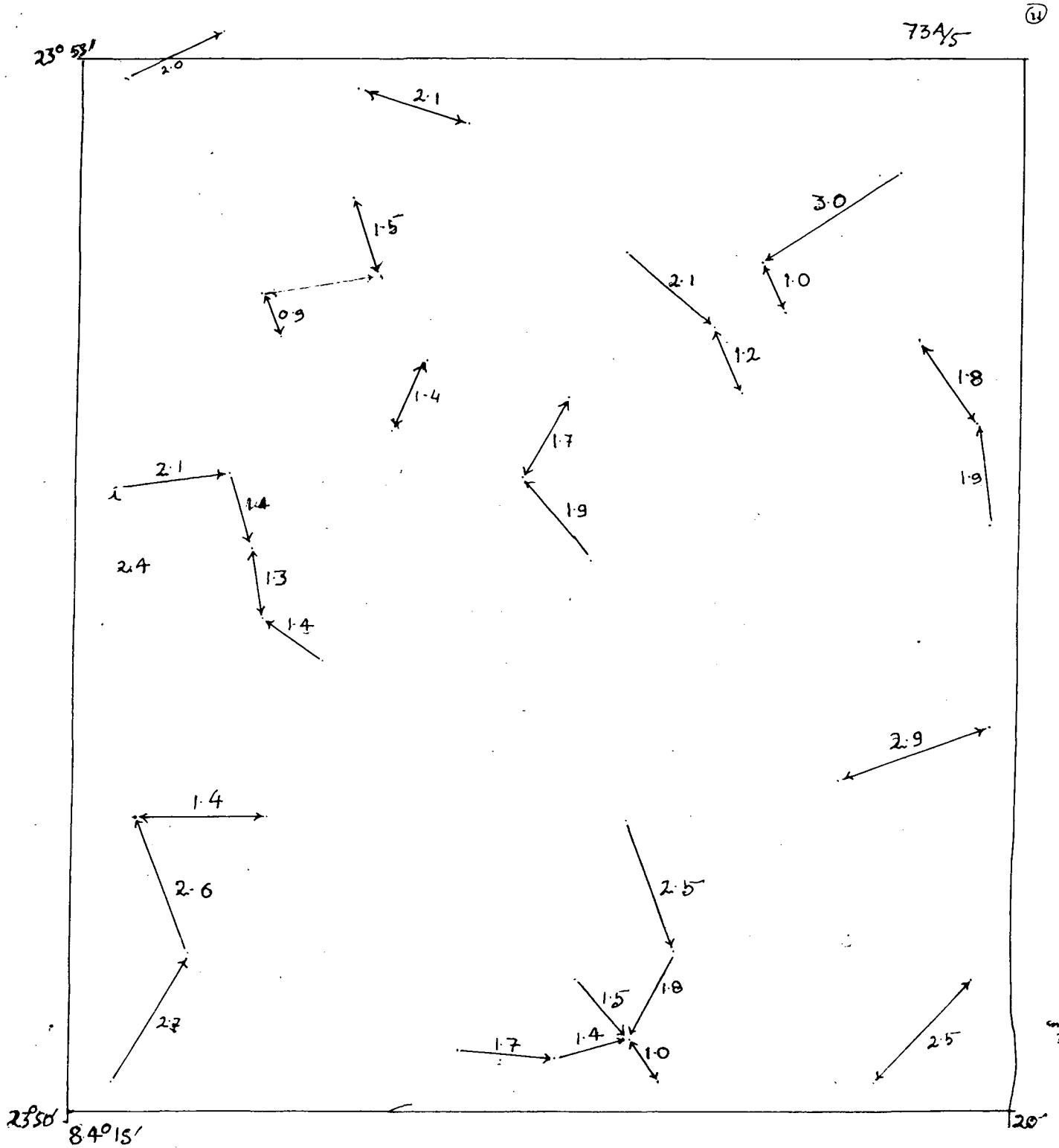
72 D/3



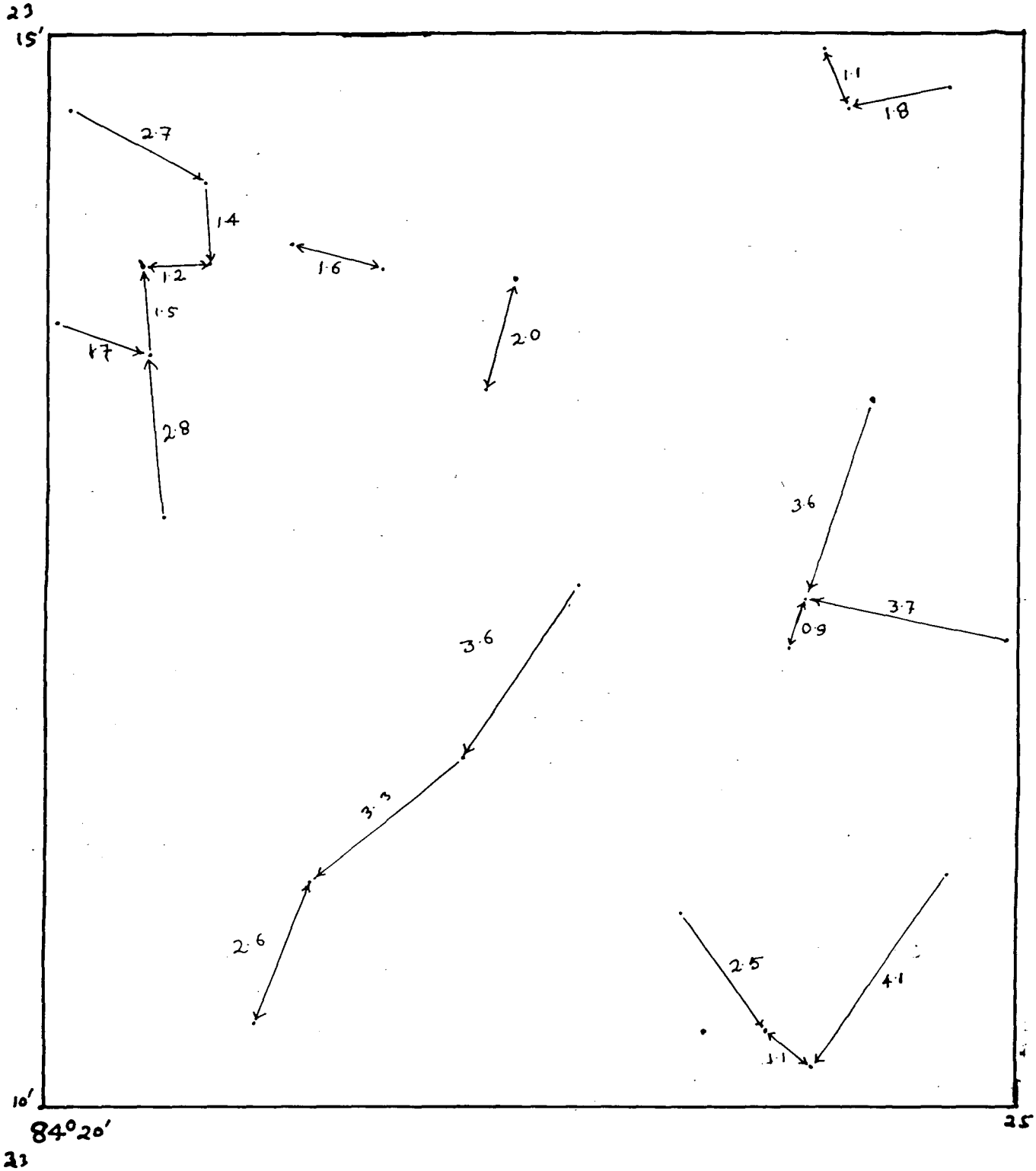
72 D/12

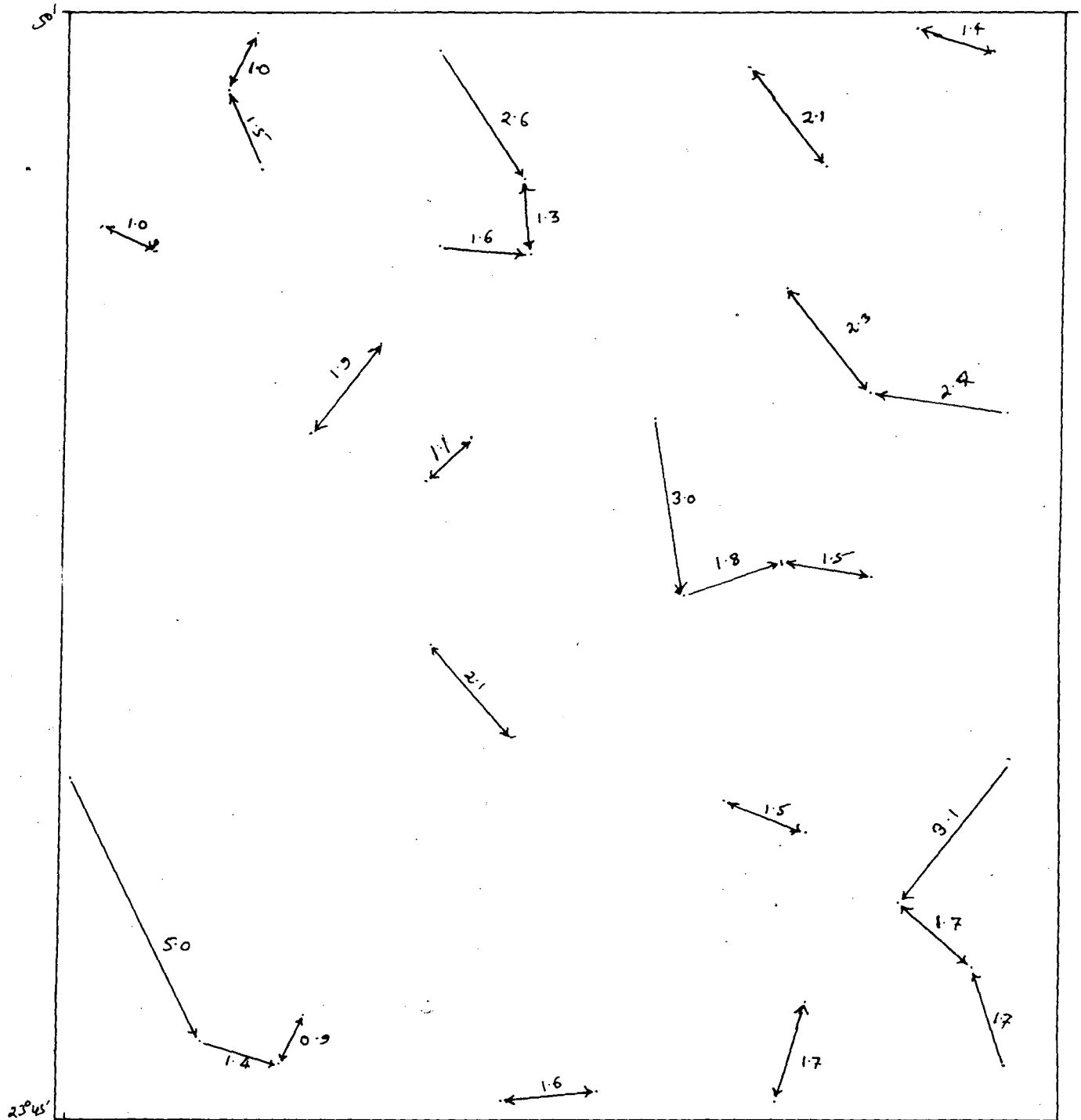



5'
10"
23°35'
73 A/2
1.9
2.0
1.7
1.8
1.6
2.2
3.4
1.1
23°30'
84°5'
84°10'


73A/5
23° 58'
2.0
2.1
1.5
0.9
1.4
3.0
2.1
1.0
1.2
1.8
1.9
1.7
1.9
2.1
1.4
2.4
1.3
1.4
2.9
1.4
2.6
2.7
2.5
1.8
1.5
1.7
1.4
1.0
2.5
23'30'
84°15'
20'

73A/8


23
15'
1.1
1.8
2.7
1.4
1.2
1.6
1.5
1.7
2.0
2.8
3.6
3.7
0.9
3.6
3.3
2.6
2.5
4.1
1.1
10'
84°20'
25'
23


50'
1.0
1.5
2.6
1.3
1.6
1.4
2.1
1.0
1.9
2.3
2.4
1.1
3.0
1.8
1.5
2.1
1.5
3.1
1.7
1.7
5.0
0.9
1.4
1.7
1.6
23°45'
84°35'
40'
73 A/9
Grid o

73 A/10

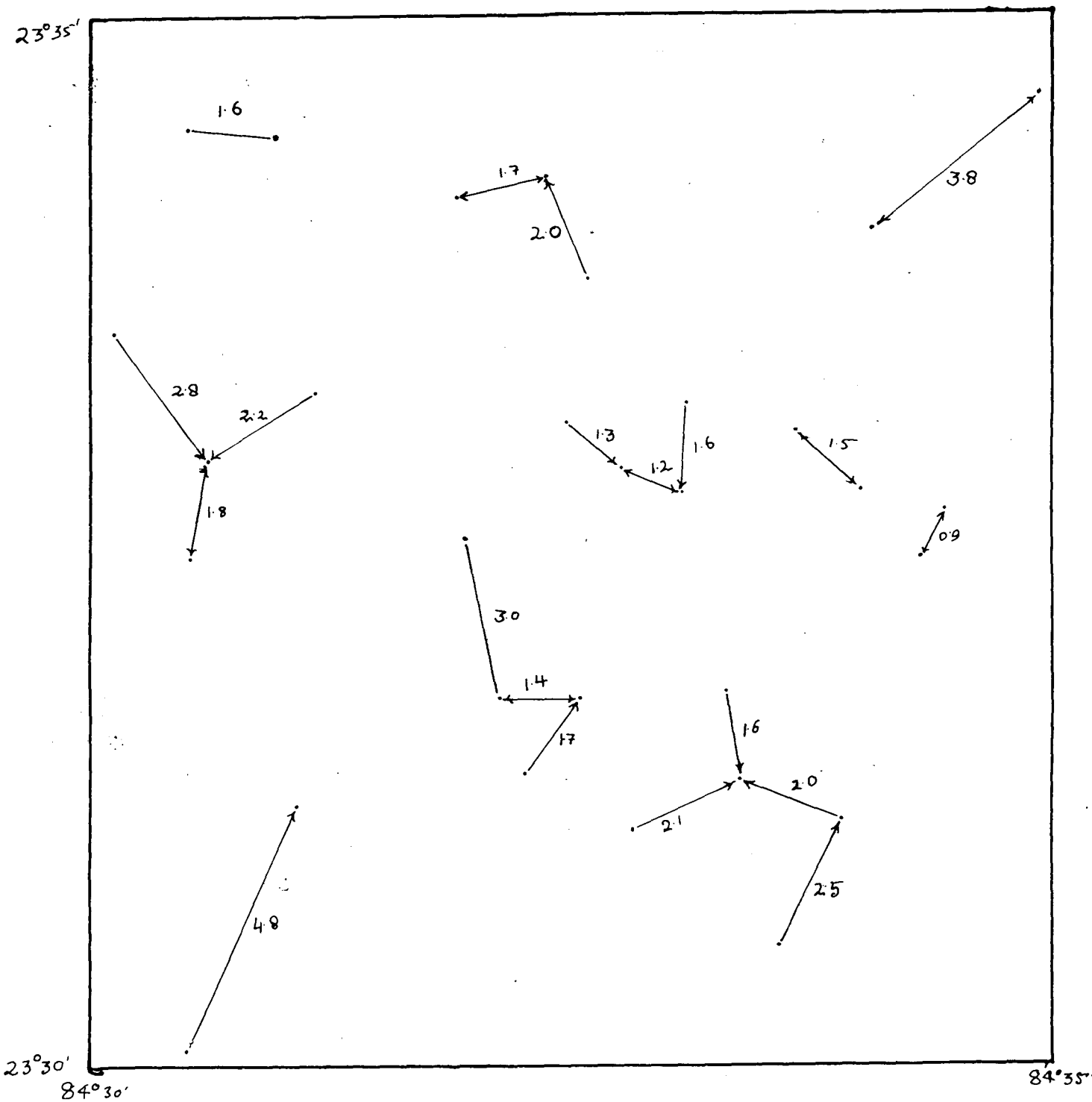

23°35'
1·6
1·7
2·0
3·8
2·8
2·2
1·8
1·3
1·2
1·6
1·5
0·9
3·0
1·4
1·7
1·6
2·0
2·1
2·5
4·8
23°30'
84°30'
84°35'

Table 4.2

Nearest Neighbour Analysis of Settlements in The North-Koel Basin

Grid No	Ra	Re	R	re	c	Remarks
Southern Hilly Region						
73 A/2	1.225	Ø.9942	1.23ØØ	Ø.1162	1.985Ø	Random
73 A/3	1.3Ø8	1.Ø48Ø	1.248Ø	Ø.1293	2.Ø134	Random
73 A/1Ø	1.Ø3Ø	Ø.8118	1.2687	Ø.ØØ774	2.8157	More regular than random
73 A/6	1.46Ø	1.Ø78Ø	1.35ØØ	Ø.1367	2.7939	More regular than random
73 A/7	1.1Ø6	Ø.76ØØ	1.455Ø	Ø.Ø683	5.Ø612	Randomly even
64 M/Ist	Ø.947	1.Ø48Ø	Ø.9Ø36	Ø.1291	Ø.78ØØ	Random
Central Dissected Plateau						
73 A/9	Ø.8787	Ø.7Ø31	1.2499	Ø.Ø581	3.Ø2ØØ	More regular than random
73 A/1Ø	Ø.8862	Ø.86Ø7	1.3662	Ø.Ø494	4.8Ø37	Randomly even
73 A/6	Ø.93ØØ	Ø.81ØØ	1.1455	Ø.Ø774	1.5488	Random
73 A/5	Ø.8785	Ø.686Ø	1.28ØØ	Ø.Ø55Ø	3.48ØØ	More regular than random
73 A/2	Ø.925Ø	1.2836	Ø.72Ø6	Ø.1936	1.Ø55Ø	Random
73 A/1	Ø.73ØØ	Ø.678Ø	1.Ø8ØØ	Ø.Ø54Ø	Ø.962Ø	Random
Northern Plain Region						
72 D/3	Ø.92ØØ	Ø.927Ø	Ø.99ØØ	Ø.1Ø1Ø	Ø.Ø69Ø	Less random than dustend
72 D/4	1.1ØØØ	Ø.76ØØ	1.447Ø	Ø.Ø68Ø	5.ØØØØ	Randomly even

Contd.....

Grid No	Ra	Re	R	re	c	Remarks
72 D/7	Ø.73ØØ	Ø.71ØØ	1.Ø2ØØ	Ø.Ø499	Ø.4ØØØ	
72 D/8	Ø.78ØØ	Ø.64ØØ	1.2187	Ø.Ø484	2.8911	More regular than random
78 D/12	1.Ø448	Ø.8257	1.265Ø	Ø.Ø8ØØ	2.74ØØ	More regular than random
63 P/12	1.14ØØ	Ø.83ØØ	1.38ØØ	Ø.Ø8Ø1	3.92ØØ	More regular than random
63 P/15	Ø.77ØØ	Ø.62ØØ	1.24ØØ	Ø.Ø446	3.36ØØ	More regular than random

The R values are calculated and the values closer to 'o' shows clusterning and near'1' randomness and more than'1 even distributions of settlements.

As the study area is large spread over more than 20 toposheets only selected grids have been takan for analysis, Highly forested areas lacking settlements have been ignored. The grids have been choosen randomly.

The region is physiographically not even. It comprises high erosional surfaces in the form of 'pat' region, undulating plains of central region and nearly even plain in the north. Hence the varying patterns of settlements are also expected.

Southern hilly region:- As stated earlier, the area is rugged and covered with dense forest. Here the sample grids chosen randomly show random pattern of settlements. For example grids selected from toposheets no. 73 A/2.A/3,64 M/14 show value ranging between 1.28 and 0.9036. This shows that villages are scattered about depending upon the availability of the level land, water and the soil fertility. The remaining two grids taken from sheets no toposheets no. 73 A/6 and 73 A/10 are situated close to north-koel river. Water is easily available and has good soil cover. The

pattern of settlements in these grids vary from random to regular.

Central Dissected plateau:-

Like the southern hilly tract this region also has in parts dense forest cover and undulating surface. Thus cultivation beyond the north-koel Auranga valley is found only in low lands and around ahars which poresent a patchy settlements, Grids selected from this region from the toposheets no. 73 A/6,A/1,A/2 are nearer to southern hilly region. Settlements here occur only along the lands where cultivable land is available. On the other hand grids falling in toposheets no. 73 A/5 and A/9 are nearer to the northern plain region of the basin. Hence, the prevailing pattern is more regular than random. It denotes easier and more frequent availability of amenities. The grid falling in 73 A/10 belongs to Auranga valley having plain land. The abundant cultivable land makes settlement pattern more regular . Tlhus, southern half-shows random pattern as against regular patter in the northern half.

NORTHERN PLAIN REGION:-

This region has land surface and long history of settlemtns. Here, it is not necessary for the people to

settle in some selected patches. Almost the entire area has favourable geographical condition. The sample grids have been taken from toposheets number 72 D/3 D/4 D/7 D/8 D/12 63, P/12 & P/15. These show more regularity in settlement pattern. The R value is 0.98, 1.447,1.02, 1.2187,1.265, 1.38 and 1.24 respectively.

FORMS OF SETTLEMENTS:-

Form of settlement refers to the outer geometrical shape and the internal morphology which is the arrangement of the building blocks and the streets. Although internal morphology is intimately related to and influences the form, they are not the same. Even if the form remains constant, the internal arrangement can vary. 'Form' cannotes the geometrical shape of the aggregate of buildings and streets, and thus, is expressed through innumerable categories, such as square, rectangular, circular, quadrilateral and irregular [1]. In the study of form the context is essentially site, a single settlement opposed to the pattern where the context is regional.

Form is a dynamic concept which is in a state of

---

9. Mukerjee, op.cit.p 98

gradual change through time whatever may be the pace of change. It is related to the process of settling and subsequent evolution, growth and dispersal of settlements. The study of forms indirectly reveals various facts regarding settlement as is reflected by the statement." The entire history of civilization is reflected in present forms of human settlements."[1]

Unlike in western countries where planned settlements are found which naturally possess well defined shapes and a distinct internal plan, here the villages have developed in response to the physical and cultural setting. Here we find, "an unmistakable connection between the configuration of the site, surface water (river, canal, tank, pond or well) the nature of the soil, cultivation of grooves and the shapes of the fields on the one hand and the patterns of settlements on the other."[2]

Agglomeration is the pre -requisite for the identification of form. The North-Koel Basin where

---

10. Demangeon A. op.cit. p:

11. Ahmed, E. (1962) Indian Village Pattern, Geographical outlook vol. 1 p.5

settlements are not historically very old. these have not yet reached the amorphous stage, atleast in southern part. Most of the southern part has hamlets hence no form development has yet taken place. Form has been distinguished visibly only in northern section of central dissected plateau zone and the northern plain where compact type of settlement has been recognised.

The following discussion is almost entirely based on the identification and interpretation of the form on 1:50,000 Survey of India Toposheet maps.

The most striking regular forms found are

(a) Rectangular

(b) Square

(c) L shaped and T shaped

(d) Linear

(e) Checkerboard

(f) Amorphous

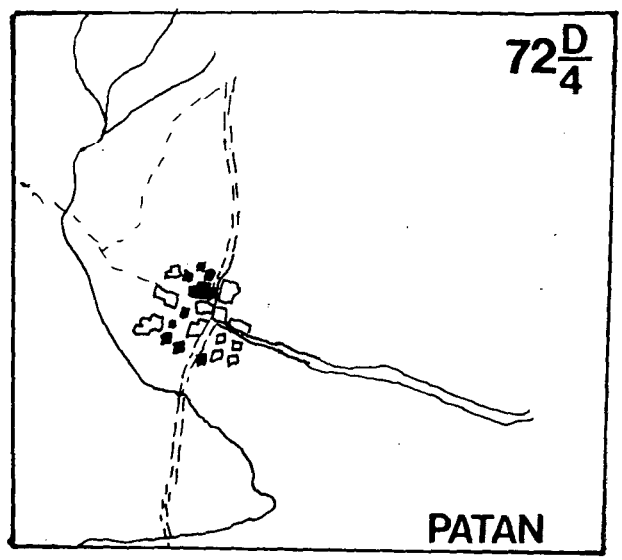
Rectangular forms:- The most frequently occuring village form is that of rectangular basically due to the rectangular shape of the cultivated fields. "Rectangular form of field requires a minimum turning of the plough and the least strain on bullocks. In a rural environment where

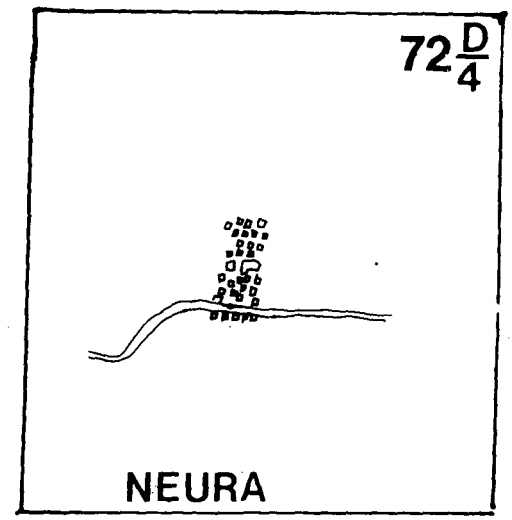
everything is made subservient to cultivation the tendency is not to disturb the ploughable shape of the most fertile field adjacent to dwellings. The rectangular alignment of dwellings with their main axis from north to south and east to west are mostly designed to get maximum sunlight and fresh air. Combined with the need for agggregation and given the rectangular shape of houses results in a rectangular form of village. Neura village in northern plain presents an example to the case (72D/4). Rectangular villages are mostly concentrated in northern plain area and close to the North Koel river in the central dissected plateau.

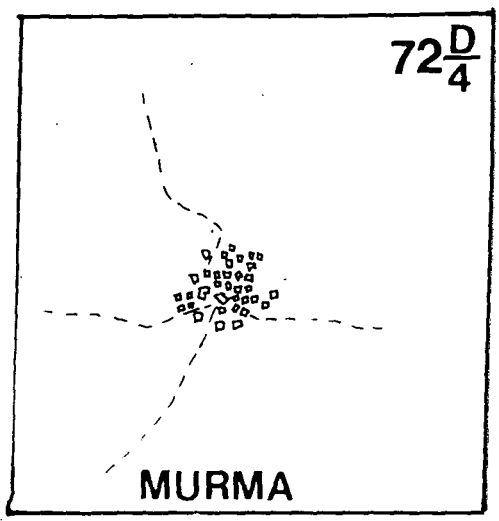
Square Village:-

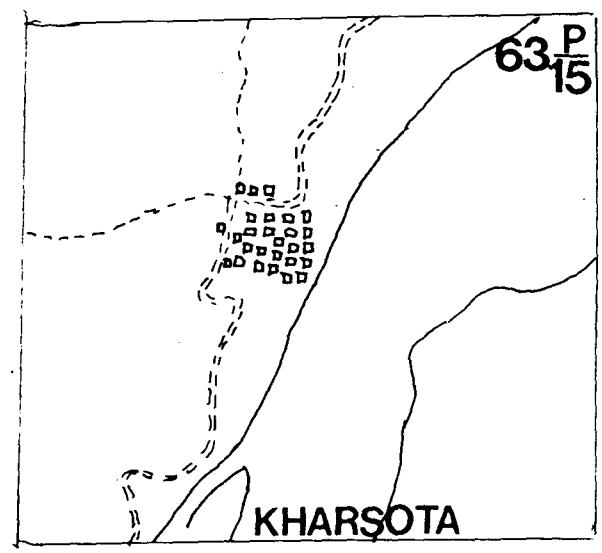
Rectangular and square forms generally occur together. The square form is generally associated with villages lying along the roads and other physical barriers. Roads and river present such barriers in the region, Korgain and Kharsota (63 P/15) villages present examples of the case. These village of Manjhiaon block lies immediately west of the koel river. The western and northern boundaries are controlled by the roads.

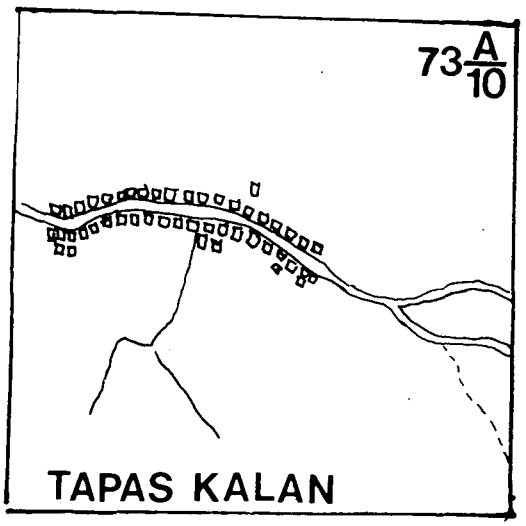
L-Shaped settlements:-

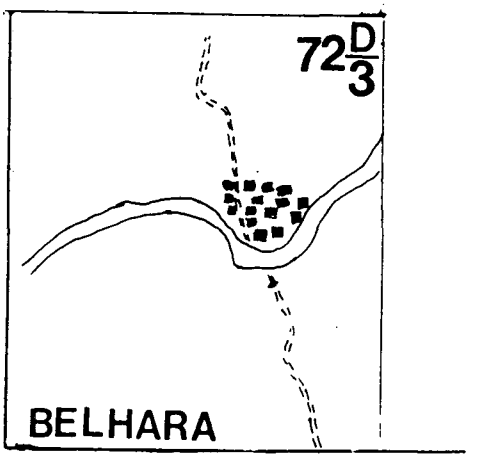

72 D/4
PATAN

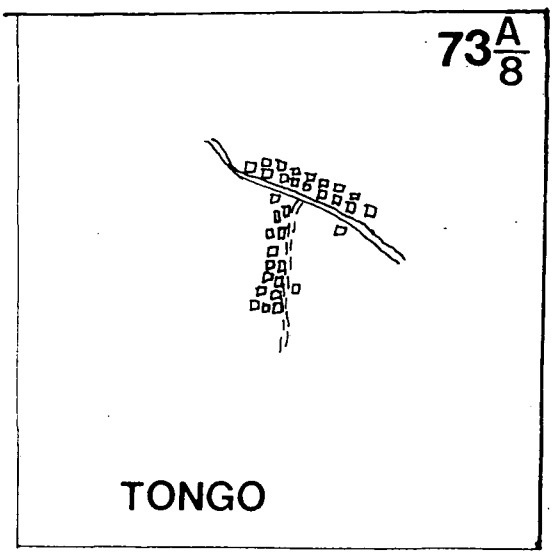

72 D/4
NEURA

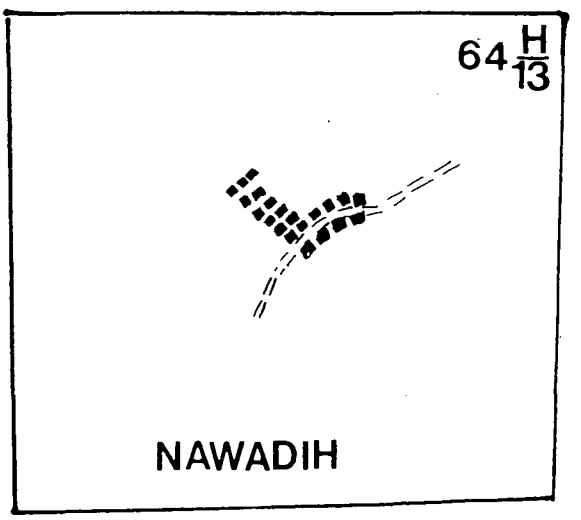

72 D/4
MURMA

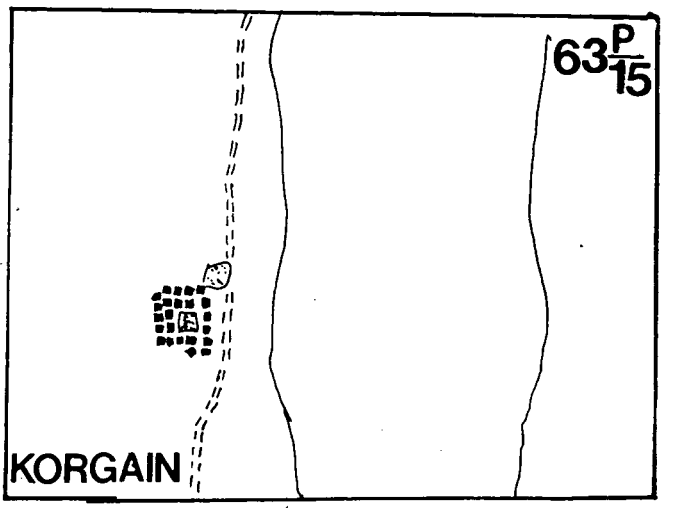

63 P/15
KHARSOTA

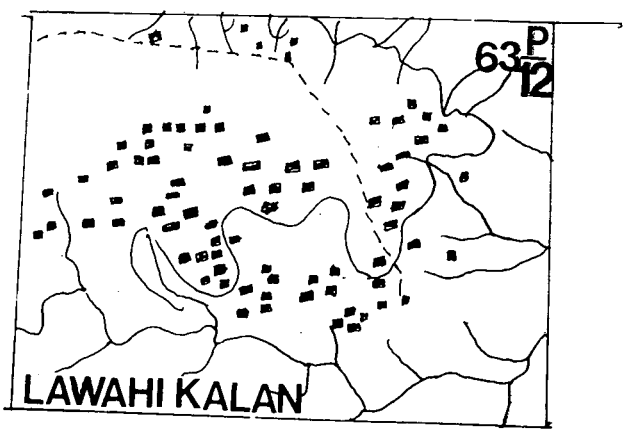

73 A/10
TAPAS KALAN

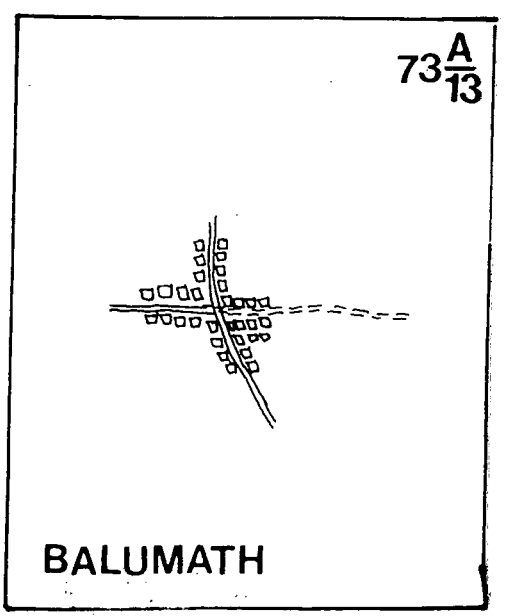

72 D/3
BELHARA


73 A/8
TONGO


64 H/13
NAWADIH


63P/15
KORGAIN


63P/12
LAWAHI KALAN


73A/13
BALUMATH

This form is common feature found when a rectangular village emerges indigenously and after its development a road passed through its outer limit, then new development of houses take place alongwith the road which provide better location. Nawadih village (64M/13) is an example to the case. Development of T-shaped villages also takes place in the similar process but the difference is that here, in place of one, two forces simultaneously act. For example, in Tonga village, one road meets the other road making angle of 90^0, hence along both the roads houses have been built. Therefore the subsequent development of village presents T-shaped form.

Circular Form:-

Circular village is generally characterized by very high degree of compactness. The round form was a natural result of maximum aggregation for the purpose of defence, around the mansion of landlords who used to protect the peasantry against a foray by a neighbouring chief. In the North-Koel this form is not the heritage of the past but is due to natural growth. Patan and Murma vilages in the region (72D/4) are circular in shape. In both the villages roads radiate in all directions hence the development of houses in circular form became possible.

Sometimes the villages occur in Semi-circular form.

These generally develop on the crescent shape of a meander. Belha village has emerged on the sharp meander formed in the course of Banki river (72D/3). It is the physical constraint which is responsible for the growth of semi-circular shaped villages.

Linear settlements: linear settlements have emerged along roads. In this form, the settlments have emerged along roads and have grown in a single line to an early approach to the road.Emergenceof Topas kalan village(73A/10) is almost along the roadside.Houses have come strictly along roadside for a rather larger distance. Here the controlling factor of road is obvious. Sometimes a settlement may consist of two or more strings depending upon the other smaller roads traversing the villages. Villages are prominent in central and southern portion of the region.

CHECKERBOARD:-

Checkerboard:a- grid forming a right angled mesh of street with or without a central rectangular market place. Village lanes & roads intersect at right angles. These villages do not show any adjustment to the physiographic outlines. Balumath presents an example of the case. Here two roads intersect each other and the houses have emerged along

road side making an ideal checkboard settlement. There is clear cut separation of different blocks of houses from each other.

Amorphous Villages:-

If the village lands are dotted with many hamlets and individual farmsteads, all being very small rectangles linked with the central hamlet by crude paths, no definite form can be recognised. Such irregular villages are known as amorphous. Here houses are scattered over the area. Lawahi kalan village (63P\12) scattered over a larger area presents an example of amorphous village.

We find that the compact type villages are in general, controlled by the North koel river but the physiography have much better control over the types of settlements. Southern hilly region shows random pattern but the magnitude of randomness goes on decreasing and is replaced by the more regularity than randomness. This contradiction in pattern denotes the patchy availability of controlling factors, where as in the case of the northern plain settlements follow water and agricultural land which show continnous availability. Forms, which are in a state of perpetual change, the important factors of change are the socio

economic condition of the village or territory. These villages in order to adopt in changing ecological condition of the northern plains give birth mostly to rectangular and square shaped villages whereas in the central region where the condition for agricultural activities is not so good villages have grown up along the transportation routes. The shape of village here is mostly linear.

CHAPTER V

HIERARCHY OF SETTLEMENTS

Settlement generally form hierarchical order. Thereforee. the settlements can be grouped into tiers of hierarchy in any regional set up. This tier of hierarchy can be identifiedd in two ways: (a) On the basis of population sizes and (b) on the basis of amenities available .The movement from less complex to more complex economic organisation is likely to be a movement towards rank-size rule. Keeping this in mind an attempt has ben made to find out the correlation between population size and different amenities.

RANK-SIZE RULE

The idea of 'rank-size' rule emerged from Aurbach (1913) and the empirical relationship has been established by G.K. Zipf and later by Berry in many parts of the world. The general form of rank- size rule states that the population of any settlement in a settlement system can be determined on the basis of (a) the population of the largest place in the system; and (b) the position of the settlement being considered in a rank-ordering of all settlements in the system. The

population of each settlement is defined as the population of the largest divided by the rank of the settlement under consideration,

$$Pr = KR^{-b}$$

where Pr is the population of the settlement whose rank is R. K and b are the constants.

This relationship gets transformed into the following linear form after taking the logrithm of both the sides,

$$Y = a-bx$$

where $Y = \log Pr$

$X = \log R$

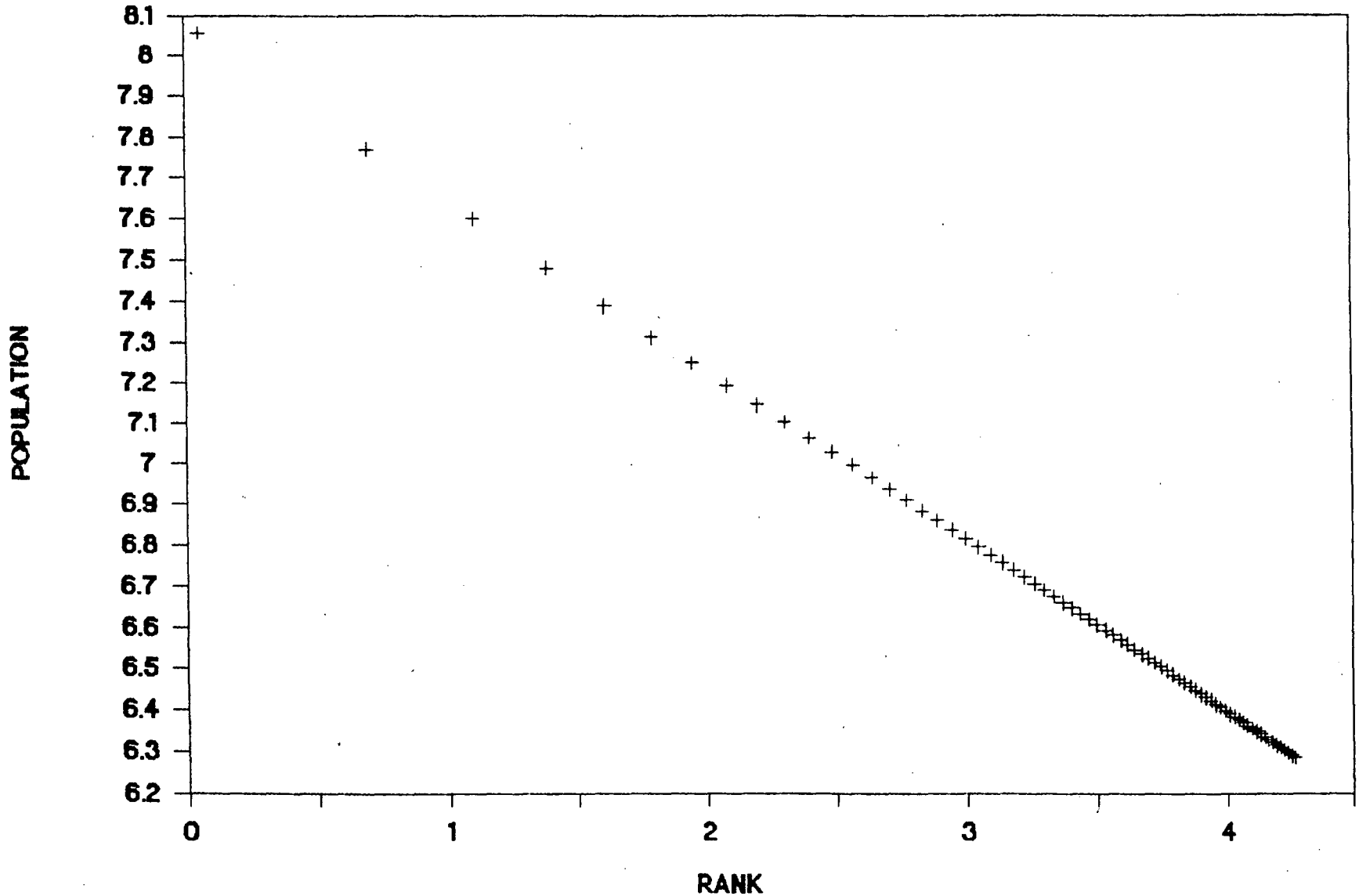
and $a = \log K$.

The population of settlements (Pr) of the region are plotted on Y axis and their ranks (R) are plotted on X axis.

The rank size relationship for the southern hilly region shows a linear relationship. There are two first ranking settlements - Netrahat and Ambatoli. Netrahat is a township in Mahuadanr block whereas Ambatoli in Bishnupur . There are five second ranking settlements i.e. Gardari and Banasi in Bishnupur. There is a trend of gradual increase in third order and fourth order

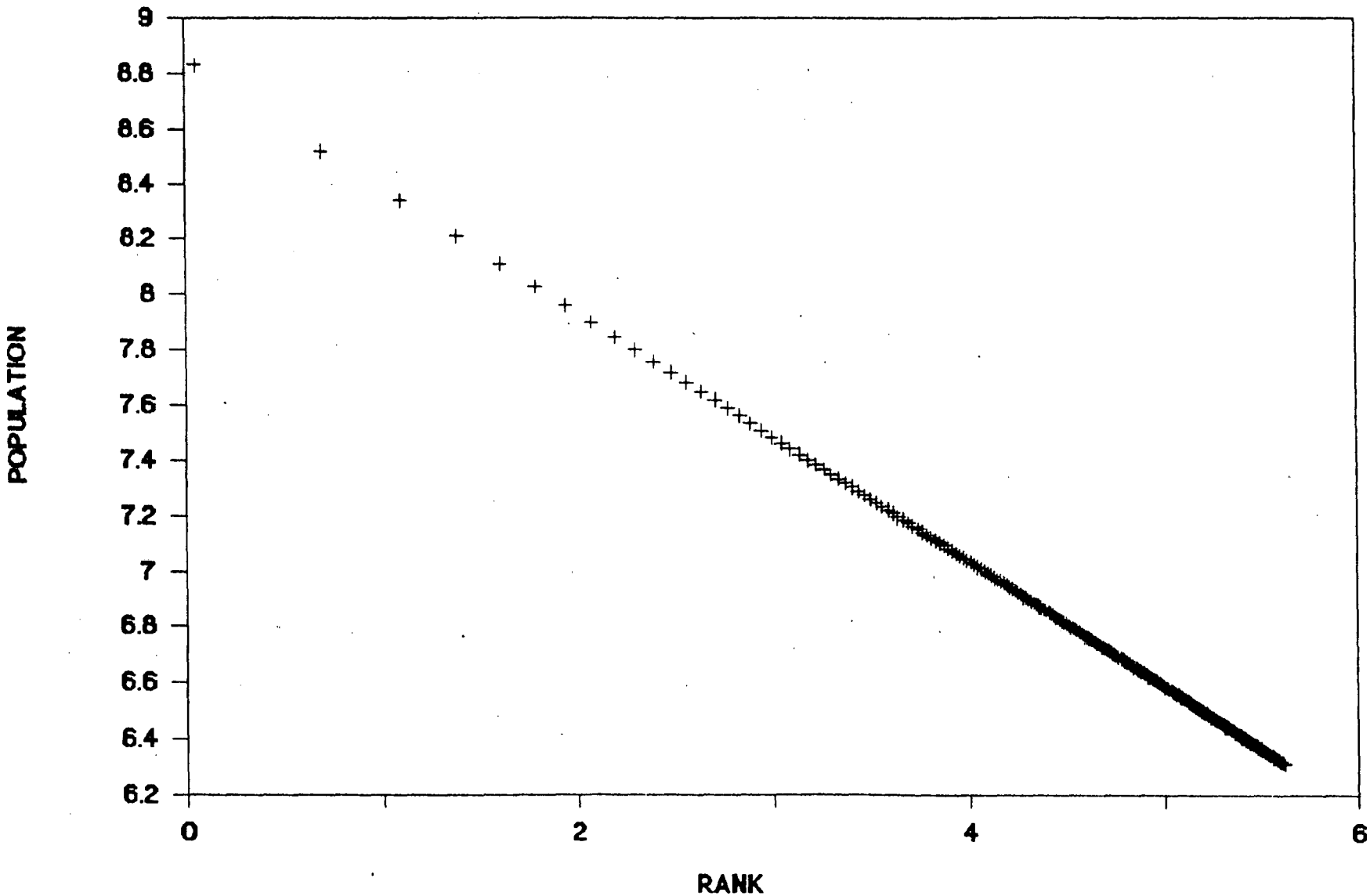
RANK SIZE RELATIONSHIP OF SETTLEMENTS

(SOUTHERN HILLY REGION)



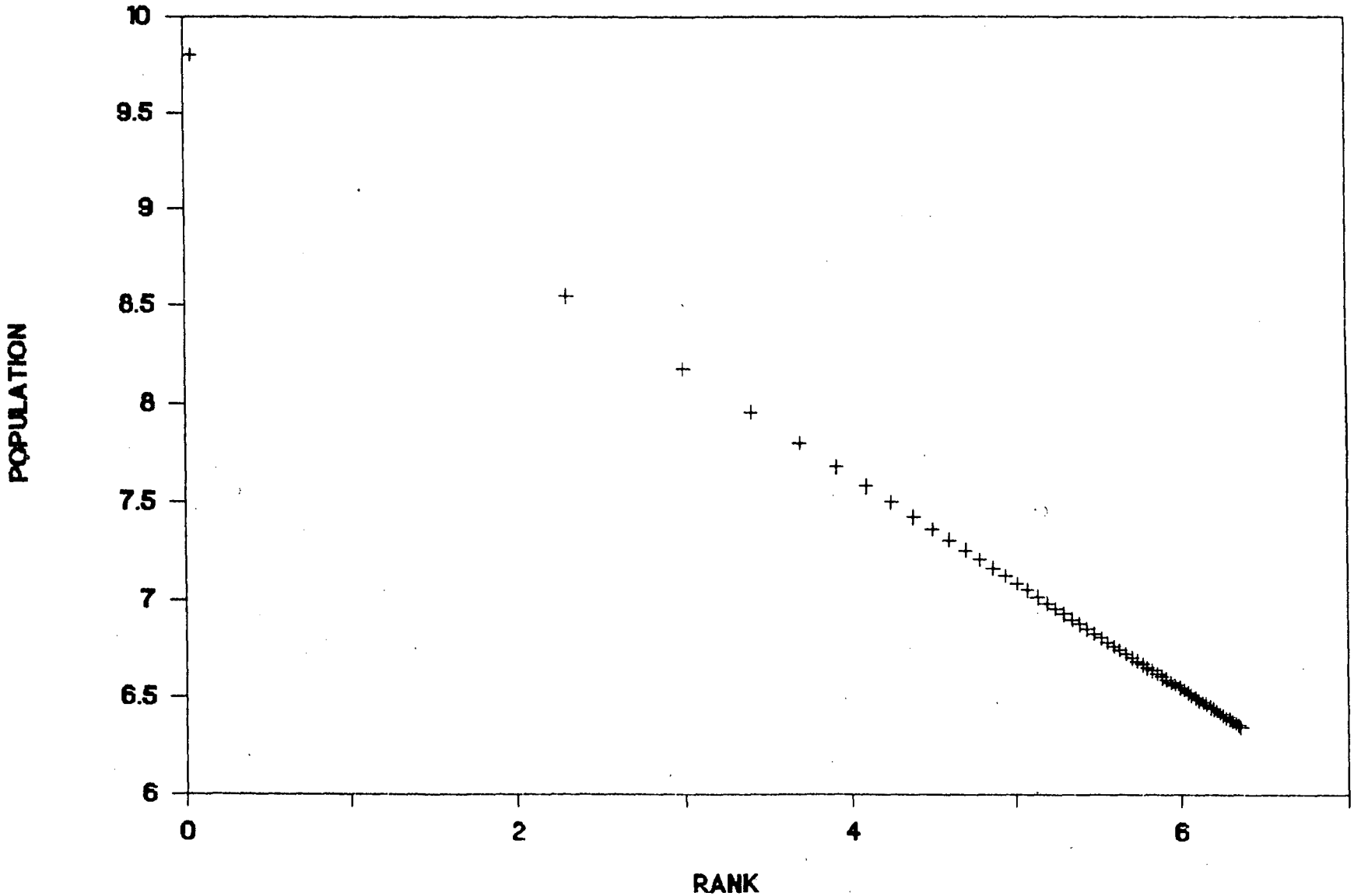
RANK SIZE RELATIONSHIP OF SETTLEMENTS

(CENTRAL DISSECTED PLATEAU)



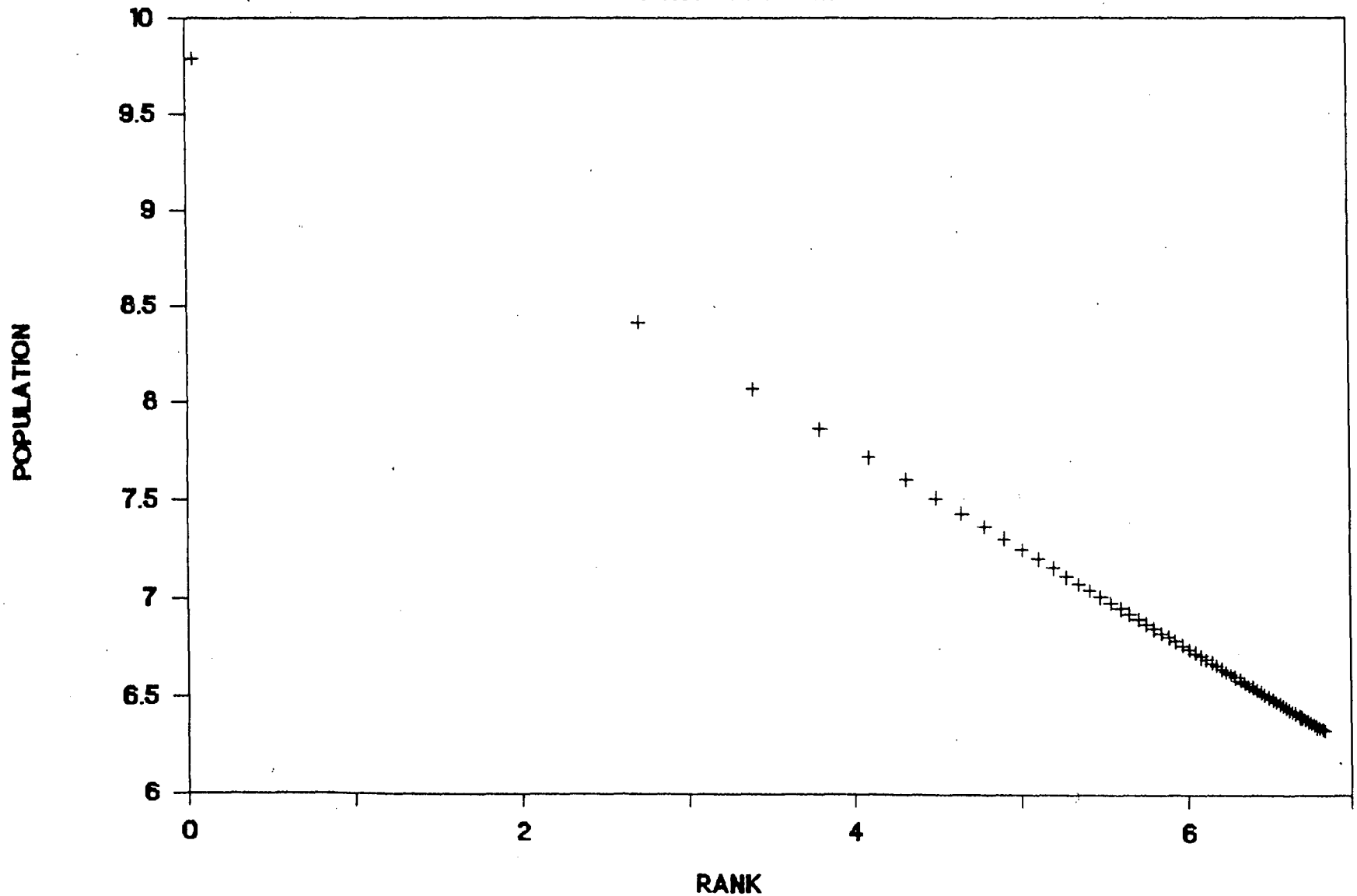
RANK SIZE RELATIONSHIP OF SETTLEMENTS

(NORTHERN PLAIN REGION)



RANK SIZE RELATIONSHIP OF SETTLEMENTS

(NORTH KOEL BASIN)



settlements in southern hilly tract (Graph No.5.1).

There are only two first ranking settlements in the North Koel basin.These are Barwadih and Latehar.. There are 13 second ranking settlements ande 35 third ranking settlements. In this region ,94settlements got the fourth rank and 124 fifth rank.

In the northern plain region there is two first ranking settlement. There are five settlements having second rank and thirteen third rank. Maximum number of settlements occupy the fifth rank.(Graph5.3)g) the rank correlation has been worked out the North-Koel basin there is no first and second ranking settlements. Even the third ranking settlements are very few. The maximum concentration of settlements are found in the fifth rank (Graph No.5.4).

The graphs showing a complete linear form shows that there is no major deviation from the expected rank of settlements.

HIERARCHY BASED ON AMENITIES

Man has to mould his habits and occupation according to the needs of the society in response to environment. Thus, the human settlement grows in size

as well as amenities which these provide. Settlement is a characteristic grouping of population into occupance units, together with the facilities in the form of houses and streets which serve the inhabitants." As the amenities are related with the socio-economic development of the region under study. Their degree of attainment may be used satisfactorily to evaluate the socio-economic status of settlements in a regional framework.

Keeping above facts in mind certain variables have been chosen. The variables chosen are educational, health facilities, drinking water, post and telegraph and transport and comunicational facilities. Even among these functions there are various sub-functions which are of varyig importance e.g. primary schools impart education and same work is also performed by the colleges. But both of them are qualitatively different. Hence, it is imperative to give varying weightages in order to do justice with these functions. In this exercise the weights to different sub-functions were assigned according to their distribution among all the settlements on the blasis of the principle that greater th scarlcity greater the importance in terms of centrality and, therefore, higher the weightage. The

Bhatt's formula is used in giving the weightages:

$$W_i = \frac{N}{F_i} \quad \text{and} \quad C_i \sum_{i=1}^{K} W_i X_{ij}$$

Fi = Number of settlements having the functions/sub-function.

N = Total number of settlements.

Wi = Weightage to the ith sub-function.

K = Total number of sub-functions under a given function.

Cij = Composite value for that functions for jth settlement.

Xij = Value of the ith sub-function in jth settlement.

After giving due weightage to each sub-function, the total value is added together to get the value of each amenity. Then the weighted scores of all the amenities have been added. After this the mean value of population and amenities of each setlements have been divided by the respective mean value. These normalised

---

1. Bhat, L.S. et.al (1976), Micro Level Planning - A Case Study of Karnal Area, Haryana, India", K.B. Publication, New Delhi, p.

Table 5.1

WEIGHTED ASSIGNED FOR THE VARIABLES

S.No.	Amenities	Weight Assigned			
		Southern Hilly Region	Central Region	Northern Plain Region	Region as a whole
1.	**Educational Amenities**				
	i. Primary School	1.16	1.10	1.09	1.10
	ii. Middle School	4.73	4.38	3.96	4.13
	iii. High School	10.14	69.00	16.63	20.20
	iv. Adult Literacy centre	-	5.63	38.80	14.52
	v. Training School	-	138.00	291.00	232.25
	vi. Industrial "	-	138.00	291.00	232.25
	vii. Other educational centre	-	69.00	116.50	103.22
	viii College	-	-	83.14	132.71
2.	**Medical Amenities**				
	i. Primary Health sub centre	14.20	18.40	29.10	23.22
	ii. Primary Health centre	17.75	27.60	83.14	44.24
	iii. Community Health worker	14.20	9.52	32.33	19.76
	iv. Maternity & child welfare centre	71.00	55.20	194.00	116.12
	v. Hospital	23.67	55.20	44.77	51.61
	vi. Health centre	35.50	46.00	97.00	77.42
	vii. Rural Practionner	71.00	69.00	29.10	38.71

Contd.....

S.No.	Amenities	Weight Assigned			
		Southern Hilly Region	Central Region	Northern Plain Region	Region as a whole
	viii Dispensary	71.ØØ	39.43	72.75	61.93
	ix. Family Planning centre	35.5Ø	27.6Ø	145.5Ø	1Ø3.22
	x. T. B. Hospital	-	-	297.ØØ	465.5Ø
3.	Drinking water				
	i. Well-water	1.15	1.Ø2	1.Ø9	1.Ø7
	ii. Rivers	3.55	3.Ø7	3.2Ø	3.19
	iii. Nalas	4.44	4.6Ø	5.34	5.Ø2
	iv. Canal	17.75	34.5Ø	12.93	25.31
	v. Hand pipe	8.88	4.76	3.83	4.26
	vi. Tankwater	3.74	3.94	6.61	5.23
	vii. Tubewell	71.ØØ	69.ØØ	83.14	77.52
4.	**Post & Telegraph**				
	i. Post Office	7.1Ø	6.13	6.19	6.19
	ii. Post & Telegraph office	35.5Ø	69.Ø	83.14	71.46
	iii. Phone	71.ØØ	131.8Ø	83.14	92.9Ø
5.	**Transport**				
	i. Bus stand	8.89	5.31	5.49	5.6Ø
	ii. Railway station	-	92.ØØ	97.ØØ	1Ø3.2Ø

scores have been added together to find out index which has been used to work out hierarchy. In order to find out the hierarchic level four categories have been taken using the formula:

(i) Less than Mean.

(ii) Mean to Mean+I.S.D.

(iii) Mean + I.S.D. to Mean+2.S.D.

(iv) Above Mean + 2 S.D.

Educational Amenities

Education, being the motivating factor for development, is an effective indicator of economic development. In the name of the availability of educational amenities primary, adult, middle and high schools, training schools, colleges and otherihstitutions have been taken into consideration..These hve been assigned different weightages.

In the southern region educational facilities are available in only 64 settlements out of 71 settlements taken into consideration. Out of these only eight settlements have been placed in the third category and only one settlement in the second category. Helta,

Banasi, Bishupur and Chopatoli in Bishunpur block and Serka, Hamikhas, Sidra and Netrahat in Mahudadanr block come in third category. Ambatoli in Mahuadonr block of Palamau district fall in second category of educational facility. Not a single settlement in the southern hilly region has the availability of high educational facility.

Out of these 275 settlement in the Central only 257 settlements have got educational facilities. Out of these 257 settlements only seven settlements viz. Nawagarh, Korhas in Latehar block, Mosiatu, Balu, Manika, Barwadih, Ranka Kalan and Chotti Satwarba are first ranking settlements in educational amenities. The last four at block headquarters naturally due to administrative facilities, educational institutions have grown up. Two settlements are in the second category and thirty in the third category. The remaining 218 villages are in the fourth category denoting majority of settlements have only primary educational facility.

Out 581 settlements,in the North Koel plain 513 settlements have till 1981 succeeded in receiving primary educational amenities. Out of these seven

occupied first rank. These are viz. Daltonganj, Baratola, Garhwa, Lalgarh, Kalyanpur, Chattarpur and Tisibar Kalyanpur. There is no settlement in the second category. Only thirty one settlements are in the third category of educational amenities. Remaining 475 settlements fall in the fourth category. Hierarchy based on educational amenities in this sub-region is highly uneven. Some settlements have been very well placed in these amenities whereas there are settlements where only primary schols are available.

Comparing the three sub-regions in the educational amenities we find that the level is very low in case of the southern hilly region whereas in the northern plain region only some first ranking settlements are found. No second ranking settlement is found in this region. Even the third ranking settlements are in very small numbers, denoting alarming need of education facility. The central region although not very well placed shows rather better hierarchic pattern when compared against the remaining two sub-regions.

Medical Facilities

To keep people safe from the different diseases, the medical facilities are a must. In general, the

people in rural areas devoid receiving medical treatmewnt. In place they use some local medicines. In this respect, medical facility doubly indicate development of the region at the one hand availability make people rather safe and on the other denote the people's consciousness. In the name of medical facilities dispensary, hospitals, maternity and child welfare centres, primary health centres, health centres, rural practitioners, T.B. hospitals have been taken into consideration.

Out of 71 settlements 18 were enjoying medical facility. Out of these only one settlement i.e. Netrahat emerged in first category, one in the second category i.e. Bishnupur, four in the third category and the remaining 12 setlements in the fourth category. Netrahat being a township and Bishnupur being a block headquarter have high value . The low level of medical facility is attributed partially to low density of population and partially to tribal concentration who are averse to medical treatment.

In the central dissected plateau sub-region only 63 settlements out of 275 settlements have been provided with the medical facilitie Only three settlements, viz.

Latehar, Bhandaria and Ranka Kalan are placed in the first category whereas Barwadih, Khura, Chhipidohar (all in Barwadih block and Chhota Satbarwa in Daltonganj are placed in second category. All of these except Khura and Chhoti Satbarwa are block headquarters .

Out of the 581ettlements only 108 settlements have been provided with medical flacility meaning thereby more than 80% of the settlements under consideration has not received only medical facility till the date. outof these 108 settlements five settlements viz. Daltonganj, Garhwa, Chainpur Meral and Bishrampur are placed in the first rank settlements. Nagar Intari is placed in the second rank. Allthese settlements are either district headquarters or are block headquartersr. This denotes that all these settlements have certain urban characteristics. 16 settlements were placed in the third category and the remaining 84 setlements are in the fourth rank.

When we look at the hierarchy of settlements having medical amenities we find that only administrative lcentres enjoy the first and second ranks. Rural areas whatever may be the size of settlements do not have medical facilities.

Drinking Water Facility

Water is the first necessity which is taken into consideration before establishing a household at a place since time immemorial. But, today it is not so important factor in the establishment of a settlement at a place. But where physiography puts hindrance in water availability, water facility controls the emergence and groth of rettlements to agreat extent.

So far as the southern hilly region is concerned availability of water facility is more important because the hard rocky surface makes the digging up of wells quite difficult. Moreover, water table is very low. Hence, settlements generally have developed along the streams . Out of 71 settlements - the water facility is found in all the settlements but only three settlements are grouped into first category i.e. Hamrup, Bishunpur and Netarhat, Mahuadanr and Amboti in Mahuadanr block have been placed into the second category. 13 settlements are placed in the third category and the remaining 53 settlements are in the fourth category.

In the central region, the water is found more easily. Therefore, four settlements occupy the first and

twenty four in the second category. Here water is no more the controlling factor for settlements In Northern plain region water table is high, land level and easy to dig up. Hence large settlements in population are not always occupy in higher categories, even some small settlements in this.while some of the large settlements in the lower categories.

Water facility has followed the population size only in southern region and to some extent in central dissected plateau zone but no more controlling factor in the northern plain region. Here settlements have emerged randomly. Even the small settlements are placed in higher categories and the more populated in lower categories.

Post and Telegraph Facilities

These are modern facilities which bring the people of the remote places nearer to each other. the message. These may be taken as indicators of development of a settlement.

Post and telegraph facilities are available sixteen settlements meaning there more than three-fourth of the settlements are without postal facilities. Out

of 16 settlements only one settlement i.e. Bishunpur occupies the first category whereas the two settlements Mahuadanr and Ambatoli are placed in the second category. Not a single settlement is placed in the third category.

In the central region outof the 275 settlements only 49settlemens have been provided with postal facilities. Out of these only two settlements i.e. Latehar and Khura are placed in the first category whereas three settlements are in the second category i.e. Manika, Chhipidohar and Ranka Kalan. The remaining settlements having the facility are placed in the fourth category.

In the northern plain region out of 581 settlements only 111 settlements have been provided postal facilities. Out of these five settlements are placed in the first categories. These are Daltonganj, Garhwa, Kalhar, Lesliganj and Pandua Sirha, Patan and Nagar Untalri come in the second category. The remaining settlements fall in the fourth category.

Transport

The means of transport have made the movement

throughout the world very easy. The movement of people and goods have become easier. In this way means of transport and accelerate the pace of development.Therefore,, the means of transport are very good indicators of development

In the southern region only 2 out of 71 settlements are linked by the roads. Even these settlements are placed in the lowest category. The adverse physiographic condition i.e. undulating surface, dense forest cover and hard rocky surface, are the main obstacles in the development of transport in this part.

In the central part out of 275 settlements 54 settlements are linked with the roadways or railways meaning more than 80% of the villages are still to be linked with the roadways. Out of 54 settlements five settlements are linked with roadwaysl and railways, both hence occupy the first category. These are Barwadih, Barkadih, Kethki and Ranka Kalan. Other settlements are placed in the fourth category.

In the northern plains out of 581 settlements 145 places are linked with either roadways or railways. Daltonganj, Garhwa, Pandwa and Mohsinnaar are placed in the first category. Other settlements occupy fourth

category. Due to plain surface band, the potential for the development of transport are higher in this region.

Heirarchy based on Population and Amenities

When both populatuon and amenities are taken into consideration the hierarchy which emerges present a gloomy picture. Out of 928 settlement studied 746 settlements are placed in the lowest level of hierarchy. These account for 80.38% of the total settlements. 146 settlement i.e 15.73 percent of the total come in the third category. Only 4% of the total settlements fall in the upper two categories. This proportion gives a vivid picture of the economic condition of the North Koel basin(Map).

If we take into consideration the southern region we find that not a single settlement fall in the first category. Only three settlements are placed in the second category. The position of the northern plain region is not less alarming. More than 85% of the settlements fall in the lowest category, 12% in the third category meaning only 3% villages are placed in the two higer categories. In the central region 68% of the settlements are placed in the lowest category, 24.2% in the third category, 3.27% in the second

category and 9.0% in the first category. In this way the position of the central region is a bit better than the remaining two sub-regions of the north koel river basin.

Relationship between population and Amenities/Services:

As stated earlier, population to a greater extent attract amenities/facilities. Hence it is expected that bigger settlements in terms of population will have higher level of amenitie. In order to find out relationship between the two coefficient of correlation has been worked out Karl Pearson's formula.

$$r = \frac{Exy - \frac{ExEy}{N}}{\sqrt{\Sigma X^2 - \frac{(\Sigma X)^2}{N}}\sqrt{\Sigma Y^2 - \frac{(\Sigma Y)^2}{N}}}$$

Relation between Population and educational facilities

Bigger villages generally attract higher educational facilities. In the southern hilly region the value of r comes to 0.6333 meaning thereby the educational facilities have fairly high correlation with the population size of settlements. In the central

plateau region r = 0.6119 hence this region also has fairly high correlation. The same trend is seen in the plain with the value of r being 0.6019. For the region a whole r comes 0.7691 showing strong relation between educational facilities and population size of the settlement. Therefore, it may be concluded that population size of settlements to a greater degree control the level of educational facility in the region.

Relation between Population and Drinking Water Facility

The southern hilly region has fairly good correlation between populationsize and drinking water facility. Getting drinking water in this region is not easy . It seems people while settling preferred to stay near water bodies and in subsequent time growth took place at these sites . Dispersal didn't take place without taking into consideration the basic necessity of water. The value of r for the southern hily region is 0.5242. In the central and northern region the value of r are 0.2090 and 0.3077 respectively. Here the availability of drinking water is not an acute problem. As stated earlier due to high water table in the northern plain and alluvial soil it is easy to dig the wells. Hence, the availabity of water was not a major

constant. That is why very weak correlation is found. In the central dissected plateau the frequent availability of streams and in northern and north-western part it is not difficult to dig wells. The value of r for the region as a whole comes to 0.2881, it also shows weak correlation between drinking water facilities and population size of settlement.

Relation between Population and Medical certificate

Availability of medical facilities is very much important for the people residing in the area. There is respectively higher threshold value for different medical facilities. Hence, if the population size of a settlement is bigger, it becomes easy to establish medical facility. But there are other factors, too, which play important role in providing medical amenities in a settlement. In the southern hilly region fairly good correlation is found between medical facilities and population size. The value of r = 0.5447. The value of r is 0.4884 and 0.6620 in central and northern region respectively. . The value of r is 0.6248 for the region has a whole. It shows that larger the size of population greater would be the availability of medical facilities.

Relation between Population and Post & Telegraph

Post & telegraph is not so frequently found facility as the drinking water and education are. It may and may not be available in every settlement.. The value r came to be = 0.3532 in southern region 0.3133 in central region. Thus, in these two sub-regions there exists a poor correlation between population size and the availability of post and telegraph facilaities. In the northern plain region there is fairly good correlation (r = 0.5419) between the two. Thus, here bigger population size has attracted post and telegraph facilities towards it. Larger villages have better provided these facilities.

Relation between Population and Transport

Transport and communication facilities are very important for the development of the area. Moreover, effort is also made to link every village by the means of transport for easy and immediate movement people and goods. In this context it is expected that the large sized settlements should be linked with these

facilities. But, southern hilly and central plateau show very poor correlation between population size and transport and communication facilities. The value of r in case of these two regions is 0.2601 and 0.3303 respectively. The possible cause of this poor correlation seems to be the adverse physiographic condition. In the northern plain region population size is strongly correlated with the the transport and communication facilities. The r value is 0.6283. Here, there is no hindrance in the development of these facilities like the remaining two regions. In the North-Koel basin the correlation betwen the two is also not very encouraging. The r value is 0.5332.

Relation between Population size and all the Facilities

The correlation has also been worked out taking all the facilities together. The value of r comes out 0.6263, 0.6013 and 0.7476 for the southern hilly central and northern plain region respectively. The first two sub-regions have fairly good correlation between population size and the availability of amenities. In case of northern plain region, the strong correlation is found between population size and the amenities/facilities. On this basis it may be stated that larger the size of population in a settlement

higher would be the level of amenities available.

The hierarchy of settlements worked on the basis of rank size rule presents that the maximum concentration of settlements are found in the fourth and fifth ranks in the North Koel Basin. The hierarchy on the basis of amenities presents that maximum concentration is found in urban or semi-urban or administrative headquarters. The rural settlements are generally lacking in amenities. The hierarchy worked out the basis of population and amenities taken together, reveal the alarming disparities in inter-regional and intra-regional. Population has good correlation value with educational amenities. The weakest correlation is found with Drinking Water except hilly region. Population has the strongest correlation value in the amenities in northern plain region (0.7476).

SUMMARY AND CONCLUSIONS

Settlement is the best expression of the state of civilization of the region. The strructure of settlement, in this context, indirectly unfolds various aspects of socio-economic and ecological aspects of the region. The cultural advancement of the people gets reflected in the structure of settlements. The North Koel basin which presents a high degree of physiographic, cultural, ethnic variations presents an ideal region for the study of settlements. Here, the impact of North Koel river on the settlement structure seems enormous.

The population size of settlements goes on increasing from south to north and from the boundary zones to the North Koel river valley. The areal spread of village just present opposite picture - the size of villages in terms of area goes on decreasing from south towards north and away from the North Koel river. The lack of water facility, greater depth of water table dense forest cover in fertile thin soil highly amenable to erosion can sustain only limited persons. That is why only small sized settlements are found in the southern region. Moreover, the majority of the people

living in these areas are tribal who, by nature, prefer to stay in small bands in place of large villages. The density of population is also highly varied. In the southern hilly region the average density is 60 persons per km^2 whereas the density in the northern plain region is almost five times higher. The harsh physiographic conditions and lack of developmental activities in the southern region are responsible for the lower density whereas plain land coupled with some degree of developmental effort has been responsible for higher population density in the region.

The spacing of settlements to a great extent is controlled by the North Koel river. The spacing around the river is low to very low but as we go away towards the boundary inter-settlements the spacing goes on increrasing. The spacing is very low in the northern plain region where plain, land irrigation facilities, lack of vegetation cover are responsible for low spacing. Moreover, the existing caste structure has helped in the low spacing. The lack of these facilities and rugged terrain in the southern hilly region are responsible for high to very very inter-settlements spacing.

Compact type of settlements are found in those blocks of northern plain which have vast arable land, long history of settlements, presence of major routes of historical migration; the lack of hard rocky surface. On the other hard, sprinkled settlements are found in upper reaches of the North Koel river (southern hilly region region and Bhandaria block). The factors that induce sprinkled settlements are the dense forest cover, land badly affected by gully erosion, large ravinous tract, highly leached lateritic soil etc.

The pattern of settlements is also varying. The southern hilly region shows random pattern whereas the central region shows random to randomly even. The northern plain shows more regular than random pattern.

Most of the villages in the northern plain show rectangular to square form which reflects the dominant agrarian structrure in the region. The rectangular forms are characterized in those villages of which economic base is agriculture. In the central plateau, the dominant form is linear reflecting that most of the settlements have developed along the roadside denoting very recent development of these settlement. Moreover, circular, semi-circular, t-shaped forms are also seen in

some places.

Hierarchy of settlements has been worked out as (a) the population size using rank size rule and as (b) the availability of amenities i.e. educational, medical, drinking water, post and telegraph and transport facilities. Maximum concentration of settlements are in the fifth rank. The rank size among the three sub-regions is better fitted in central plateau zone. The developmental index prepared on the basis of population and amenities taken together presents gloomy picture. Out of the 928 settlements taken under consideration 746 settlements occupy fourth or lowest category meaning thereby 80% of the total settlements are the bottom layer. When area-wise picture is taken -- in southern region 83% of the settlements and 84.16% in northern plain region are at the bottom of the hierarchy. The percentage of settlements in the lowest category is rather low in the central area. The proportion of settlements in the first and second categories is very low. Not more than 4% of the total settlements fall in these categories denoting higher degre of disparity in facility/services provided. Moreover, intensive study show that even those first or second ranking

settlements are mostly administrative headquarters. That means even that facility is induced in order to provide for the administrative headquarters. These settlements are situated on either side of the Koel river denoting commanding influence of the North Koel river.

The main findings of the present study are as follows:

(1) There exists negative correlation between size and spacing of settlements - larger the size of settlements lower would be the magnitude of spacing. Thus, we find that this is contradicting against the general rule in India, of settlements is larger, larger the magnitude of spacing.

(ii) Type of settlement in the basin is largely controlled by the physiographic condition. Harsh physiographic condition in the southern hilly region has given birth to sprinkled settlements whereas even terrain has given rise to compact settlements in northern plain.

(iii) Form of setlement is controlled by cultural-ecological factors in the northern central region. For example, rectangular form in the northern plain region

is frequently found which is the characteristic of agrarian villages. On the other hand, linear settlements are found in central part along transport routes which also denote the cultural factor controlling the form.

(iv) There is greater degree of disparity in facility/amenities provided to the region. The region is quite poor in the facilities provided.

(v) There exists positive correlation between population size and the amenities provided. Larger population size has succeeded in attracting greater number of amenities. The relation is highly strong in case of northern plain.

BIBLIOGRAPHY

BOOKS

Abler, R., J.S. Adams and P Gould (1971), "Spatial Organisation: the Geographical view of the World", Prentice Hall, Englewoodcliffs, New Jersey.

Ahmed, Enyat (1965), "Bihar: A Physical, Economic and Regional Geography", Ranchi University Press, Ranchi.

_____,(1979), "Social and Geographical Aspects of Human Settlements", Classical Publications, New Delhi.

Bhat, L.S. et.al (1976), "Micro Level Planning- A Case Study of Karnal Area, Haryana, India, K.B. Publications, New Delhi.

Chisolm, M. (1962), "Rural Settlements and Land Use", London, Hutchinson.

Cloke, P.J. (1983), "Introduction to Rural Settlements Planning", Methuen, London.

Demangeon, Albert (1927), "La Geographie de L' habitat rural", Anals de geograhie, XXXVI, pp.97-114 translated, "Readings in Cultural Geography" ed. by P.L. Wagnei and M.W. Mikesell, The University of Chicago Press, Chicago, 1962.

Desai, Anjana P. (1985), "Spatial Aspects of Settlement Patterns - A Study of the Narmada Command Area of Mahesana District - Gujarat", Concept Publishing Company, New Delhi.

Geddes, A. (1982), "Man and land in South Asia", Concept Publishing Company, New Delhi.

Grover, Neelam (1985), "Rural Settlements: A Cultural Geographical Analysis - A Case Study of Northern Haryana", Inter-India Publication, New Delhi.

Hagget, P. (1965), "Locational Analysis in Human Geography", Edward Arnold, London.

Hudson, F.S. (1970), "A Geography of Settlements", McDonald and Evans, London.

Lal, K.M.(1988), "Population Settements Development and Planning", Chugh Publication, Allahabad.

Mahmood, Aslam (1993), "Statistical Methods in Geographical Studies", Rajesh Publications, New Delhi.

Mandal, R.B., (1979), "Introduction to Rural Settlements", Concent Publishing Company, New Delhi.

_____, (1981), "Planned Development of Rural Settlement", Concept Publishing Company, New Delhi.

Mukherjee, A.B. and A. Ahmed (ed), (1985), "India : Culture, society and Economy - Geographical Essays in Honour of Ashok Mitra", Inter-India Publications, New Delhi.

Sharma, A.N. (1981), "Spatial Approach of District Planning - A Case Study of Karnal District", Concept Publishing Company, New Delhi.

Sharma, R.C. (1972), "Settlements Geography of the Indian Desert", Kumar Brothers, New Delhi.

Singh, A.K. (1985), "Population and Settlements in Uttar Pradesh - A Geographical Analysis", Inter-India Publications, New Delhi.

Singh, Jagdish (1985), "Upper Damodar Valley- A Study in Settlement Geography", Inter-India Publications, New Delhi.

Singh, R.L. et.al (1972), "Readings in Rural Settlements Geography", NGSI, Varanasi.

_____, (1976), "Dimension of Rural Settlements" B.H.U. Press, Varanasi.

Singh, R.P.& Anil Kumar (1970), "Monograph of Bihar", Bharti Bhawan, Patna.

Smith, David. M (1977), "Patterns in Human Geography", Genguin Books, harmondsworth, Middle X England.

Tiwari, R.C. "Settlement System in Rural India - A Case

Study of the Lower Ganga-Yamuna Doab", The Allahabad Geographical Society, Allahabad.

Wanmali, S. (1987), "Geography of Rural Service Systems in India", B.R. Publishing Corporation, Delhi.

Whyte, R.O. (1982), "The Spatial Geography of Rural Economics" Oxford University Press, New Delhi.

ARTICLES

Ahmed, Enayat, (1952), "Rural Settlement Types in the U.P.", Annals of the Association of American Geographers, Vol.42, pp.223-246.

_____, (1962), "Indian Village patterns", Geographical Outlook, pp.5-15.

Ahmed, N. (1950), "The Pattern of Rural Settlement in East Pakistan", Geographical Review, Vol.XLVI, pp.388-398.

Ali, S.M. (1982), "Population and Settlement in the Ghaggar Plain", Indian Geographical Journal, Vol.XVII, pp.157-182.

Annas, M. (1954), "The Pattern of Rural Settlement in the Sub Himalayan Region", Geographer, Vol.6, No.2, pp.23-34.

Aurousseu, M. (1920), "Arrangement of Rural Population", Geographical Review, Vol.X, pp.223-240.

Bhattacharya, Rabindranath (1975), "Settlement Pattern in Deltaic West Bengal", Geographical Review of India, Vol.37, pp.305-309.

Birch, Brian P. "Pattern and Process in Frontier Farm Settlement", Geographical Review of India, Vol.21, pp.168-171.

Cautinho, O. and Ramamurthy K. (1972), "A Study of Rural Settlement Pattern in Maharashtra", Indian Geographical Journal, Vol.47, (1&2), pp.26-40.

Clark, P.J. and Evans, P.C. (1954), "Distance to Nearest

Neighbour as a Measure of Spatial Relationship in Population", Ecology, Vol.35, pp.445-453.

Despande, C.D. (1942), "Settlement Types of Bombay- Karnataka", Indian Geographical Journal, Vol.17, pp.115-131.

Dickinson, R.E. (1949), "Rural Settlements in the German Lands: Annals of the Association of American Geographers", Vol.39, pp.239-263.

Gupta, U.C. (1975), "Typical Rural Dwellings in the Bundelkhand Region", Geographical Review of India, Vol.37, No.2, pp.189-195.

Hagget, P. and Gundwardena, K.A. (1964), "Determination of Population Threshold for Settlements Functions by Reed Muench Method", Professional Geographer, Vol.16, pp.6-9.

Hall, Robert Burnett, (1931), "Some Rural Settlement Farms in Japan", Geographical Review, Vol.21, pp.92-123.

James, Emrys, (1945), "Settlement Pattern in the Middle Teify Valley", Geography, Vol.30, No.150, pp.103-111.

Jordon, Terry G. (1966), "On the Nature of Settlement Geography", Professional Geographer, Vol.18(1), pp.26-28.

Kumbhar, A.B. and Deshmukh, P.W.(1958), "Rural Settlement Pattern in Nira Valley, Maharashtra", Geographical Review of India, Vol.50, pp.87-91.

Lahiri, R. (1950), "Settlement Types in Ajay Basin", Calcutta Geographical Review, Vol.12, No.4.

Mann, R.S. (1974), "Rural Settlements Size in Hansi Tehsil (Haryana)", Decan Geographer, Vol.12, pp.27-32.

Mather, E.C.(1944), "A Linear Distance Map of Farm Population in the U.S.", Annals of the Association of American Geographers, Vol.34, pp.173-180.

Mishra, H.N. (1976), "Hierarchy of Towns in the Umland of Allahabad", Decan Geographer, Vol.24, pp.34-37.

Mukerjee, A.B. (1969), "Spacing of Rural Settlements in Andhra Pradesh - A Spatial Interpretation", Geographical Outlook, Vol.6.

_____, (1974), "Spacing of Settelements in Upper Ganga Yamuna Doab", Geographical Review of India, Vol.26. No.2.

_____, (1976), "Rural Settlements in the Chandigarh Siwalik Hills: An Application of Multiple Collinear Diffusion Model", Decan Geographers, vol.xiv. No.2, pp.105-134.

Mukerjee A.B. and Mira Das (1964), "Settlement Pattern in the Puri-Chilka Coastal tract", Geographical Review of India, Vol.26, pp.149-152.

Nand, Nitya (1966), "Distribution and Spatial Arrangement of Rural Population in East Rajasthan India", Annals of the Association of American Geographers, Vol.26, pp.205-219.

Nitz, H.J. (1972), "Objectives and Methods of Geographical Research in the Evolution of Rural Settlement Regions", National Geographer, Vol.vii, pp.1-12.

Philbrick, A.K. (1957), "Principles of Areal Functional Organisation in Regional Human Geography", Economic Geography, Vol.33, pp.299-336.

Prasad, A., "The Types of Rural Settlements in Chotanagpur" Population and Settlement Geography selected papers International Geographical Congress, pp.207-210.

Robinson A.H. and J.A. Barnes (1940), "A New Method for the Representation of Dispersed Rural Population", Geographical Review, Vol.30, pp.134-137.

Singh, Arvind Kumar (1985), "The Areal Functional Gaps and Planning for Functional Integration: A Case Study of Lav Block, U.P.", National Geographical Journal of India, Vol.31, Part-2, pp.86-98.

Singh, Iqbal and V.K. Asthana (1976), "Spatial Distribution and Types of Rural Settlements in the Foot-hill Zones of Haryana", National Geographical Journal of India, Vol.22, pp.99-106.

Singh, Ram Bali (1969), "Rural Settlement Types and Their Distribution" National Geographical Journal of India", Vol.14, pp.91-104.

Singh, R.Y., "Hierarchy of Rural Settlements and Identification of Locational functional gaps in Upper Chamanvati Basin" in Geographical Dimension in Rural Settlements", ed. R.L. Singh, et.al pp.173-183.

Tiwari, R.C. (1972), "A Critique of Research Methodology of Rural Settlements in India", National Geographers, Vol.VII, pp.69-77.

_____, (1973), "An Appraisal of Location Theories for Rural Settlements", National Geographer, Vol.VIII.

Trewartha, G.T. (1946), "Types of Rural Settlements in Colonial America", Geographical Review, Vol.36, pp.568-596.

Verma, L.N. (1985), "Types of Rural Settlement in Gondwana basin of South Baghelkhand, Madhya Pradesh", Geographical Review of India, Vol.47, pp.91-95.

Vats, P.C. and Singh S. (1976), "Geomorphic Influence on Settlements- A Quantitative Approach", Decan Geographer, Vol.XIV, No.2, pp.27-33.

GOVERNMENT PUBLICATIONS

Bihar District Gazetters, Palamau, 1961.

Bihar District Gazetters, Ranchi, 1968.

APPENDIX

WEIGHTED SCORES OF AMENITIES

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
SOUTHERN HILLY REGION											
BISHUNPUR											
Nirosi	795	1.16	0.00	1.15	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Jamti	996	1.16	0.00	4.70	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Katiya	812	4.73	14.20	9.33	0.00	0.00	4.13	23.22	11.32	0.00	0.00
Ghaghara	699	1.16	14.20	9.14	0.00	0.00	1.10	23.22	9.78	0.00	0.00
Baualat	677	1.16	0.00	4.70	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Rehaldag	575	1.16	0.00	1.15	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Beti	733	1.16	0.00	8.44	0.00	0.00	1.10	0.00	9.99	0.00	0.00
Banasi	1854	16.03	71.00	74.74	7.10	8.89	25.43	61.93	1.07	6.19	5.60
Ankuri	576	1.16	0.00	1.15	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Narmad	1996	1.16	14.20	4.89	0.00	0.00	1.10	23.22	6.30	0.00	0.00
Amtipaui	954	1.16	0.00	13.32	0.00	0.00	0.00	0.00	9.28	0.00	0.00
Gardari	1690	5.29	0.00	1.15	71.00	0.00	5.23	0.00	1.07	6.19	0.00
Kujam	858	5.89	71.00	14.47	0.00	0.00	1.10	0.00	6.89	0.00	0.00
Dewaragoes	675	1.16	0.00	1.15	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Chirodih	1077	1.16	0.00	9.36	0.00	0.00	1.10	0.00	11.32	0.00	0.00
Champatoh	694	5.89	14.20	14.47	0.00	0.00	5.23	23.22	6.89	0.00	0.00
Oreya	662	5.89	0.00	12.88	0.00	0.00	1.10	0.00	15.01	0.00	0.00
Bahargara	862	1.16	0.00	27.88	0.00	0.00	1.10	0.00	15.01	0.00	0.00
Arangloya	513	1.16	0.00	15.35	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Bishunpur	884	16.02	159.75	21.76	78.10	8.89	25.43	263.58	77.42	99.89	5.60

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Helta	811	2.32	14.20	21.76	0.00	0.00	2.20	19.76	15.81	0.00	0.00
Chopatolli	739	17.19	0.00	12.62	0.00	0.00	26.53	0.00	9.49	0.00	5.60
Serka	1259	12.46	0.00	89.02	0.00	0.00	22.40	0.00	92.43	0.00	0.00
Hawrup	659	5.89	0.00	5.59	0.00	0.00	5.23	0.00	6.30	0.00	0.00
Kachki	715	1.16	0.00	9.14	0.00	0.00	1.10	0.00	9.78	0.00	0.00
MAHUADANR											
Jamdih	868	1.16	0.00	1.15	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Tamoli	581	1.16	0.00	9.14	0.00	0.00	1.10	0.00	15.81	0.00	0.00
Buenrital	578	1.16	14.20	4.89	0.00	0.00	0.00	0.00	5.33	0.00	0.00
Akri	680	0.00	0.00	4.89	7.10	8.89	1.10	23.22	6.30	6.19	5.60
Durup	558	1.16	14.20	12.86	0.00	0.00	1.10	0.00	18.70	0.00	0.00
Chatakpur	1044	1.16	67.45	4.89	7.10	0.00	1.10	141.42	6.30	6.19	0.00
Chiro	818	1.16	0.00	4.70	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Mirg	546	1.16	0.00	1.15	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Ashari	625	1.16	0.00	1.15	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Orsa	1478	0.00	0.00	1.15	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Surkain	620	5.89	0.00	1.15	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Hamikhas	1352	11.78	17.50	10.03	7.10	0.00	10.46	103.22	9.02	6.19	0.00
Parhi	565	0.00	0.00	1.15	7.10	0.00	1.10	0.00	1.07	6.19	0.00
Regain	766	1.16	0.00	4.89	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Sugi	547	0.00	0.00	1.15	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Chainpur	757	1.16	0.00	1.15	0.00	0.00	0.00	0.00	1.07	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Gothgaon	1050	0.00	0.00	1.15	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Seyarburhai	652	4.73	0.00	8.44	0.00	8.89	4.13	0.00	9.99	0.00	5.60
Aintatoki	694	2.32	0.00	1.15	0.00	0.00	2.20	0.00	1.07	0.00	0.00
Rajdanda	618	1.16	0.00	26.19	0.00	8.89	1.10	0.00	38.07	0.00	0.00
Parhatoli	807	1.16	0.00	22.45	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Dipatoli	521	0.00	0.00	1.15	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Mahuatoli	1300	1.16	94.67	31.52	35.50	8.89	1.10	51.61	38.07	71.46	5.60
Ambatoli	2650	33.22	94.67	18.90	35.50	0.00	51.96	129.03	26.38	71.46	0.00
Bartoli	566	0.00	0.00	1.15	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Champa	1219	4.73	0.00	1.15	0.00	0.00	21.30	51.61	1.07	6.19	0.00
Sudra	791	11.30	23.67	1.15	0.00	0.00	21.30	0.00	1.07	0.00	0.00
Kurund	646	1.16	0.00	4.89	0.00	0.00	0.00	0.00	6.30	0.00	0.00
Garh Burhai	576	1.16	0.00	1.15	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Charaannwa	642	1.16	0.00	1.15	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Netarhat	2900	21.43	201.17	79.00	7.10	8.89	41.50	682.26	81.68	6.19	5.60
GHAGHARA											
Tendar	664	2.32	0.00	4.70	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Turgaon	590	0.00	0.00	1.15	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Gutnajokari	762	0.00	0.00	4.70	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Bimaria	623	0.00	0.00	4.70	0.00	0.00	1.10	0.00	10.35	0.00	0.00
Serengdag	660	1.16	0.00	10.47	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Selgi	742	1.16	0.00	4.70	0.00	0.00	2.20	0.00	6.30	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
SENHA											
Tulan	1041	2.32	0.00	5.59	0.00	0.00	1.10	0.00	4.76	0.00	0.00
CHAINPUR											
Banda	569	1.16	14.20	4.70	0.00	0.00	1.10	19.76	6.30	6.19	0.00
KISKO											
Pesrar	604	1.16	106.50	4.93	7.10	0.00	1.10	193.54	6.30	0.00	0.00
Rosad	1000	1.16	0.00	10.83	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Pakhar	1100	1.16	0.00	4.44	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bunropar	757	0.00	14.20	1.15	0.00	0.00	0.00	19.76	1.07	0.00	0.00
Deoria	505	0.00	0.00	1.15	0.00	0.00	0.00	64.00	1.07	0.00	0.00
BARU											
Baresnar	634	4.73	31.95	13.58	7.10	8.89	4.13	0.00	4.76	6.19	5.60
Mayapur	634	1.16	0.00	0.00	0.00	0.00	1.10	0.00	1.07	0.00	0.00
CENTRAL DISSECTED PLATEAU											
SIMARIA											
Banwar	536	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Nawadih	774	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Rimni	641	6.73	0.00	1.02	0.00	0.00	15.62	0.00	1.07	0.00	0.00
Hutrah	524	0.00	0.00	1.02	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Herum	756	1.10	0.00	5.00	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Lawalung	1047	11.11	186.63	5.70	6.13	5.31	19.75	258.42	5.33	6.19	5.60
Korehi	518	1.10	0.00	5.62	0.00	0.00	1.10	0.00	6.09	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Jina Khurud	754	11.11	9.52	5.78	0.00	0.00	19.75	19.76	5.33	0.00	0.00
Salgi	587	5.63	9.52	4.96	0.00	0.00	14.52	19.76	6.30	0.00	0.00
Kuti Rangania	1095	12.36	9.52	4.96	0.00	0.00	30.15	19.76	6.30	0.00	0.00
Tunday	672	5.63	9.52	4.96	0.00	0.00	14.52	19.76	6.30	0.00	0.00
Gothai	516	5.63	0.00	5.80	0.00	0.00	14.52	0.00	6.09	0.00	0.00
Jobra	1066	6.73	46.00	8.03	6.13	5.31	15.62	77.42	9.02	6.19	5.60
Nawadih	705	1.10	9.52	9.56	0.00	0.00	1.10	19.76	11.32	0.00	0.00
Jeudu	805	1.10	0.00	9.56	0.00	0.00	1.10	0.00	11.32	0.00	0.00
Dundua	821	1.10	69.00	1.02	6.13	5.31	1.10	38.71	1.07	6.19	5.60
Bogra	991	22.37	0.00	8.03	0.00	5.31	28.01	0.00	9.02	0.00	5.60
Serandag	1186	1.10	0.00	4.96	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Ara-Athi	598	12.36	0.00	1.02	0.00	0.00	30.15	0.00	1.07	0.00	0.00
Sabana	1235	12.36	0.00	4.09	0.00	0.00	30.15	0.00	4.76	0.00	0.00
Khapia	510	6.76	0.00	4.09	0.00	0.00	15.62	0.00	4.76	0.00	0.00
Sohar Kalan	644	1.10	9.52	8.03	0.00	0.00	1.10	19.76	82.18	0.00	0.00
Khatia	543	6.73	9.52	4.09	0.00	0.00	15.62	19.76	4.76	0.00	0.00
CHANDWA											
Serak	1766	1.10	0.00	8.03	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Darea	576	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Renchi	686	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bauhardi	756	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bari	674	5.48	73.60	1.02	0.00	0.00	5.23	126.44	1.07	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Rampur	855	2.20	0.00	1.02	0.00	0.00	2.20	0.00	1.07	0.00	0.00
Kita	810	12.36	0.00	48.09	0.00	0.00	30.15	0.00	9.78	0.00	0.00
Sos	848	1.10	0.00	48.09	0.00	0.00	1.10	0.00	9.78	0.00	0.00
An	1019	11.11	0.00	86.50	0.00	0.00	19.75	0.00	49.13	0.00	0.00
Serang	1188	4.38	0.00	87.35	6.13	5.31	4.13	0.00	39.35	6.19	5.60
Chetar	1192	1.10	0.00	52.85	0.00	0.00	1.10	0.00	14.04	0.00	0.00
LATEHAR											
Bendi	549	1.10	0.00	0.03	0.00	0.00	1.10	0.00	9.99	0.00	0.00
Hatwag	663	1.10	0.00	4.09	0.00	5.31	1.10	0.00	4.76	0.00	5.60
Parsahi	884	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Godna	563	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Nareshgarh	577	0.00	0.00	4.09	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Nawagarh	2261	73.38	37.44	4.09	6.13	0.00	107.84	62.74	4.76	6.19	0.00
Tarwadih	1192	1.10	37.44	12.79	0.00	0.00	1.10	62.74	0.00	0.00	0.00
Manan Distag	949	4.38	0.00	1.02	0.00	0.00	4.13	0.00	1.07	0.00	0.00
Baj Kua	521	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bariatu Jagir	582	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Dhankara	1063	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Hundru	538	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Pandepur	663	4.38	0.00	5.04	0.00	0.00	4.13	0.00	6.30	0.00	0.00
Karhuwa	559	1.10	0.00	5.04	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Mungar	1188	4.38	0.00	1.02	0.00	0.00	4.13	0.00	1.07	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Goa	746	1.10	0.00	8.69	0.00	0.00	1.10	0.00	9.78	0.00	0.00
Zalim Khurd	1321	5.48	27.92	14.45	6.13	0.00	5.23	42.18	14.25	6.19	0.00
Bhnsur	1113	1.10	0.00	8.69	0.00	0.00	1.10	0.00	9.78	0.00	0.00
Kulgara	589	1.10	0.00	4.96	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Gohak	604	0.00	0.00	10.45	0.00	0.00	0.00	0.00	9.78	0.00	0.00
Nindir	754	0.00	0.00	4.96	0.00	0.00	0.00	0.00	6.30	0.00	0.00
Demu	1086	1.10	18.40	1.02	6.13	0.00	1.10	23.22	1.07	6.19	0.00
Peshrur	657	1.10	0.00	8.85	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Sikri	682	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Ichak	700	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Heth Pochra	973	5.48	18.40	9.72	6.13	0.00	5.23	23.22	10.56	6.19	0.00
Sasang	972	0.00	0.00	4.09	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Kaima	541	1.10	0.00	4.09	6.13	0.00	1.10	0.00	4.76	6.19	0.00
Korhas	618	70.10	0.00	4.09	0.00	0.00	104.32	0.00	4.76	0.00	0.00
Patratu	750	5.48	0.00	1.02	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Nuka	530	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Sabauo	514	5.48	0.00	87.38	0.00	0.00	5.23	0.00	39.56	0.00	0.00
Mangra	517	0.00	0.00	48.12	0.00	0.00	0.00	0.00	9.78	0.00	0.00
Tubed	527	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Dilni	1172	0.00	39.43	4.96	0.00	0.00	0.00	61.93	6.30	0.00	0.00
Nawain	735	0.00	0.00	5.62	0.00	0.00	0.00	0.00	6.09	0.00	0.00
Merup	599	1.10	0.00	4.96	6.13	0.00	1.10	0.00	6.30	6.19	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Latehar	5495	361.44	140.63	74.86	6.13	97.31	500.39	232.61	81.68	6.19	108.62
BHANDARIA											
Rawar	750	1.10	0.00	4.96	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Marda	603	1.10	0.00	9.72	0.00	0.00	1.10	0.00	10.56	0.00	0.00
Nauka	633	1.10	0.00	4.96	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Bhandria	1670	9.86	205.03	4.96	6.13	5.31	9.36	332.88	6.30	6.13	5.60
Binda	628	1.10	0.00	5.78	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Rodo	568	1.10	0.00	4.96	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Path	501	1.10	18.40	52.22	0.00	0.00	1.10	23.22	14.25	0.00	0.00
Mail	857	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Harta	900	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bijika	1090	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Kurun	619	1.10	0.00	77.85	0.00	0.00	1.10	0.00	87.07	0.00	0.00
Madgari	821	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Paraswar	857	1.10	27.60	9.72	0.00	0.00	1.10	44.24	10.56	0.00	0.00
Kutku	748	5.48	46.00	43.49	0.00	0.00	5.23	77.42	4.76	0.00	0.00
BALUMATH											
Herhanj	1009	11.11	138.32	1.02	6.31	5.31	19.75	257.54	1.07	6.19	5.60
Ghura	561	6.73	69.00	5.78	0.00	5.31	15.16	38.71	5.33	0.00	5.60
Salaiya	590	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Balubhang	1302	5.48	9.52	4.09	6.13	0.00	5.23	0.00	4.76	6.19	0.00
Letu	671	11.11	9.52	9.72	0.00	0.00	39.50	19.76	10.56	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Phulsu	1048	5.48	18.48	4.96	6.13	5.31	5.23	19.76	6.30	6.19	5.60
Hisri	565	23.62	0.00	1.02	0.00	5.31	5.23	23.22	1.10	0.00	5.60
Nbathet	507	1.10	0.00	8.03	0.00	5.31	1.10	0.00	9.99	0.00	5.60
Nawadih	597	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bariatu	1473	22.37	0.00	1.02	0.00	5.31	48.79	0.00	1.07	0.00	5.60
Gari	1025	6.73	0.00	1.02	0.00	0.00	15.16	0.00	1.07	0.00	0.00
Darha	2059	20.09	0.00	1.02	0.00	0.00	63.31	0.00	1.07	0.00	0.00
Badsra	525	12.36	0.00	1.02	0.00	0.00	30.15	0.00	1.07	0.00	0.00
Jhabar	787	21.27	0.00	1.02	6.31	5.31	47.69	0.00	1.07	6.19	5.60
Ichak	543	6.73	9.52	9.72	6.31	5.31	15.16	19.76	10.56	6.19	5.60
Lawagara	601	5.48	69.00	1.02	0.00	5.31	5.23	0.00	1.07	0.00	0.00
Hundru	889	6.73	0.00	77.54	0.00	0.00	15.16	0.00	87.67	0.00	0.00
Matkama	594	6.73	9.52	5.62	6.31	5.31	15.16	19.56	6.09	0.00	0.00
Chiru	1104	6.73	9.52	8.69	0.00	0.00	15.16	19.76	11.11	6.19	5.60
Guntam	505	6.73	9.52	1.02	6.13	0.00	15.16	19.76	1.07	0.00	0.00
Balu	2811	80.11	9.52	91.29	0.00	5.31	122.97	19.76	19.27	6.19	0.00
Nawada	630	1.10	9.52	4.96	0.00	0.00	1.10	19.76	6.30	0.00	5.60
Serandag	567	1.10	0.00	44.39	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Rajhar	525	6.73	9.52	1.02	0.00	0.00	15.16	19.76	1.07	0.00	0.00
Masiatu	1168	74.48	9.52	12.79	0.00	0.00	108.45	19.76	10.56	0.00	0.00
Holang	728	6.73	9.52	4.09	6.13	0.00	15.16	19.76	4.76	6.19	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
MANIKA											
Sinis	1145	0.00	0.00	4.96	0.00	5.31	0.00	0.00	6.38	0.00	5.60
Manika	1891	212.48	94.63	5.78	69.00	5.31	128.65	143.54	5.33	71.46	5.60
Namudag	986	1.10	0.00	9.72	0.00	5.31	1.10	0.00	10.56	0.00	5.60
Kope	675	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Lanka	628	1.10	0.00	8.93	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Kui	852	5.48	0.00	1.02	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Kamaru	860	1.10	0.00	9.72	0.00	0.00	1.10	0.00	10.56	0.00	0.00
Kariadih	791	5.48	0.00	1.02	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Ranki Kalan	977	1.10	0.00	8.83	6.13	0.00	1.10	0.00	9.99	6.19	0.00
Rabda	987	1.10	0.00	48.28	0.00	5.31	1.10	0.00	38.64	0.00	5.60
Tumagara	613	0.00	79.98	77.48	0.00	5.31	0.00	0.00	0.00	0.00	5.60
Piprakalan	863	1.10	9.52	8.83	0.00	5.31	1.10	19.76	9.99	0.00	5.60
Bakoria	2261	5.48	64.72	1.02	6.13	5.31	5.23	135.88	1.07	6.19	0.00
Sadhwadih	920	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Baudua	1821	4.38	0.00	5.62	6.13	0.00	4.13	0.00	6.09	6.19	0.00
Jamho	1197	0.00	0.00	5.78	0.00	0.00	0.00	0.00	5.33	0.00	0.00
Barwaia Kalan	1372	5.48	0.00	1.02	6.13	5.31	5.23	0.00	1.07	6.19	5.60
Natnag	793	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Chama	558	0.00	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Doki	646	0.00	0.00	5.62	0.00	0.00	0.00	0.00	6.09	0.00	0.00
Bariatu	567	1.10	0.00	5.62	0.00	0.00	1.10	0.00	6.09	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Bishun Bandh	745	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Dundu	1524	1.10	0.00	9.56	0.00	5.31	1.10	0.00	11.32	0.00	5.60
Mail	1121	1.10	9.52	8.69	6.13	0.00	1.10	17.96	9.78	0.00	0.00
Matlaung	1405	5.48	9.52	1.02	6.13	0.00	5.23	17.96	1.07	6.19	0.00
Palhea	1163	0.00	18.40	1.02	0.00	0.00	0.00	23.22	1.07	6.19	0.00
Purai Pathea	655	1.10	0.00	4.62	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Jungar	1948	1.10	0.00	4.62	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Aunra Tanr	745	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Lali	831	1.10	0.00	4.96	0.00	5.31	1.10	0.00	6.30	0.00	5.60
Barkadih	816	0.00	0.00	77.54	0.00	92.00	0.00	0.00	0.00	0.00	103.20
BARWADIH											
Kethki	1390	1.10	0.00	8.85	0.00	97.31	1.10	0.00	9.02	0.00	108.62
Kandianpur	671	0.00	0.00	1.02	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Kalyanpur	678	1.10	0.00	5.62	0.00	5.31	1.10	0.00	6.09	0.00	5.60
Amdiha	830	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Kutau	894	1.10	0.00	1.02	0.00	5.31	1.10	0.00	1.07	0.00	5.60
Sariadih	1265	5.45	0.00	12.79	6.13	0.00	5.23	0.00	14.25	6.19	0.00
Pokhri kalan	3006	1.10	0.00	12.79	0.00	0.00	1.10	0.00	14.25	0.00	0.00
Pokhri khurd	554	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Betla	901	1.10	0.00	5.78	0.00	5.31	1.10	0.00	5.33	0.00	0.00
Meru	953	4.38	55.20	5.78	0.00	0.00	4.13	51.61	5.33	0.00	5.60
Luhur	592	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Ukwar	851	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Barwadih	5495	361.44	148.63	74.86	6.13	97.31	500.39	232.61	81.68	6.19	100.62
Murgidih	745	1.10	0.00	8.85	0.00	5.31	1.10	0.00	9.02	0.00	5.60
mangra	1232	1.10	0.00	4.09	0.00	5.31	1.10	0.00	9.02	0.00	5.60
Khura	1134	138.00	138.00	8.93	207.00	0.00	0.00	263.58	4.76	164.36	0.00
Chapri	1139	5.48	0.00	9.72	0.00	0.00	5.23	0.00	9.02	0.00	0.00
Chhendha	1460	0.00	27.60	4.09	0.00	0.00	0.00	44.24	10.56	0.00	0.00
Babhandih	1319	1.10	0.00	8.85	0.00	0.00	1.10	0.00	4.76	0.00	0.00
P. Forest	716	1.10	0.00	1.02	6.13	0.00	1.10	0.00	9.02	6.19	0.00
Mandal	2641	5.48	39.43	4.09	6.13	0.00	5.23	61.93	1.07	6.19	0.00
Morawi Kalan	1266	1.10	27.60	9.72	0.00	0.00	1.10	44.24	9.92	0.00	0.00
Tohwai	1318	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Lat	638	1.10	27.60	10.38	6.13	0.00	1.10	44.24	10.35	6.19	0.00
Barkheta	527	1.10	0.00	5.62	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Tongari	528	1.10	0.00	5.62	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Saidup	979	1.10	0.00	12.63	0.00	0.00	1.10	0.00	13.68	0.00	0.00
Jurubar	784	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Chhipidohar	3280	14.28	195.83	5.78	69.00	5.31	13.49	307.00	5.33	71.46	5.60
Kudwila	1158	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Gari	962	4.30	0.00	5.78	0.00	5.31	4.13	0.00	5.33	0.00	0.00
Ker	1397	1.10	0.00	4.09	0.00	5.31	1.10	0.00	4.76	0.00	0.00
Nehegara	659	1.10	0.00	8.69	0.00	0.00	1.10	0.00	9.78	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Nawadih	626	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Chunguru	959	2.20	0.00	8.85	6.13	0.00	2.20	0.00	9.82	6.19	0.00
Haratu	661	1.10	0.00	13.45	0.00	0.00	1.10	0.00	14.84	0.00	0.00
RANKA											
Duduwara	694	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Hetri	652	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Ranichen	589	1.10	0.00	4.09	6.13	5.31	1.10	0.00	4.76	6.19	0.00
Belri	1474	5.48	18.40	5.78	6.13	5.31	5.23	23.22	5.33	6.19	5.60
Chitka	985	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Katra	634	1.10	0.00	5.62	0.00	5.31	1.10	0.00	6.90	0.00	5.60
Sirai Kalan	718	2.20	0.00	1.02	0.00	0.00	2.20	0.00	1.07	0.00	0.00
Sirai Khurd	788	1.10	0.00	5.62	0.00	0.00	1.10	0.00	6.89	0.00	0.00
Hutar Kalan	936	1.10	0.00	5.62	0.00	0.00	1.10	0.00	6.89	0.00	0.00
Barwadih	1089	1.10	18.40	1.02	6.13	0.00	1.10	23.22	1.70	6.19	0.00
Tahle	711	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
S.Singh Kalan	572	1.10	0.00	52.19	0.00	0.00	1.10	0.00	17.94	0.00	0.00
Manjhagawan	684	1.10	0.00	35.52	0.00	0.00	1.10	0.00	26.38	0.00	0.00
Birbandha	668	1.10	0.00	8.93	0.00	0.00	1.10	0.00	9.82	0.00	0.00
Hurdaj	685	1.10	0.00	10.38	0.00	5.31	1.10	0.00	10.35	0.00	5.60
Vohri	678	1.10	0.00	5.62	0.00	0.00	1.10	0.00	6.89	0.00	0.00
Kadhanpur	1100	1.10	0.00	9.72	0.00	0.00	1.10	0.00	10.56	0.00	0.00
Ranka Kalan	3741	147.86	375.58	82.30	207.00	5.31	132.78	351.40	92.23	77.65	5.60

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Khopra	1654	1.10	0.00	8.03	0.00	0.00	1.10	0.00	9.99	0.00	0.00
Manpur	1494	1.10	0.00	8.03	0.00	0.00	1.10	0.00	9.99	0.00	0.00
Sonpurwa	642	1.10	0.00	8.03	0.00	0.00	1.10	0.00	9.99	0.00	0.00
Sondag	989	1.10	0.00	8.69	0.00	0.00	1.10	0.00	9.78	0.00	0.00
Puregara	593	1.10	0.00	5.62	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Tangi Kalan	922	5.48	0.00	5.62	6.13	0.00	5.23	0.00	6.09	6.19	0.00
Gaur Gara	616	5.48	0.00	4.09	0.00	0.00	5.23	0.00	4.76	0.00	0.00
Chatak	598	1.10	0.00	9.56	0.00	0.00	1.10	0.00	11.32	0.00	0.00
Gasedag	739	1.10	0.00	17.39	0.00	0.00	1.10	0.00	19.27	0.00	0.00
Kasaar	833	5.48	0.00	5.62	0.00	0.00	5.23	0.00	6.09	0.00	0.00
Chapri	638	1.10	0.00	5.62	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Harhe	931	1.10	0.00	5.62	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Suli	548	1.10	0.00	8.69	0.00	0.00	1.10	0.00	9.78	0.00	0.00
Cheto	789	1.10	0.00	12.63	0.00	0.00	1.10	0.00	15.01	0.00	0.00
Udaipur	1784	2.20	0.00	10.38	6.13	0.00	2.20	0.00	10.35	6.19	0.00
Raksi	1424	4.38	0.00	4.09	0.00	0.00	4.13	0.00	4.76	0.00	0.00
Mangrauli	1104	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bahahara	785	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Pindra	654	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Jolanga	537	1.10	0.00	9.56	0.00	0.00	1.10	0.00	11.32	0.00	0.00
Kudrua	1838	1.10	0.00	9.56	0.00	0.00	1.10	0.00	11.32	0.00	0.00
Bishrampur	1592	7.68	19.70	4.96	0.00	5.31	7.43	38.71	6.30	0.00	5.60

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Baligarh	591	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Gobardhana	683	1.10	0.00	9.72	0.00	0.00	1.10	0.00	10.56	0.00	0.00
Birajpur	587	1.10	0.00	8.69	0.00	0.00	1.10	0.00	9.78	0.00	0.00
Chutia	1855	75.58	18.40	8.85	6.13	5.31	26.53	23.22	9.82	6.19	5.60
Durjan	639	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Barwa	600	1.10	0.00	4.96	0.00	0.00	1.10	0.00	6.30	0.00	0.00
LESLIGANJ											
Ghutua	730	0.00	0.00	5.62	0.00	0.00	0.00	0.00	6.09	0.00	0.00
Chanpi	750	1.10	0.00	4.96	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Rebaratu	1019	5.48	0.00	1.02	0.00	0.00	5.23	0.00	1.70	0.00	0.00
Dhabadih	1503	2.20	0.00	1.02	0.00	0.00	2.20	0.00	1.07	0.00	0.00
Karaa	1073	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Sehra	1152	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bohita	1226	1.10	0.00	9.72	0.00	0.00	1.10	0.00	10.56	0.00	0.00
DALTONGANJ											
Polpol Kalan	1546	5.48	18.40	48.28	6.13	5.31	5.23	23.22	38.64	6.19	5.60
Lahlahe	747	1.10	0.00	4.09	0.00	5.31	1.10	0.00	4.76	0.00	5.60
Khamdih	1000	1.10	0.00	1.02	6.13	5.31	1.10	0.00	1.07	6.19	5.60
Bari	1984	4.38	0.00	1.02	0.00	5.31	4.13	0.00	1.07	0.00	5.60
Halunanr	654	1.10	0.00	8.84	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Rajderwa	538	1.10	0.00	4.09	0.00	5.31	1.10	0.00	4.76	0.00	5.60
Paudhi	1041	1.10	0.00	1.02	0.00	5.31	1.10	0.00	1.07	0.00	5.60

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Chotti Satwarwa	3455	213.58	129.12	8.84	6.13	5.31	258.78	223.62	9.02	6.19	5.60
Dulsulaa	1143	1.10	0.00	5.78	0.00	0.00	1.10	0.00	5.33	0.00	0.00
CHAINPUR											
Karso	1616	1.10	0.00	9.56	6.13	0.00	1.10	0.00	11.32	6.19	0.00
Natauli	600	0.00	0.00	1.02	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Bori	1829	5.48	0.00	1.02	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Chanparia	692	1.10	0.00	5.62	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Babhaudih	1293	1.10	0.00	5.62	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Berma	785	1.10	0.00	9.56	0.00	0.00	1.10	0.00	11.32	0.00	0.00
Harnada	1109	1.10	27.92	1.02	6.13	0.00	1.10	42.18	1.07	6.19	0.00
Baghi	809	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Sarja	550	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kadhan	1053	1.10	0.00	5.78	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Hisra	518	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Nawadih	1225	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Gare	513	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Semra	1833	5.48	0.00	1.02	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Chorhat	712	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Masuraa	594	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Nawadih	734	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Chando	844	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Hutar	1223	1.10	0.00	4.76	0.00	0.00	1.10	0.00	4.26	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Chitra	600	1.10	0.00	4.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Ulaan	552	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Chenga Bansdih	509	1.10	0.00	9.56	0.00	0.00	1.10	0.00	11.32	0.00	0.00
Bansdih Khurd	977	1.10	0.00	9.56	0.00	0.00	1.10	0.00	11.32	0.00	0.00
Pinrhe	617	1.10	0.00	9.56	0.00	0.00	1.10	0.00	11.32	0.00	0.00
Chando	3094	6.58	0.00	8.69	6.13	0.00	6.23	0.00	9.78	6.19	0.00
Ausane	3298	1.10	0.00	8.69	0.00	0.00	1.10	0.00	9.78	0.00	0.00
PANKI											
Birha	541	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Ratanpur	755	4.38	0.00	74.62	0.00	0.00	4.13	0.00	11.32	0.00	0.00
Duwarika	611	5.48	27.60	8.69	0.00	0.00	5.23	44.24	9.78	0.00	0.00
Kakargarh	637	1.10	0.00	8.69	0.00	0.00	1.10	0.00	9.78	0.00	0.00
Tittangi	594	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Apanuansi	553	0.00	0.00	4.09	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Kelwa	635	1.10	0.00	22.60	0.00	0.00	1.10	0.00	38.07	0.00	0.00
Balmuwar	504	0.00	0.00	5.62	0.00	0.00	0.00	0.00	6.09	0.00	0.00
Hotwar	537	1.10	0.00	1.02	0.00	0.00	1.10	0.00	1.07	0.00	0.00
NORTHERN PLAIN REGION											
MANJHIAON											
Chatmian	1049	1.09	0.00	10.90	0.00	0.00	1.10	0.00	9.78	0.00	0.00
Pipardih	555	0.00	13.46	13.46	0.00	0.00	0.00	0.00	14.02	0.00	0.00
Lamari Kalan	1483	1.09	8.12	8.12	0.00	0.00	1.10	0.00	9.02	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Jainath	1083	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bardiha	1518	1.09	83.14	4.92	6.13	0.00	1.10	44.26	5.33	6.19	0.00
Jikatu Kolaun	619	0.00	0.00	6.43	0.00	0.00	0.00	0.00	6.09	0.00	0.00
Lekhri	695	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Khardiha	718	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Sukhndi	690	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Kosnua	757	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Barchcha Bandh	715	1.09	0.00	29.17	0.00	0.00	1.10	0.00	34.02	0.00	0.00
Lawa Champa	684	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Adar	1481	1.09	0.00	21.05	0.00	0.00	1.10	0.00	30.64	0.00	0.00
Semri	1076	1.09	0.00	26.39	0.00	0.00	1.10	0.00	35.66	0.00	0.00
Jatro Baujari	1060	1.09	0.00	26.39	0.00	0.00	1.10	0.00	35.66	0.00	0.00
Dawan Kara	1066	1.09	0.00	14.02	0.00	0.00	1.10	0.00	26.38	0.00	0.00
Purhe	1261	1.09	0.00	33.39	0.00	0.00	1.10	0.00	30.07	0.00	0.00
Tarrhe	1119	1.09	0.00	17.22	0.00	0.00	1.10	0.00	30.07	0.00	0.00
Karui	1080	5.05	0.00	105.70	6.13	0.00	5.20	0.00	34.02	6.19	0.00
Jahar Sarai	1004	1.09	0.00	40.00	0.00	0.00	1.10	0.00	29.00	0.00	0.00
Sonparwa	1277	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Chandra Pura	506	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Kanat	596	5.09	0.00	1.09	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Chandha	982	1.09	0.00	4.92	0.00	0.00	1.10	0.00	15.33	0.00	0.00
Rampur	1118	1.09	58.20	89.57	0.00	0.00	1.10	61.93	83.31	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Sakarkoni	739	1.09	0.00	7.70	0.00	0.00	1.10	0.00	6.03	0.00	0.00
Bhausua	680	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Khajuri Nawadih	1111	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Amar Chadidhari	808	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Karamdih	1817	9.81	0.00	1.09	0.00	0.00	9.36	0.00	1.07	0.00	0.00
Majhiaon Kalan	1727	10.10	0.00	8.12	6.13	0.00	10.36	0.00	9.02	6.19	0.00
Majhion Khurd	640	0.00	0.00	4.29	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Dube Tuhb	682	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Akhauri Table	588	1.09	0.00	10.26	0.00	0.00	1.10	0.00	10.35	0.00	0.00
Ghurua Khurd	885	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Dalko	609	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Ubra	916	5.09	0.00	9.63	0.00	0.00	5.23	0.00	9.78	0.00	0.00
Bodra	1264	2.18	0.00	4.29	0.00	0.00	2.20	0.00	4.76	0.00	0.00
Loka	715	1.09	0.00	83.14	0.00	0.00	1.10	0.00	77.42	0.00	0.00
Lalgara	536	0.00	0.00	19.39	0.00	0.00	0.00	0.00	31.40	0.00	0.00
Dhelka	944	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Kaua Khoh	640	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Barhi Khar	785	1.09	0.00	8.12	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Kharsato	2123	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Morwe	2414	5.05	0.00	8.12	0.00	0.00	5.23	0.00	9.02	0.00	0.00
Sohgaro	688	1.09	0.00	8.12	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Ramadih	771	5.05	0.00	4.92	0.00	0.00	5.23	0.00	5.33	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Modra Nist Niza	604	1.89	0.00	10.26	0.00	0.00	1.10	0.00	10.35	0.00	0.00
Checharia Khurd	507	1.89	0.00	10.26	0.00	0.00	1.10	0.00	10.35	0.00	0.00
Karkata	599	1.89	0.00	34.44	0.00	0.00	1.10	0.00	6.89	0.00	0.00
Shivpur	884	1.89	0.00	6.43	0.00	0.00	1.10	0.00	26.38	0.00	0.00
Gosang (Zos)	767	1.89	0.00	1.89	0.00	0.00	1.10	0.00	1.87	0.00	0.00
Khuseria	1439	1.89	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Kusha	517	5.85	0.00	84.23	0.00	0.00	5.23	0.00	78.49	0.00	0.00
Harigauwan	652	0.00	0.00	1.89	0.00	0.00	0.00	0.00	1.87	0.00	0.00
Ghatahua kalan	698	1.89	0.00	1.89	0.00	0.00	1.10	0.00	1.87	0.00	0.00
Sarkani	795	0.00	0.00	4.29	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Patriya	618	1.89	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Patila	1311	1.89	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Semaura	664	5.85	0.00	11.53	6.13	0.00	5.23	0.00	10.56	6.19	0.00
Ghurna	638	1.89	0.00	6.43	0.00	0.00	1.10	0.00	6.89	0.00	0.00
Mukhapi	516	1.89	0.00	8.12	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Kargain	534	0.00	0.00	7.70	0.00	0.00	0.00	0.00	6.30	0.00	0.00
Jaingora	600	3.96	0.00	8.12	0.00	0.00	4.13	0.00	9.02	0.00	0.00
Kharaundha	1491	21.68	0.00	8.12	0.00	0.00	25.43	0.00	9.02	0.00	0.00
Choka	823	1.89	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Belhatu	774	1.89	0.00	8.12	0.00	0.00	1.10	0.00	9.02	0.00	0.00
MANATU											
Nandiha	621	1.89	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Tilo	572	1.89	0.00	17.26	0.00	0.00	1.10	0.00	22.70	0.00	0.00
Semri	521	1.89	0.00	20.46	0.00	5.49	1.10	0.00	26.39	0.00	5.60
Bansi Khurd	712	1.89	0.00	20.46	0.00	0.00	1.10	0.00	27.93	0.00	0.00
Paduma	582	0.00	0.00	1.89	6.13	5.49	0.00	0.00	1.87	6.19	5.60
Senoti	784	0.00	29.10	4.29	0.00	0.00	0.00	23.22	4.76	0.00	0.00
Pakri	892	5.05	0.00	11.53	6.13	0.00	5.23	0.00	10.56	6.19	0.00
Tiraundha	505	1.89	0.00	1.89	0.00	0.00	1.10	0.00	1.87	0.00	0.00
Bhalugasi	806	1.89	58.20	1.89	0.00	0.00	1.10	77.42	1.87	0.00	0.00
Teriya	1004	1.89	0.00	16.24	0.00	0.00	1.10	0.00	15.01	0.00	0.00
Selani	1027	5.05	0.00	16.24	0.00	0.00	5.23	0.00	15.01	0.00	0.00
Delha	848	1.89	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Vdaipura	1048	1.89	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Tarhasi	1687	21.68	0.00	4.92	6.13	0.00	25.43	0.00	5.33	6.19	0.00
Bedawi kalan	512	0.00	0.00	4.92	0.00	0.00	0.00	0.00	5.33	0.00	0.00
Matpurlia	519	1.89	0.00	7.70	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Aska	938	1.89	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Sugi	742	0.00	0.00	1.89	0.00	0.00	0.00	0.00	1.87	0.00	0.00
Gurha	914	1.89	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Dhumia	624	1.90	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Majhgonnan	516	0.00	0.00	8.12	6.13	0.00	0.00	0.00	9.02	6.19	0.00
Majhauli	665	0.00	0.00	1.89	0.00	0.00	0.00	0.00	1.87	0.00	0.00
Lalgara	615	117.59	0.00	1.89	0.00	0.00	104.32	0.00	1.87	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Gurturi	602	5.05	0.00	1.09	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Pathak Pagar	1107	1.09	29.10	1.09	0.00	0.00	1.10	38.71	1.07	6.19	0.00
Bajalpur	910	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Gauhi	642	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Sildiliya Kalan	1441	5.05	0.00	1.09	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Sonpura	1548	5.05	0.00	17.26	0.00	0.00	5.23	0.00	22.70	0.00	0.00
Naugarh	648	1.09	0.00	9.63	0.00	0.00	1.10	0.00	9.78	0.00	0.00
Ksmar	1706	5.05	0.00	7.70	0.00	0.00	5.23	0.00	6.30	0.00	0.00
Pashar	551	0.00	0.00	7.70	0.00	0.00	0.00	0.00	6.30	0.00	0.00
Chattarpur	738	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Udaipur	922	5.05	0.00	4.29	6.13	0.00	5.23	0.00	4.76	6.19	0.00
GARHWA											
Lagaa	857	5.05	0.00	7.70	6.13	5.49	5.23	0.00	6.30	6.19	5.60
Potaa	626	0.00	0.00	7.70	0.00	5.49	0.00	0.00	6.30	0.00	5.60
Khajuri	645	0.00	0.00	17.22	0.00	5.49	0.00	0.00	30.07	0.00	5.60
Korwadih	1686	117.59	0.00	4.29	0.00	0.00	104.32	0.00	4.76	0.00	0.00
Kalyanpur	2092	121.55	0.00	10.90	6.13	5.49	108.45	0.00	9.99	6.19	5.60
Chhatrapur	1095	83.14	0.00	21.05	0.00	5.49	132.71	0.00	34.33	0.00	5.60
Jhaluna	732	1.09	0.00	20.63	0.00	5.49	1.10	0.00	31.61	0.00	5.60
Bishubpur	515	0.00	0.00	8.12	0.00	5.49	0.00	0.00	9.82	0.00	5.60
Chiraunjiya	1197	1.09	0.00	17.22	0.00	5.49	1.10	0.00	30.07	0.00	5.60
Nawada	1529	1.09	0.00	8.12	0.00	0.00	1.10	0.00	9.82	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Jobraiya	529	1.09	0.00	11.53	0.00	0.00	1.10	0.00	10.56	0.00	0.00
Sukhabdua	613	0.00	0.00	17.22	0.00	0.00	0.00	0.00	30.07	0.00	0.00
Sangrah Kalan	815	5.05	0.00	17.05	0.00	0.00	5.23	0.00	30.64	0.00	0.00
Chamrani	596	0.00	0.00	83.14	0.00	0.00	0.00	0.00	77.42	0.00	0.00
Sangrah Khurd	1200	0.00	0.00	14.02	0.00	0.00	0.00	0.00	26.38	0.00	0.00
Patsa	815	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Danu	930	0.00	0.00	4.29	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Side Khurd	786	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Pratap pur	1298	1.09	0.00	4.29	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Gurdi	620	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Vssugi	727	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Pharatiya	2229	1.09	0.00	4.29	0.00	5.49	1.10	0.00	4.76	0.00	5.60
Garhwa	21514	260.50	554.02	88.06	172.41	102.49	300.92	642.53	82.57	170.55	169.39
PANKI											
Parasia	1249	1.09	0.00	9.63	0.00	0.00	1.10	0.00	9.70	0.00	0.00
Sagaliun	1762	1.09	0.00	1.09	6.13	5.49	1.10	0.00	1.07	6.19	5.60
Bhasi	968	5.05	0.00	4.92	0.00	5.49	5.23	0.00	5.33	0.00	5.60
Sumri	854	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Nahugain	651	1.09	0.00	11.95	0.00	0.00	1.10	0.00	10.25	0.00	0.00
Aseahar	2041	5.50	0.00	10.90	6.13	0.00	5.23	0.00	10.20	6.19	0.00
Banai	761	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Bhanwardah	501	1.09	0.00	6.43	0.00	0.00	1.10	0.00	6.09	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Hutai	917	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kusai	584	1.09	0.00	6.43	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Harlaung	1170	1.09	0.00	9.63	0.00	0.00	1.10	0.00	9.78	0.00	0.00
Salgas	709	1.09	0.00	88.48	0.00	5.49	1.10	0.00	82.44	0.00	5.60
Kunwai	3014	5.05	97.00	20.07	6.13	5.49	5.23	77.42	19.27	6.19	5.60
Basaria	725	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Taiya	701	5.05	0.00	4.92	0.00	0.00	5.23	0.00	5.35	0.00	0.00
Tetrain	951	5.05	29.10	11.53	0.00	5.49	5.23	38.71	10.36	0.00	5.60
Pakaria	889	0.00	0.00	14.02	0.00	0.00	0.00	0.00	26.38	0.00	0.00
Saranna	528	1.09	0.00	14.02	0.00	5.49	1.10	0.00	26.38	0.00	5.60
Naran	1445	5.05	0.00	11.53	0.00	0.00	5.23	0.00	10.26	0.00	0.00
Pandar Kalan	2448	1.09	0.00	4.29	6.13	0.00	1.10	0.00	4.76	6.19	0.00
Dhub	1049	5.05	0.00	4.29	6.13	0.00	5.23	0.00	4.76	6.19	0.00
Chandarpur	700	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Nuren	1262	5.05	0.00	13.04	0.00	0.00	5.23	0.00	9.28	0.00	0.00
Saraidih	889	1.09	0.00	6.43	0.00	5.49	1.10	0.00	4.76	0.00	5.60
Kara	922	0.00	0.00	6.43	0.00	5.49	0.00	0.00	6.09	0.00	5.60
Panki	4509	24.55	0.00	24.46	6.13	5.49	28.46	0.00	35.67	6.19	5.60
Basdihg	586	0.00	0.00	4.29	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Nawagarh	555	0.00	0.00	4.29	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Sahgaldipa	823	0.00	0.00	6.43	0.00	0.00	0.00	0.00	6.09	0.00	0.00
Kanar	1898	1.09	0.00	4.29	0.00	5.49	1.10	0.00	4.76	0.00	5.60

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Naudiha	1174	0.00	0.00	22.60	0.00	0.00	0.00	0.00	22.70	0.00	0.00
Majhauli	555	1.09	0.00	17.26	0.00	0.00	1.10	0.00	22.70	0.00	0.00
Manjarpur	738	5.05	0.00	27.66	0.00	5.49	4.13	0.00	39.36	0.00	5.60
Gango	788	1.09	0.00	17.26	0.00	0.00	1.10	0.00	22.70	0.00	0.00
Pagar Khurd	855	1.09	0.00	38.19	0.00	0.00	1.10	0.00	53.01	0.00	0.00
Naudiha	974	5.05	0.00	1.09	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Belohainpa	1291	1.09	0.00	1.09	0.00	5.49	1.10	0.00	14.04	0.00	5.60
Merhana Kalan	503	1.09	0.00	1.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Pilza	882	1.09	0.00	1.09	0.00	0.00	1.10	0.00	9.78	0.00	0.00
Garhwa	21514	268.56	554.02	88.06	172.41	102.49	388.92	642.53	82.57	178.35	169.39
MERAL											
Bana	2681	1.09	0.00	4.29	6.13	5.49	1.10	0.00	4.76	6.19	5.60
Rajo	1504	3.96	0.00	14.73	0.00	0.00	4.13	0.00	14.25	0.00	0.00
Hasandag	1826	5.05	145.50	8.09	6.13	0.00	5.23	103.22	9.02	6.19	0.00
Lakhaea	1251	1.09	0.00	16.24	0.00	5.49	1.10	0.00	15.01	0.00	5.60
Ganda	2380	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Latdag	1530	5.05	0.00	11.95	6.13	0.00	5.23	0.00	10.25	6.19	0.00
Teuar	1607	1.09	0.00	10.26	0.00	0.00	1.10	0.00	10.35	0.00	0.00
Sobharia	878	1.09	0.00	6.43	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Loodag	802	1.09	29.10	17.22	0.00	0.00	1.10	38.71	30.07	0.00	0.00
Pauduhan	1347	1.09	29.10	1.09	0.00	0.00	1.10	38.71	9.99	0.00	0.00
Banka	787	5.05	193.99	4.29	6.13	0.00	5.23	136.70	4.76	6.19	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Bhandar	507	0.00	29.10	1.09	0.00	0.00	0.00	38.71	1.07	0.00	0.00
Potara	969	1.09	29.10	20.63	0.00	0.00	1.10	38.71	30.07	0.00	0.00
Rajbhandra	559	1.09	29.10	13.46	0.00	0.00	1.10	38.71	14.04	0.00	0.00
Adhauri	618	0.00	29.10	1.09	0.00	0.00	0.00	38.71	1.07	0.00	0.00
Rajhara	613	1.09	29.10	17.22	0.00	0.00	1.10	38.71	9.78	0.00	0.00
Sanghamia	881	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Meral	5315	21.68	472.26	24.46	89.27	5.49	25.43	361.64	39.56	98.89	5.60
Kumbhi	554	1.90	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Akalbani	641	1.09	0.00	1.09	0.00	5.49	1.10	0.00	9.99	0.00	5.60
Korkana	1492	2.18	0.00	1.09	0.00	0.00	2.20	0.00	1.07	0.00	0.00
Chana	2161	117.59	0.00	10.90	0.00	0.00	104.32	0.00	9.99	0.00	0.00
Arang	630	0.00	0.00	17.22	0.00	5.49	0.00	0.00	9.78	0.00	0.00
Biktan	1081	5.05	0.00	7.70	0.00	0.00	5.23	0.00	6.30	0.00	0.00
Basaria	707	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kanerna	674	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Oskhargar	4265	8.32	112.24	14.73	6.13	5.49	8.53	67.64	14.25	6.19	5.60
Kholra	687	1.09	0.00	17.21	0.00	5.49	1.10	0.00	30.07	0.00	5.60
Chacharia	862	1.09	97.00	88.48	0.00	5.49	1.10	77.42	82.44	0.00	5.60
Khoridih	773	5.05	0.00	4.29	0.00	0.00	5.23	0.00	4.76	0.00	0.00
Duldulwa	2146	17.72	0.00	6.43	0.00	0.00	21.30	0.00	6.09	0.00	0.00
Perka	1675	21.68	83.14	8.12	6.13	5.49	25.43	44.42	9.02	6.19	5.60
Tisartetka	678	0.00	0.00	1.09	0.00	5.49	0.00	0.00	1.07	0.00	5.60

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Jhosar	1508	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Katkhas	924	1.09	0.00	27.70	0.00	0.00	1.10	0.00	32.19	0.00	0.00
Sitadih	677	1.09	0.00	24.29	0.00	0.00	1.10	0.00	30.65	0.00	0.00
Purnadih	1319	5.05	0.00	30.90	0.00	0.00	5.23	0.00	32.19	0.00	0.00
Munaria	810	5.05	29.10	29.63	0.00	5.49	5.23	23.22	35.74	0.00	5.60
Turkadih	546	0.00	0.00	30.19	0.00	0.00	0.00	0.00	48.01	0.00	0.00
Juru	1206	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Jaitu Khaur	556	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Itahe	898	1.09	0.00	8.12	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Jharkatia	542	1.09	0.00	17.26	0.00	0.00	1.10	0.00	22.70	0.00	0.00
Haratua	738	1.09	0.00	20.46	0.00	0.00	1.10	0.00	26.39	0.00	0.00
Pachmo	597	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Muramsi	614	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Darudih	1396	5.05	0.00	1.09	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Sangbar	858	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	6.19	0.00
Garadih Khas	587	1.09	0.00	17.26	6.13	0.00	1.10	0.00	22.77	0.00	0.00
Oria Kalan	1748	5.05	0.00	4.92	0.00	0.00	5.23	0.00	5.33	0.00	0.00
Lotwa	556	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Rajagari	528	1.09	0.00	6.43	0.00	0.00	1.10	0.00	6.89	0.00	0.00
Kundri	2004	21.68	64.66	11.53	6.13	0.00	25.43	39.52	18.56	6.19	5.60
Sohad	772	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Rae nagar	843	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Jamudih	1088	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Parsuram Khop	514	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Pipra Khurd	771	1.09	0.00	21.09	0.00	0.00	1.10	0.00	26.96	0.00	0.00
Bansdih	597	1.09	0.00	23.87	6.13	0.00	1.10	0.00	27.93	6.19	0.00
Raipur	511	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Chaura	719	5.05	0.00	21.09	0.00	0.00	5.23	0.00	26.96	0.00	0.00
HUSSAINABAD											
Pansa	1614	6.14	0.00	4.29	6.13	0.00	6.33	0.00	4.76	6.19	0.00
Garibehra	708	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Letpauri	932	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kolhua Soubasa	1155	5.05	0.00	4.29	0.00	0.00	5.23	0.00	4.76	0.00	0.00
Bhajania	2151	1.09	0.00	4.29	0.00	158.99	1.10	0.00	4.76	0.00	5.60
Asik Nagar	607	1.90	0.00	8.12	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Mausin Nagar	3800	1.09	97.00	21.05	6.13	97.00	1.10	77.42	34.33	6.19	103.20
Kadel Kurwi	1853	3.96	0.00	8.12	0.00	0.00	4.13	0.00	9.02	0.00	0.00
CHAINPUR											
Karkari	2293	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Basaria Kalan	1073	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Ladi	551	3.96	0.00	1.09	0.00	0.00	4.13	0.00	1.07	0.00	0.00
DALTONGANJ											
Kauria	1886	2.18	29.10	13.46	0.00	0.00	2.20	23.22	14.04	0.00	0.00
Sua	3500	5.05	0.00	9.63	6.13	0.00	5.23	0.00	9.78	6.19	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Rerma	4575	17.33	0.00	90.17	6.13	5.49	17.81	0.00	85.37	6.19	5.60
Sudna	2846	3.96	0.00	86.97	6.13	5.49	4.13	0.00	81.68	6.19	5.60
Singroha Khurd	1877	1.90	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Singroha Kalan	918	5.05	0.00	1.09	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Bairia	595	39.89	0.00	14.73	0.00	5.49	15.62	0.00	14.25	0.00	5.60
Baralota	3855	242.30	0.00	4.92	6.13	5.49	194.92	0.00	5.33	6.19	5.60
Jonr	1341	5.05	0.00	7.70	0.00	5.49	5.23	0.00	6.30	0.00	5.60
Dharyardih	871	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Kumar	1260	1.09	0.00	10.90	0.00	0.00	1.10	0.00	10.56	0.00	0.00
Rajwadih	1782	21.68	29.10	4.92	6.13	5.49	25.43	23.22	5.33	6.19	5.60
Jamune	1688	1.09	0.00	13.46	0.00	0.00	1.10	0.00	14.04	0.00	0.00
Pokhraha Kalan	1321	39.89	0.00	27.66	0.00	0.00	15.62	0.00	17.94	0.00	0.00
Pokhraha Khurd	2222	78.69	0.00	4.92	0.00	0.00	30.14	0.00	5.33	0.00	0.00
Chainki	3699	5.05	0.00	17.85	0.00	5.49	5.23	0.00	30.64	0.00	5.60
Hisra	666	2.18	0.00	11.53	0.00	0.00	2.20	0.00	10.56	0.00	0.00
Sarja	1197	5.05	29.10	4.92	0.00	5.49	5.23	23.22	5.33	0.00	5.60
Khundelwa	1289	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Jhabar	1681	1.09	0.00	14.02	0.00	0.00	1.10	0.00	14.25	0.00	0.00
LEBLIBANJ											
Chaukhara	685	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bhakari	843	0.00	0.00	24.96	0.00	0.00	0.00	0.00	27.93	0.00	0.00
Rajhara	1708	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Naudiha	864	1.09	0.00	7.70	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Koiripatra	712	1.09	0.00	7.70	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Kuriapatra	1134	1.09	0.00	7.20	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Dhela	675	1.09	0.00	4.29	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Kathaundha	730	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Shansh	612	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Gopalganj	779	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Patharahi	586	1.09	0.00	27.87	0.00	0.00	1.10	0.00	22.93	0.00	0.00
Lesbiganj	2834	26.73	175.72	31.80	166.28	5.49	30.66	0.00	32.19	164.36	5.60
Bharyanwar	867	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
CHAINPUR											
Rampur	987	1.09	0.00	33.04	0.00	0.00	1.10	0.00	37.18	0.00	0.00
Kosiara	851	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Gang	574	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Potarahia Khurd	794	0.00	0.00	4.92	0.00	0.00	0.00	0.00	5.33	0.00	0.00
Lidki	739	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Patarahia Kalan	706	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Katuwa Kalan	646	3.96	0.00	6.43	6.13	0.00	4.13	0.00	6.09	0.00	6.19
Tunil Taleya	1933	5.05	0.00	4.92	0.00	0.00	5.23	0.00	5.33	0.00	0.00
Taleya Khas	767	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Chenrabar	589	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Babhandih	677	0.00	0.00	11.53	0.00	0.00	0.00	0.00	10.56	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Karakat	537	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Mahuagaon	1346	5.05	0.00	4.92	6.13	0.00	5.23	0.00	5.33	0.00	6.19
Lokeya	647	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Nagwa	617	1.09	0.00	7.70	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Majnagawan	1134	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Pathra	2245	21.68	97.00	11.53	6.13	0.00	25.42	77.42	10.56	0.00	6.19
Bausdih	836	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Baran w	3144	1.09	0.00	7.70	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Harnawar	1428	21.68	0.00	10.90	6.13	0.00	25.42	0.00	9.99	0.00	6.19
Kothasa	588	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Rabda	1875	2.18	0.00	1.09	0.00	0.00	2.20	0.00	1.07	0.00	0.00
Nosnar	1329	1.09	0.00	8.12	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Nenua	1074	1.09	0.00	1.90	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Khura Kalan	1276	5.05	0.00	1.09	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Bahen Khurd	885	1.09	0.00	17.26	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Sunra	1833	5.05	0.00	1.09	0.00	0.00	5.23	0.00	1.70	0.00	0.00
Salatna	1798	5.05	206.93	8.12	6.13	0.00	5.23	146.20	9.02	0.00	6.19
Burhibir	1933	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kudago Khurd	855	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kudagao Kalan	506	0.00	0.00	6.43	0.00	0.00	0.00	0.00	6.30	0.00	0.00
Neura	2311	1.09	0.00	11.53	0.00	5.49	1.10	23.22	10.56	0.00	5.60
Garda	765	1.09	29.10	7.70	0.00	0.00	1.10	0.00	6.30	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Banua	1489	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Jhariwa	772	1.09	0.00	1.90	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Shahpur	3343	5.50	0.00	11.53	6.13	6.13	5.23	0.00	10.56	6.19	5.60
Kalyanpur	607	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Chainpur	4212	24.03	448.01	10.90	6.13	0.00	28.46	435.67	11.32	6.19	0.00
BISHRAMPUR											
Kutau	690	1.09	0.00	1.09	6.13	0.00	1.10	0.00	4.76	6.19	0.00
Jamdiha	869	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Binhua	589	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Sulumdag	670	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Karkata	944	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Joga	1054	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bhitinara	677	0.00	0.00	4.29	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Sigsig	2041	5.05	0.00	8.12	6.13	0.00	5.23	0.00	9.02	6.19	0.00
Jhagarua	1032	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Diharia	1133	5.05	0.00	4.92	6.13	0.00	5.23	0.00	5.33	6.19	0.00
Panrepura	585	1.09	0.00	14.02	0.00	0.00	1.10	0.00	26.30	0.00	0.00
Narsula	1211	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bishrampur	3599	21.68	445.70	4.92	6.13	5.49	25.42	329.42	5.33	6.19	5.60
Bagmandwa	1064	1.09	0.00	9.63	0.00	0.00	1.10	0.00	9.78	0.00	0.00
Kelat Kalan	1597	3.96	0.00	1.09	6.13	5.49	4.13	0.00	1.07	6.19	5.60
Dandia Kalan	1274	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Godarma Kalan	1581	5.05	61.43	4.92	6.13	0.00	5.23	58.47	5.33	6.19	0.00
Raksa	574	1.09	29.10	4.92	0.00	0.00	1.10	30.71	5.33	0.00	0.00
Sabauna	675	5.05	134.18	86.97	0.00	0.00	5.23	120.35	82.50	0.00	0.00
Gardiha	601	5.05	101.85	11.53	0.00	0.00	5.23	100.64	10.56	0.00	0.00
Rekha Kalan	2678	312.68	127.91	87.23	166.28	97.00	257.68	126.50	81.68	164.36	103.20
Rekha Khurd	819	1.09	0.00	91.26	0.00	0.00	1.10	0.00	86.44	0.00	0.00
Gurha Kalan	929	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Mallahtoli	846	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Toha	1575	3.96	0.00	1.09	6.13	0.00	4.13	0.00	1.07	6.19	0.00
Murma Khurd	585	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Murma Kalan	743	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Sankha	815	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Khadwan	881	3.96	0.00	4.92	6.13	5.49	5.23	0.00	5.33	6.19	5.60
Lalgura	2525	21.68	0.00	8.12	6.13	0.00	25.23	0.00	9.02	6.19	0.00
Pinjri Kalan	734	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Pinjri Khurd	535	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.37	0.00	0.00
Nangarha	629	5.05	0.00	1.09	6.13	0.00	5.23	0.00	1.07	0.00	0.00
Bhandar	1485	5.05	29.10	1.09	6.13	5.49	5.23	23.22	1.07	6.19	5.60
Guri	696	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Gaura	668	1.09	0.00	6.43	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Gharatia	648	1.09	0.00	0.00	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Kauria	941	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Jamari	576	0.00	0.00	4.29	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Ghasidag	770	1.09	0.00	6.43	0.00	0.00	1.10	0.00	6.38	0.00	0.00
KumbhiKhurd	920	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Kumbhi Kalan	651	0.00	0.00	4.29	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Damaro	813	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Barahmaria Kala	563	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Chachanha	936	1.09	0.00	1.09	6.13	5.49	1.10	0.00	1.07	6.19	5.60
Rajhara	2578	5.05	0.00	4.92	6.13	5.49	5.23	0.00	5.33	6.19	5.60
Basna	1616	5.05	0.00	4.92	6.13	5.49	5.23	0.00	5.33	6.19	5.60
Chanea	638	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Tukbera	1601	2.18	0.00	1.09	0.00	5.49	2.20	0.00	1.07	0.00	5.60
Pataria	668	1.09	0.00	4.92	0.00	0.00	1.10	0.00	6.83	0.00	0.00
Rabda	1101	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Kanda Khas	1797	5.05	0.00	11.53	6.13	5.49	5.23	0.00	10.56	6.19	5.60
Rajdiria	717	1.09	0.00	8.12	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Sahdog Khurd	867	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Nawa	1377	5.05	29.10	8.12	6.13	5.49	5.23	0.00	9.02	6.19	5.60
Itko	1629	1.09	0.00	8.12	0.00	5.49	1.10	0.00	9.02	0.00	5.60
Lunarat bahini	1360	1.09	0.00	8.12	6.13	0.00	1.10	0.00	9.02	6.19	0.00
Bhaduna	784	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Lohar Banjiri	1838	1.09	0.00	4.29	6.13	0.00	1.10	0.00	4.76	6.19	0.00
Sirna	1235	21.68	0.00	8.12	83.14	0.00	25.42	0.00	9.20	71.46	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Checharia	616	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Panrepwa	1195	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Malwaria	673	5.05	0.00	1.09	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Semri	958	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Murma Kalan	1759	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Murma Khurd	1198	1.09	0.00	7.70	6.13	0.00	1.10	0.00	6.30	0.00	0.00
Dala Kalan	959	1.09	0.00	6.43	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Tisibar Kalan	1693	121.55	29.10	4.29	6.13	0.00	108.45	38.71	4.76	6.19	0.00
Kutmu	4010	5.05	0.00	4.29	6.13	5.49	5.23	0.00	4.76	6.19	5.60
Darua	811	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Tisibar Khurd	765	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Jharna Kalan	571	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Phulia	648	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bhatwalia	854	1.09	0.00	8.12	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Basdiha	661	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Mahuganwan	1824	1.09	0.00	8.12	0.00	0.00	1.10	0.00	9.02	0.00	0.00
Karandih	767	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Panru	2112	22.77	130.95	8.12	6.13	5.49	26.52	120.48	9.02	6.19	5.60
Lawar Panru	583	1.09	0.00	9.63	0.00	0.00	1.10	0.00	9.78	0.00	0.00
Ashnaulia	528	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Musikhap	1358	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kajru Khurd	1591	1.09	0.00	1.09	6.13	0.00	1.10	0.00	1.07	6.19	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Kajru Kalan	1935	5.05	0.00	1.09	0.00	0.00	5.23	0.00	1.07	0.00	0.00
Musur maty	1013	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kajrat	595	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
devganga	978	5.05	0.00	4.29	6.13	0.00	5.23	0.00	4.76	6.19	0.00
Gasna	1648	2.18	0.00	4.29	0.00	0.00	2.20	0.00	4.76	0.00	0.00
Jhakra	1025	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	0.00
Daurai	2342	1.09	155.20	4.92	6.13	5.49	1.10	123.86	5.33	6.19	5.60
Karke	2846	1.09	0.00	16.87	0.00	0.00	1.10	0.00	15.58	0.00	0.00
Sonhe	1993	5.05	0.00	29.17	6.13	0.00	5.23	0.00	19.27	6.19	0.00
Bulai	1014	1.09	0.00	22.56	0.00	0.00	1.10	0.00	35.09	0.00	0.00
Rare	3498	5.05	29.10	21.05	6.13	5.49	5.23	38.71	34.33	6.19	5.60
Nanebita	662	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Telani	1185	5.05	29.10	4.29	6.13	0.00	5.23	23.22	4.76	6.19	5.60
Lawchi Khurd	830	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Lawchi Kalan	2195	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bale Khari	956	5.05	0.00	4.29	6.13	0.00	5.23	0.00	4.76	6.19	0.00
Mahudar	618	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bardan	3047	5.05	0.00	4.29	6.13	0.00	5.23	0.00	4.76	6.19	0.00
Tasrar	1165	5.05	0.00	8.12	0.00	5.49	5.23	0.00	9.02	0.00	5.60
Gabardaha	568	1.09	0.00	9.63	0.00	0.00	1.10	0.00	9.78	0.00	0.00
UNTARI											
Garbandh	2774	1.09	0.00	9.81	0.00	0.00	1.10	0.00	8.92	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Kumba Khurd	1194	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Jamua	1082	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Jamuri	618	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Bilas pur	1152	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Halwanta Kalan	917	5.05	0.00	4.29	0.00	0.00	5.23	0.00	4.76	0.00	0.00
Pataria Khurd	583	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Saharestal Khur	508	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Mangarlah	833	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Makhoria Khurd	517	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Puraini	925	0.00	0.00	1.09	0.00	5.49	0.00	0.00	1.07	0.00	5.60
Nagar Untari	3895	17.72	208.05	4.92	83.15	5.49	21.30	218.67	5.33	74.76	5.60
hir purwa	970	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Nayakhar	2770	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Punanapar	521	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Checharia	2743	7.86	0.00	1.09	0.00	5.49	8.26	0.00	1.07	0.00	6.19
Bishunpur	960	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bhojpur	1392	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Jangipur	2239	1.09	0.00	7.70	0.00	5.49	1.10	0.00	6.38	0.00	6.19
Adhaura	840	3.96	0.00	1.09	0.00	0.00	4.13	0.00	1.07	0.00	0.00
Sole	1238	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Khamhi	543	0.00	0.00	14.82	0.00	0.00	0.00	0.00	26.38	0.00	0.00
Sirma	1291	1.09	0.00	4.92	6.13	5.49	1.10	0.00	5.33	5.60	5.60

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Utoki	984	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Kajarma	508	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Dullri	697	5.05	0.00	11.53	0.00	5.49	5.23	0.00	10.56	0.00	5.60
Kalhar	1815	16.63	340.00	1.09	166.20	5.49	20.20	232.61	1.07	164.36	5.60
Saguna	929	1.09	0.00	17.26	0.00	5.49	1.10	0.00	22.70	0.00	5.60
Nawada	573	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Satwa	617	1.09	0.00	20.63	0.00	0.00	1.10	0.00	9.99	0.00	0.00
Semri	1728	5.05	0.00	4.29	0.00	5.49	5.23	0.00	5.33	0.00	5.60
Patan	601	22.77	451.19	17.26	83.14	5.49	5.23	0.00	22.70	6.19	5.60
Khunha	519	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Janghasi	1510	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Imli Khas	1322	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kishun pur	1371	139.26	58.20	24.46	6.13	5.49	26.53	61.93	35.87	6.19	5.60
Chatma	800	1.09	0.00	21.09	0.00	0.00	1.10	0.00	26.96	0.00	0.00
Karar Kalan	733	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Hanika	574	1.09	0.00	20.63	0.00	0.00	1.10	0.00	31.61	0.00	0.00
Bardiha	508	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Pakri	749	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Rajhara	755	2.18	0.00	4.29	0.00	0.00	2.20	0.00	4.76	0.00	0.00
Sautha	883	1.09	29.10	4.29	0.00	0.00	1.10	38.71	4.76	0.00	0.00
Loinga	1642	1.09	0.00	4.92	6.13	0.00	1.10	0.00	5.33	6.19	0.00
Aredana	638	2.18	0.00	4.29	0.00	0.00	2.20	0.00	4.76	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Angra	552	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Nawakhas	1847	5.05	0.00	4.92	6.13	5.49	5.23	0.00	5.33	6.19	5.60
Rudidih	580	0.00	0.00	1.09	0.00	5.49	0.00	0.00	1.07	0.00	5.60
Dhanyardina	913	1.09	0.00	13.04	0.00	5.49	1.10	0.00	11.32	0.00	5.60
Pach Kharia	993	1.09	0.00	4.29	0.00	5.49	1.10	0.00	4.76	0.00	5.60
Kothua	847	1.09	0.00	1.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Haraiya Khurd	598	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Khajuri	984	1.09	0.00	4.92	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Dipaua	581	21.68	61.43	1.09	0.00	5.49	25.43	42.98	5.33	0.00	5.60
Tuia	518	5.05	0.00	4.29	0.00	5.49	5.23	0.00	1.07	0.00	5.60
Jaipur	561	1.09	0.00	1.09	0.00	0.00	1.10	0.00	4.76	0.00	0.00
mahulia	1182	0.00	0.00	4.29	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Churddohan	1121	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Hesla	515	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
PATAN											
Chhechhauri	1270	1.09	29.10	4.29	0.00	0.00	1.10	38.71	4.76	0.00	0.00
Barwadih	567	1.09	29.10	1.09	0.00	0.00	1.10	38.71	1.07	0.00	0.00
Majhaganun	1153	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Lauri	677	1.09	29.10	20.60	0.00	0.00	1.10	38.71	31.61	0.00	0.00
Buchilani	683	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Patra	1489	22.77	0.00	4.29	6.19	0.00	26.53	0.00	4.76	6.19	0.00
Jhari	559	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Murao	1543	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kokarga	969	2.18	0.00	1.09	0.00	0.00	2.20	0.00	1.07	0.00	0.00
Bhusra	606	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Mauahar	516	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bariad Kalan	895	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Saraiya	585	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Gaurhejha	519	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Pache Kalan	1048	1.09	29.10	17.85	6.13	5.49	1.10	23.22	9.02	6.19	5.60
Basdah	502	0.00	0.00	4.29	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Sadhpur	501	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Naudiha	911	6.14	29.10	17.85	6.13	5.49	6.33	23.22	9.02	6.19	5.60
Golhana	788	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	0.00
Sakhua	755	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Palhe Khurd	567	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Sika	859	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Fareriadih	1321	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Basu	759	1.09	0.00	6.43	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Lohaudi	658	1.09	0.00	7.70	0.00	5.49	1.10	0.00	6.30	0.00	5.60
Pandwa	2397	1.09	117.52	10.90	166.28	102.49	1.10	113.54	9.99	164.36	100.00
Loharua	1161	21.68	0.00	17.83	0.00	5.49	25.43	0.00	9.02	0.00	5.60
Garokhas	1244	1.09	0.00	4.29	0.00	5.49	1.10	0.00	4.76	0.00	5.60
Kathautia	1101	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Kajri	884	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Batsara	637	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Meral	1896	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Siki Kalan	1157	5.05	0.00	4.29	6.13	5.49	5.23	0.00	4.76	6.19	5.60
Siki Khurd	881	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Huri	882	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kanka Kalan	1343	1.09	0.00	4.29	6.13	0.00	1.10	0.00	4.76	6.19	0.00
Bareb Noria	624	5.05	0.00	4.29	0.00	0.00	5.23	0.00	4.76	0.00	0.00
Nawadih Bhuawa	1304	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Hirsa	1363	5.05	0.00	86.97	0.00	0.00	5.23	0.00	81.50	0.00	0.00
Kariahar	811	1.09	0.00	22.56	0.00	0.00	1.10	0.00	35.09	0.00	0.00
Gahar Pathra	1140	1.09	0.00	17.22	6.13	0.00	1.10	0.00	30.07	6.19	0.00
Sildili	1119	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Obra	746	1.09	129.33	4.29	0.00	0.00	1.10	97.28	4.76	0.00	0.00
Belhara	863	21.68	0.00	4.29	0.00	0.00	25.43	0.00	4.76	0.00	0.00
DHURKI											
Kathakalan	1202	1.09	0.00	14.73	6.13	5.49	1.10	0.00	14.24	6.19	5.60
Sagma	2340	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Kodwa	1171	1.09	0.00	66.17	0.00	0.00	1.10	0.00	56.93	0.00	0.00
Ketma	798	1.09	0.00	13.46	0.00	0.00	1.10	0.00	15.81	0.00	0.00
Bhandra	1369	1.09	0.00	6.24	0.00	0.00	1.10	0.00	36.64	0.00	0.00
Gariari Khurd	807	0.00	0.00	8.12	0.00	0.00	0.00	0.00	30.65	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Tatidiri	1675	5.05	29.10	13.04	6.13	5.49	5.23	23.22	15.58	6.19	5.60
Mardrai	909	1.09	0.00	14.73	0.00	0.00	1.10	0.00	14.24	0.00	0.00
Karwa Pehan	725	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Gariari Kalan	1431	1.09	0.00	8.12	0.00	0.00	1.10	0.00	30.65	0.00	0.00
Gamharia	1469	1.09	0.00	6.43	0.00	0.00	1.10	0.00	6.09	0.00	0.00
Bulka	1417	1.09	0.00	7.70	6.13	0.00	1.10	0.00	6.30	6.19	0.00
Chunchi	841	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
CHHATARPUR											
Bhikhi	508	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kurkuta	514	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Arar	853	1.09	0.00	6.43	0.00	0.00	1.10	0.00	27.72	0.00	0.00
Khouri	1123	1.09	0.00	10.90	0.00	0.00	1.10	0.00	35.87	0.00	0.00
Telari	806	3.96	101.85	4.92	6.13	0.00	4.13	85.15	5.33	6.19	0.00
Kanwal	660	1.09	0.00	7.70	0.00	0.00	1.10	0.00	6.30	0.00	0.00
Gurdi	572	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Khajauri	669	5.05	0.00	9.63	6.13	0.00	5.23	0.00	9.02	6.19	0.00
Okraha	554	1.09	0.00	4.92	0.00	0.00	1.10	0.00	5.33	0.00	0.00
Dali	2496	5.05	101.85	4.92	6.13	0.00	5.23	85.15	5.33	6.19	0.00
Mumumday	619	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Rudwa	877	1.09	0.00	13.04	0.00	0.00	1.10	0.00	11.32	0.00	0.00
Bhandhudih	571	0.00	0.00	1.09	0.00	5.49	0.00	0.00	1.07	0.00	5.60
Charan	994	3.96	0.00	10.26	6.13	0.00	4.13	0.00	10.35	6.19	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Palhe Kalan	1544	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Khadwan	1031	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Koljhiki	1364	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kolndio	1023	0.00	0.00	4.29	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Patihari	1644	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Saro	646	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Bishunpura	2048	0.00	0.00	24.46	0.00	0.00	0.00	0.00	35.87	0.00	0.00
Sandhea	514	1.09	0.00	14.02	0.00	5.49	1.10	0.00	26.38	0.00	5.60
Patgara Kalan	974	3.96	0.00	17.85	0.00	0.00	3.69	0.00	30.64	0.00	0.00
Patgara Khurd	3250	1.09	0.00	17.85	0.00	5.49	1.10	0.00	30.64	0.00	5.60
Kochea	596	1.09	0.00	17.85	6.13	5.49	1.10	0.00	30.64	6.19	5.60
Amhar khas	1637	1.09	0.00	90.17	0.00	5.49	1.10	0.00	85.19	0.00	5.60
Pipri Khurd	639	0.00	0.00	4.92	0.00	0.00	0.00	0.00	5.33	0.00	0.00
Pipri Kalan	1735	1.09	29.10	1.09	6.13	0.00	1.10	0.00	1.07	6.19	0.00
Jatpura	808	1.09	0.00	4.29	0.00	0.00	1.10	0.00	4.76	0.00	0.00
Sidhi	595	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Kabisa	599	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Marwarian	1413	1.09	0.00	6.43	6.13	5.49	1.10	0.00	6.09	6.19	5.60
Rohila	816	1.09	0.00	7.70	6.13	0.00	1.10	0.00	6.30	6.19	0.00
Karanpura	834	1.09	0.00	7.70	0.00	5.49	1.10	0.00	6.30	0.00	5.60
Baghaundha	3642	1.09	0.00	4.92	6.13	5.49	1.10	0.00	5.33	6.19	5.60
Majhganwan	664	0.00	0.00	6.43	0.00	0.00	0.00	0.00	6.09	0.00	0.00

Contd.....

Village	Population	Education	Medical	Drinking Water	Post & T.Graph	Transport	EDUCATION	MEDICAL	DRINKING WATER	POST & T.GRAPH	TRANSPORT
Sihdag	2434	5.05	29.10	88.06	0.00	0.00	5.23	23.22	82.57	6.19	0.00
Kaseha	532	1.09	0.00	1.09	0.00	5.09	1.10	0.00	1.07	0.00	5.60
Taudwa	2675	5.05	0.00	8.12	0.00	0.00	5.23	0.00	9.02	0.00	0.00
Parsawan	645	0.00	0.00	1.09	0.00	5.49	0.00	0.00	1.07	0.00	5.60
Bahiar Khurd	1473	1.09	0.00	13.46	0.00	5.49	1.10	0.00	14.04	0.00	5.60
Bahiar Kalan	1041	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Mangra	721	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Sapahi	976	0.00	0.00	4.29	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Kusdanr	1538	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Kohhua	690	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Nasa	564	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.07	0.00	0.00
Narhi	995	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Chitris rean	1702	22.77	0.00	1.09	6.13	0.00	26.53	0.00	1.07	6.19	0.00
Bardiha	522	1.09	0.00	1.09	0.00	5.49	1.10	0.00	1.07	0.00	5.60
Basodih	786	5.05	0.00	4.29	0.00	5.49	5.23	0.00	4.76	0.00	5.60
Pipardih	751	1.09	0.00	1.09	0.00	0.00	1.10	0.00	1.07	0.00	0.00
Sulsulia	671	0.00	0.00	13.04	0.00	0.00	0.00	0.00	11.32	0.00	0.00
Hasadag Kalan	1719	0.00	0.00	8.12	0.00	0.00	0.00	0.00	9.02	0.00	0.00
Daltonganj	51952	292.43	748.02	91.26	172.41	158.99	758.48	798.67	91.38	178.55	108.62

2336