SECTORAL SHIFTS IN THE WORK-FORCE AND THE ORGANISATION OF SPACE IN A DEVELOPED AND A LESS DEVELOPED DISTRICT IN THE PUNJAB(1961-71): A PRELIMINARY EXPLORATION

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by

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CHAPTER - I

INTRODUCTION

The present study is a preliminary attempt to understand the relationship between sectoral shifts in the work-force and spatial organisation in a developed and a less developed district in the heartland of Green Revolution during the decade 1961-71. The subject of spatial organisation has been a relatively neglected field of study. Its relationship with sectoral distribution and shifts in the work-force has been almost totally ignored by geographers. One can find an extensive literature describing settlement patterns or occupational structure separately. But the mutual relationship between the two has drawn very little attention of researchers.

It is generally recognised that settlements with different functions grow at different rates and settlements of different size perform different functions. The problem, however, is to develop a model which may adequately identify and explain the two patterns in relation to each other in a dynamic setting. It is our intention in this study to make a preliminary exploration into this terra incognita of unexplained relationships.

It was during the decade 1961-71 that the developmental efforts of our country gathered momentum and therefore, it was felt that the question whether these have led to any change in the sectoral distribution of the work-force in relation to spatial organisation in a developed and a less developed district in the heartland of Green Revolution would of interest. It was also felt that such a study would enable us to find out whether the Clarkian hypothesis that the low levels of development are associated with a higher proportion of the total labour force engaged in agriculture and allied activities is correct in its entirety in the context of the Green Revolution. The succeeding pages would show that we have made a modest attempt to unravel some of the interesting features of sectoral shifts in the work-force, spatial organisation and economic development in the two districts.

1.1 <u>A Survey of Literature on Spatial Organisation, Economic Development and Sectoral Shifts in the Work-force</u>:-

As has been indicated earlier, the relationship between the spatial organisation, sectoral shifts in the work-force and economic development has been a neglected field of study. However, literature exists separately on spatial organisation, sectoral shifts in the work-force and economic development. The inferences drawn from the existing literature may prove helpful in the present study.

So far as the field of spatial organisation is concerned, a number of models and theories have been developed by various geographers and economists. It would be useful to examine their implications in order to make use of the inferences drawn by them for the present study. Most of the theories relating to spatial organisation have been developed by economists, namely von Thunen, Laumhardt, Weber, Lösch, Greehut and others. In this respect, the works of geographers generally lack a sound theoretical base,; and David Harvey[1] has rightly suggested that a major task ahead of geographers is to develop theoretical approach in geography with special reference to the theories of spatial structure and process. Christaller's[2] Central Place Studies is the only significant contribution of geographers to the theory of spatial organisation, per se. However, a large volume of works has been published by geographers which explore the role of urban settlements in the organisation of space. Among these, the more prominent are the contributions of Dickinson[3], Gottmann[4] and Berry[5] . It may also be noted that

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1. David Harvey, Explanations in Geography, Arnold, 1969
2. Walter Christaller, Central Place Studies in Southern Germany, 1933, translated by C.W. Baskin, Prentice Hall, 1966
3. R.E. Dickinson, City, Region and Regionalism: A Geographical Contribution to Human Ecology; Kagan Paul, 1947
4. J. Gottmann, Megalopolis: The Urbanised North Eastern Sea Board of the United States; MIT Press, 1961
5. B.J.L. Berry, Geography of Market Centres and Retail Distribution, Prentice Hall, 1967

during the sixties particularly geographers have tried to provide theoritical bases for their empirical works[6].

So far as the formulation of models on spatial organisation in geography is concerned, the contribution made by Christaller, Lösch, Timbergen and Friedmann are by far the most important. However, Christaller's theory has drawn the most attention. His ideas were elaborated by Losch (1954) and have been further advanced by others[7], though the basic content has not been significantly altered.

As opposed to the inductive method of Perroux[8], both Christaller and Lösch employed a general deductive method to explain the "size, number and distribution of towns"[9]. Based on the assumption that man tries to organise his activities over geographical space in an efficient manner, they argue that the structure of spatial organisation can be deductively derived and explained with reference to a number of ordering principles governing the formation of the structure of his model.

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6. M. Chisolm, Human Geography: Evolution or Revolution, Penguin Books, 1975

7. Notably by M. Beckmann, "City Hierarchies and the Distribution of City Size", Economic Development and Cultural Change, 1958, by B.J.L. Berry, "Cities as systems within systems of cities" Regional Science Association; Papers and Proceedings, 1963; and by E. von Boventer, Towards a unified theory of spatial economic structure", Regional Science Association: Papers and Proceedings, 1961

8. F. Perroux, "Economic Space: Theory and Application", Quarterly Journal of Economics, 1950; also reprinted in Friedmann and Alonso, Regional Development and Planning: A Reader; Combridge Mass, 1964

9. B.J.L. Berry & A. Pred, Central Place Studies: A Bibliography of Theory and Applications, Philadelphia, 1961

Christaller and Lösch start their analysis assuming a homogeneous plain with even distribution and quality of agricultural conditions and natural resources. At each point of this plain, the density of population, consumer preferences and production techniques for each product are equal. They have based their model on the existence of space exploiting activities, transportation costs and economies of scale. They have also assumed that each product has a corresponding demand function and all producers and consumers are assumed to behave rationally.

But the difference between the two models arises from their different way of treating the combination of the market areas of individual plants in a systematic spatial organisational structure. von Boventer[10] has rightly remarked that they start at opposite ends. Christaller starts from the top and moves to the bottom with the good having the smallest spatial range; and therefore develops the organisation from below.

Following the general deductive approach, Christaller[11] has arrived at a model of spatial organisation which can be summarised as follow:-

Human activities are organised in space so that horzontally they are located at regularly spaced clusters forming triangular lattices - and are centrally located with

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10. E. von Böventer (1961), op. cit.
11. Walter Christaller (1966), op. cit.

hexagonally shaped trading areas. In this system, higher order central places are more widely spaced than lower order ones and the latter are located at gravity centres of triangles formed by places at the next higher order.

Vertically, higher order centres supply all goods which are supplied by lower order centres. But in addition to this, they also supply goods of wider range that differentiate them from and set them above the lower order ones. Higher order settlements are larger with respect to number of activities, range of goods produced, volume of business and trading areas than lower order settlements.

By making another assumption that the number of places served by a central place at the next higher order in the system is fixed, another well-known characteristic of the vertical organisation of central place system can be derived i.e. a definite hierarchy can be established in the system in which a number of levels corresponding to the number of classes of goods can be identified[12]. Many scholars have expressed serious doubts about the realism of the model on the ground that its scope is limited to the service sector[13].

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12. B.J.L. Berry and W.L. Garrison "Functional Bases of the Central Place Hierarchy", Economic Geography, 1958

13. E. von Böventer (1961) op. cit. and R.L. Morril, Migration and the Spread and Growth of Urban Settlements, Lund, 1965

Starting from the same basic assumptions as Christaller, Lösch[14] developed a model of spatial organisation which had a more elaborate economic base. The basic characteristics of the model can be summarised as follows:-

(i) All goods are produced in one superior centre.

(ii) There is real specialisation, devision of labour and trade between centres i.e. smaller centres supply larger centres with their specialized products.

(iii) Concentration of centres takes place in "city-rich" sectors separated by interstitial sector which are less densely packed with centres.

(iv) Without further assumptions, nothing can be said about the relative sizes of centres except for the superior one being larger than all others. Centres with the same number of functions do not neccessarily provide the same kind of functions.

(v) Assuming that the size of centres is proportional to the number of plants, it can be shown that within the "city-rich" sector, the size of centres increases with distance from the central place and that smaller centres tend to get located about half way in between larger ones[15].

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14. A. Losch, The Economics of Location, New Haven, 1956

15. B.J. Gardener, "Models of Urban Geography and Settlement Location", Chapter 9 in R.J. Chorley and P. Haggett(eds.), Models in Geography, London, 1967

(vi) Lösch asserts that the vertical organisation would be hierarchical, but this is doubtful and cannot be proved without further assumptions. On the other hand, it seems to follow from the model that the size distribution is continuous[16].

On the whole, Losch's model is far less rigid as compared to Christaller's. It can be seen that the two types of organisations which emerge are quite different. Lösch's model appears to be applicable to transportable goods while Christaller's to immobile services. According to vön Böventer, the model developed by Christaller applies mainly to secondary i.e. manufacturing and processing industries[17]. If this be so, Lösch's and Christaller's models can be regarded as supplementing each other, the former explaining the spatial organisation of secondary activities and the latter that of service activities. Recent contributions to this field have , however, shown the possibilities of integrating vön Thunen's model of agricultural specialisation and location into an extended Christaller - Lösch framework so that primary, secondary and service industries may be treated within a broadly integrated framework.[18]

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16. W. Isard, Location and Space Economy - A General Theory Relating to Industrial Location, Market Areas, Land - Use, Trade and Urban Structure, MIT Press London, 1972
17. E. vön Böventer, 1961, op. cit.
18. Ibid.

J. Tinbergen[19] has also formulated a model of spatial organisation of human activities along lines similar to those of Christaller. The basic difference between the two is that while Christaller aimed at derving the horizontal and vertical organisation simultaneously, Tinbergen has separated the problem into two parts, first, the determination of size distribution of the centres and their industrial composition; and second the location of the centres. He starts with the assumption of a closed economy with agricultural production evenly spread over the area. The non-agricultural part of the economy is divided into an abritrary number of sectors. Each of the sectors has a minimum size of enterprise at which unit production costs are at the minimum and above which they remain constant. Prices are given and are assumed to be equal to value. All products are final consumer goods and the production is origanised in plants producing only one good. On the basis of demand and supply, one can derive the number of plants needed in the region to serve a particular sector. Each industry is then ranked in accordance with the number of plants. In fact Tinbergen's procedure of ranking industries may be treated as one way of arriving at the range of the various goods in the Christaller's model.

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19. J. Tinbergen, "The Spatial Dispersion of Production: A Hypothesis, Schweizersche Zeitschrift fur Volkwirtschaft und Statistik, 1961, and by the same author, "The Hierarchy Model of the Size Distribution of Centres", Regional Science Association Papers, 1968. Also cited in H.C. Bos, Spatial Dispersion of Economic Activity, Rotterdam, 1964

In order to find out the combination of plants belonging to each sector in each centre which minimises the total costs of transportation and production, Tinbergen formulates the following three hypotheses:-

(i) Every centre having an industry of rank h, also has industries belonging to lower ranked industries. So, the centres can be ranked according to their highest ranking industry.

(ii) Each centre exports the goods from the highest ranking industry.

(iii) The highest ranking industry in all the centres is represented by only one plant.

These three hypotheses enable us to determine the number of centres in each group and their industrial composition.

But the model suffers from the same limitations as Christaller's. Critics assert that both these models are applicable to service sector only. Tinbergen's model is, however, a little less rigid in its vertical organisation and allows for a more continuous rank - size relation. It is also obvious that the model is silent over the horizontal organisation which reflects the real impact of space as an obstacle to economic interaction.

The most severe criticism levelled against all the models of spatial organisation is that they are static and unhistoric. Instead of explaining how the spatial organisation

comes into being, they explain as how such an organisation would behave once it has already emerged on the scene in a temporally static context; or how it ought to behave from a total cost point of view.

It is questionable whether it is possible to explain the behavier and attributes of spatial organisation in the real world within the context of static models discussed above. Hilhorst[20] has rightly pointed out that this is a sphere of analysis wherein the question - whether the egg or the hen came first - cannot be neglected. Spatial organisations do not come into being all at once; they are end products of temporal processes, wherein by certain preconditions come first; and their configuration essentially determines what follows[21]. On the basis of this recognition, Fridemann[22] has recently developed a model of spatial organisation. His model deviates from those discussed above by:-

(i) being dynamic i.e. aiming at explaining how spatial organisations evolve;

(ii) its expression being in verbal qualitative statements; and

(iii) its inclination towards conditions in developing countries.

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20. J.G.M. Hilhorst, Regional Development Theory: An Attempt to Synthesize, The Hague, 1967

21. Ibid.

22. J. Friedmann, Regional Development Policy: A Case Study of Venezuela, Cambridge, 1966

Friedmann distinguishes four stages in the evolution of spatial organisation during the process of national economic development. The first is the stage of pre-industrial organisation. This stage is characterized by a number of relatively small independent centres evenly spread throughout the agricultural land. Each centre serves its own surrounding region. Because of the inter-centre trade on the minor scale, the growth possibilities, which are limited to interaction with the agricultural hinterlands, are soon exhausted. This stage is regarded as stable with respect to internally generated forces.

The next stage is characterised by primacy, where one single urban centres grows to a position of dominance over the whole region where it is located. Historically, this type of organisation may either lead to development or to the perpetuation of backwardness[23]. According to Friedmann, however, the primacy dominated organisation is essentially harmful for economic development[24]. Primate cities tend to be parasitic[25], feeding upon the rest of the region from which extensive migration to the primate city takes place. Alonso[26] argues that primacy is often associated

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23. B.J.L. Berry, (1961), op. cit.
24. J. Friedmann (1966), op. cit.
25. B.F. Hoselitz, "Generative and Parasitic Cities" in Sociological Aspects of Economic Growth, Glencoe, III, 1960.
26. W. Alonso, "Urban and Regional Imbalances in Economic Development", Economic Development and Cultural Change, 1968

with colonialism, the primate city being the geographical point of departure for exploitation of natural resources in the hinterlands. Friedmann[27] regards the primacy dominated spatial organisation as unstable. According to him, the problem of primacy relates not so much to the absolute size of the primate city, as to the lack of balance in the distribution of cities over the whole spectrum of sizes. He asserts that inter-regional balance in the spatial distribution of centres and a hierarchical vertical organisation are essential conditions for national development.

The third stage is that of transitional organisation, wherein, a certain degree of primacy still continues to dominate the region. This dominance, however, goes on weakening with the development of sub - centres in the hinterland. New resources from the former periphery are added to the national economy to accelerate the developmental process. This stage will not be stable either since there will still be pockets of poverty between the national and regional centres.

The fourth stage is, the stage of full fledged spatial organisation based on the hierarchy principle which covers the entire national territory. The goals of national integration, efficiency of location, maximum growth potential and a high degree of inter-regional balance is achieved during this stage.

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27. J. Friedmann, "Regional Planning: A Problem of Spatial Intergration", Regional Science Association Papers, 1959

Friedmann's model is also open to criticism. It has been stated, for example, that it does not specifty the conditions for and the mechanisms behind the transition from the pre-industrial stage to that of full fledged spatial organisation. Further, it does not distinguish properly between descriptive, positive and normative elements. Inspite of these, this model of spatial organisation represents a significant step towards a dynamic theory of how such organisation come into being and how they extend themselves gradually over space[28].

There also exists some literature on the nature of interdependencies between economic development and spatial organisation. It is true that difficult problems of indentification are always bound to arise if one wants to separate the impact of economic development on spatial organisation and vice versa. Inspite of this, some scholars have worked on the nature of relationship between spatial organisation and economic development.

Lampard[29] considers it useful to start the exercise with the study of the impact of economic development on spatial evolution because this impact appears to be stronger than that exerted by the latter on the former.

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28. Z.J. Pioro, Spatial Structure of the Tanzanian Economy, Dar-es-Salaam, 1969

29. E.E. Lampard, "The Evolving System of Cities in the United States: Urbanization and Economic Development" in H.S. Perlott and L. Wingo (eds.) Issues in Urban Economics, Baltimore, 1968

Hermansen[30] argues that it is necessary to specify the structure of the initial spatial organisation in order to explain how the process of economic development influences the spatial organisation of human activity. A gradual concentration of economic, social and cultural activities in the larger cities is led by the increased importance of economies of scale, external economies of agglomeration, declining role of transportation costs for commodities and increased migration and service trip mobility[31] . It is argued that the rising personal mobility in commuting and increased demand for space for building and recreational purposes lead to suburbanisation and urban sprawl.

Hermansen also states that agricultural and industrial revolutions in the process of economic development put pressure on spatial organisations, which are initially dominated by agriculture. Friedmann[32] argues that the theories of economic growth have the advantage in the dynamic analysis of the impact of economic development on spatial organisation, in as much as take the type of subsistence agricultural economy as the starting point, and that this suggest a possible correspondence between the stages in the volution of spatial organisation and in that

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30. T. Hermansen, "Spatial Organisation and Economic Devlopment: The Scope & Task of Spatial Planning, Development Studies No. 1, Mysore, 1971

31. Ibid

32. J. Friedmann (1966), op. cit.

of economic development. Hermansen also associates the evolution of spatial organisation with the "stages of economic growth". According to this theory[33], any region or area under normal conditions passes through the four stages of the traditional economy, the pre-conditions for take - off, the take - off and the drive to maturity as well as high mass consumption. It may, however, be noted that the first two stages of economic growth and their association with spatial organisation do not find adequate attention in his study. Much emphasis has been given on the stage of industrial revolution which is tried directly to radical changes in the methods of production leading to decisive consequences over relatively short periods of time[34].

Hermansen finds that the first industrial revolution had a profound impact on spatial organisation. It is during this period that basic transformations occur particularly in the attributes of urban settlements and in agricultural specialisation. He argues that in order to understand the impact of further industrialisation on spatial

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33. W.W. Rostow, The Stages of Economic Growth, 1960, Also"The Take-Off into Self-Sustained Growth" in A.N. Agarwal and S.P. Singh (eds.) Economics of Underdevelopment

34. Ibid.

organisation, it is necessary to keep the temporal interrelations[35] in mind.

On the basis of Datta Chaudhari's[36] study, Hermansen has explored the link between the second stage industrialisation and the second agricultural revolution. It is argued that agricultural revolution leads to extensive out - migration which create problems both in the areas of out - migration and in the receiving urban regions. Hansen[37] contends that occupational mobility within such areas, even if possible is very difficult and is, therefore generally reflected as geographical mobility i.e. out-migration which in turn, makes the conditions for the remaining population even worse.

A number of other studies have shown that there are two decisive factors which determine the impact of the matured process of industrialisation on spatial organisation- first, the type of the existing spatial organisation, which had emerged as a result or the initial agricultural and

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35. That is, at a given point or time there exists a pattern of distribution of consumer demand, a pattern of distribution of raw material sources, a certain pattern of demand for intermediary products and a given transportation network consisting a number of inter-connecting or trans-shipment points.

36. M. Dutta - Chaudhari, "Regional Development in South East Asia: Experiences and Prospects, A Short Summary UNRISD, Geneva, 1969

37. N.M. Hansen, "Regional Development and the Rural Poor", The Journal of Human Resources, 1967 and J.B. Paer, "Out-migration and the Depressed Area Problem", Land Economics, 1966

industrial revolutions and second, the extent to which the second stage of industrial expansion is linked to the first stage.

Hagerstrand[38] has devoted his attention to the study of the impact of industrialisation on spatial organisation and has identified three types in the evolution of the latter. The first one is marked by a relatively even distribution of natural resource exploitation, relatively even agricultural conditions and a relatively well articulated hirarchy of service centres. The second stage of industrialisation would tend to be well accomodated within the frame-work of existing spatial organisation. This leads to a relatively high degree of dispersion of industrial plants and only minor adjustments in the prevailing organisation. The second type of spatial organisation, which is characterized by a dominating metropolis, leads to a situation wherein the process of industrialisation tends to affect only the primate city. This generates an economy which is essentially dual in both functional and spatial terms[39]. Hirschman[40] argues that if complimentarities to resource - based industries in the region are strong, the process of industrialisation and urbanisation

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38. T. Hagerstrand, "Regional Utrecklings tendenser och Problem", Appendix B, Svensk Ekonomisk Tilveksta 1966-70, Stockhalm, 1966 referred by J. Friedmann, 1966, op. cit.
39. C. Furtado, "Intra - country Discontinuities: Towards a Theory of Spatial Structure", Social Science Information, 1967
40. A.O. Hirschman, The Strategy of Economic Development, New Haven, 1958

may be spread throughout the region by means of trickling down effects. Berry[41] states that if the process of trickling down takes place, the spatial organisation will be gradually modified from one of primacy to one of semi-primacy. Revkin[42] has expressed the view that as prosperity increases and sufficient external economies become operative, further "spinoffs" take place from the regional centres to their hinterlands - the small cities, smaller towns and the rural settlements in their surroundings. Friedmann[43], assets that use of the advanced state of economic growth, the influence areas of national and regional centres tend to flow into one another and work to eliminate the remaining pockets of backwardness. The third type of spatial organisation which is marked by a limited number of large urban industrial areas resulting from resource - based industrial complexes does not find enough attention in the study.

As far as the impact of spatial organisation upon economic development is concerned, Kulklinski[44] has pointed out that economic development has been achieved in areas and countries with very different types of spatial organisation. His conclusion is based on historical evidence which confirms

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41. B.J.L. Berry, (1969), op. cit.

42. M. Rivkin, "Urbanisation and National Development: Some Approaches to a Dilemma", Socio-Economic Planning Sciences, 1967

43. J. Friedmann, (1966), op. cit.

44. A.R. Kulklinski, Growth Poles and Growth Centres, Houston, 1969

that among the number of factors influencing economic development, spatial organisation does not appear to be a decisive one.

So far as the role of cities in the process of economic development is concerned, Lampard[45] has pointed out that it is modern urban-industrial development which has gradually transformed the modes of life, the values, system and socio-economic relationships. Friedmann[46] has also stated that cities provide at the local level a spatial organisation of interdependent activities that appear conducive to their further development. He asserts that cities are the main agents for spatial intergration of the social economic and cultural systems of a nation. This integrative ability is due to their functions as centres of trade and of religions, administrative and political activities. Spatial diffusion of innovations has been considered an important aspect of national integration.

Hoselitz[47] has viewed urbanisation in relation to economic development. Encouraged by his initiative,

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45. E.E. Lampard, "The History of Cities in the Economically Advanced Areas", Economic Development and Cultural Change, 1955

46. J. Friedmann, "Cities in Social Transformation" Comparative Studies in Society and History, 1961

47. Berf F. Hoselitz: Sociological Aspects of Economic Growth, Free Press, Glencoe, Illinois, 1968

Redfield and Singer[48] proposed a dichotomous classification of cities into centres of orthogenetic or heterogenetic transformation. The centres of orthogenetic transformations were the pre-industrial cities, the locii of great tradition, which carried forward an old culture into its systematic and reflective dimensions[49]. It is argued that orthogenetic cities gave way to heterogenetic cities in the wake of industrial capitalism.

Hoselitz[50] has argued elsewhere that cities could be either "generative", contributing to economic growth in the region or "parasitic", exerting a negative impact on the regional economy. Unlike Friedmann, he however made it clear that these two categories of urban settlements are not necessarily associated with different phases of cultural change. He has made a distinction between primacy and secondary urbanisation. He argued that while primacy urbanisation may be generative of economic growth, secondary urbanisation could exert an unfavourable effect upon the economic growth of wider geographical unit of which these societies formed a part.

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48. R. Redfield and M. Singer, "The Cultural Role of Cities", Economic Development & Cultural Change, Vol. 3, 1954, pp. 55 - 73. This volume contains large number of papers on urbanisation related with economic development.

49. Ibid, p. 53

50. Bert F. Hoselitz, "Generative and Parasitic Cities", Economic Development & Cultural Change, 1955, vol. 3, No. 3, pp. 278-94

The subsequent writings of Hoselitz[51] have also viewed heterogenetic cities as prime catalysts in the developmental process. The parasitism of such cities was considered only as a theoretical possibility. In all his arguments, it was implied that peasant societies could be changed by the spread effect of the spirit of capitalism into the countryside that was both influenced and ultimately dominated by the city.

David Harvey[52] has taken a different stand and the postulated that all cities might in fact be parasitical. He asserts that rather than generating growth for the wider region, they generate it only for themselves and more pricisely for those elites, who control the means of extracting the designated surplus from everybody else in society.

In the earlier writings, Hoselitz himself had suggested that the development of a given system of cities occurs in relation to the processes of economic growth[53]. This in fact, led to the revival of interest in an earlier

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51. Bert F. Hoselitz, "Urbanisation & Economic Growth in Asia", Economic Development & Cultural Change, 1957, vol. 8, No. 1, pp. 42-54

52. David Harvey: Social Justice and the City, John Hopkins, 1973, p. 238

53. B.F. Hoselitz, 1955, op. cit. p. 292

paper by Mark Jefferson on the "Law of the Primate Cities"[54]. Berry[55] turned his attention towards this problem and tried to establish the relationship between city size distribution and economic development.

While the controversy over the formulations of Hoselitz and Berry was on, a significant contribution was made by Friedmann[56] who presented an open system model of urbanisation. This model was presented with "a planner's optimism and laid out a scenario of what would happen if a country would successfully traverse the path from narrow impact of urban life styles to total immersion in urbanism"[57]. Viewed thus cities were considered to be organisers of economic, cultural and political space[58].

Perroux's[59] classical article on growth poles has also contributed to our understanding of the impact of spatial organisation on economic development. The concept is by and large related to his notion of abstract economic space as a field of forces consisiting of centres from which centrifugal forces emanate and to which centripetal forces are attracted. Perroux[60] states that each centre, being a

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54. M. Jefferson, "The Law of the Primate City" Geographical Review, 1939, vol. 29,pp. 226-232
55. B.J.L. Berry, "Some Relations of Urbanisation and Basic Patterns of Economic Development", in F.R. Pfouts (ed.) Urban Systems & Economic Development, Eugene, Oregon, 1962
56. J. Friedmann, Urbanisation: Planning & National Development, Sage Publications, 1973, pp. 167-88
57. J. Friedmann & R. Wulff, "The Urban Transition: Comparative Studies of newly Industrialising Societies", 1976, vol. 8 Edward Arnold
58. Infra p. 20.
59. F. Perroux, "Note sur la Notion de Pole Croissance" Economique Applique, 1955 referred by Kulkinski, (1969) op. cit.
60. F. Perrouz, (1950), op. cit.

centre of attraction and repulsion, has its hinterland which is set in the hiterland of other centres - Perroux identifies these centres as the poles of development in which economic growth takes place and is diffused through out the rest of the economy. When viewed in the context of spatial organisation, it is suggested that growth poles and grwoth centres should be identified and characterised by their spatial position, size hierarchical level, functional role and ability to promote and transmit economic development. Boudeville[61] states that the last two features are more important in the case of localized functional growth centres and growth poles.

So far as the study of tne interrelationship between sectoral shifts in the work-force, economic development and spatial organisation is concerned, a number of notable economists such as Petty, Adam Smith and Marx have made notable contributions. They have laid emphasis on the changing distribution of the industrial labour force. Clark, Fisher and Kuznets are most prominent among those who analysed the changing sectoral distribution in the work-force of the centres of economic growth in recent times.

Collin Clark[62] argues that there is a close relationship between development of an economy on the one hand and occupational structure on the other and economic progress

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61. J.R. Boudeville, (1966), op. cit.
62. Collin Clark, The Conditions of Economic Progress, 1967

is generally associated with certain distinct, necessary and predictable changes in occupational structure. He contends that a high average level of real income per head is always associated with a higher proportion of working popultion engaged in tertiary industries and a low real income per head is always associated with a low proportion of the working population engaged in primary production[63]. Fisher[64] also reaches the same conclusion. He states that in every progressive economy there has been a steady shift of employment and investment from the essential primary activities to secondary activities of all kind and to a still greater extent into the tertiary production[65].

Simon Kuznents[66] follows his predecessors and shows that in the countries where per capita income grew significantly, the proportion of the labour force engaged in agriculture declined and that in non-agricultural industries increased[67].

Most of the economists have argued that with economic development the occupational structure of a country undergoes significant changes. Tnis pattern will be of labour moving from less productive occupations to more productive ones. Since the secondary and tertiary sectors are definiterly more productive in terms of value added per worker, the share of

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63. Ibid p. 182
64. A.G.B. Fisher, Economic Progress and Social Security, 1945
65. Ibid p. 5-6
66. Simon Kuznets, Modern Economic Growth, 1966
67. Simon Kuznets, Economic Growth and Structures, 1969, p. 24

agriculture in total work-force declines while that of the secondary and tertiary sector increses. Economic growth, which is the result of increased productivity and technological progress, releases certain forces of demand and supply which in turn bring about these structural changes. These economists argue that as income starts rising, there is a shift away from demand for primary products and increase in demand for manufactured goods and services. This is stated to be the result of the low income elasticity of demand for primary products. The increasing productivity in the non-agricultural activities and the fall in the demand for agricultural products result in the outflow of resources used in production from the primary to the secondary and tertiary sectors. As a result, labour shifts from agriculture to manufacturing industries and services or one can say from less productive activities to more productive activities.

A growing economy is, therefore, necessarily one in which the productivity of labour is increasing. The rising level of technology aids this process by intensifying the shift of labour by constantly rising productivity and making it possible to produce new products resulting in increasing the demand for the same. Modern economists argue that as more and more resources, particularly labour, shift in favour of non-agricultural activities, this will manifest itself in the sectoral shares of the national product. But the structural change will be most evident in the case of the distribution

of the labour force. Ever since Collin Clark published his study, the structure of the working population has rightly been accepted as reflecting level of development of a country.

Most of the work reviewed so far is related with the experience of western countries. Very few of them took interest in the study of the Third World realities. Friedmann's model[68] regarding the role of cities was severly criticised by Morse who "drawing on his deep historical knowledge of Latin America, undercut with biting irony the professional optimism of the planner"[69]. As more and more studies were undertaken, with special reference to Third World countries it became obvious that the western theories related with spatial organisation and economic development failed to explain the realities of these underdeveloped countries. The detailed study into the process of the development of underdevelopment was done mainly by Frank[70], Furtado[71], and Fanon[72].

In the historical essay on the underdevelopment of Chile, Frank places particular emphasis on the loss and misappropriation of economis surplus in the process of capitalist underdevelopment[73]. A short essay on the

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68. Infra p.20:...
69. J. Friedmann & Robert Wulff, "The Urban Transition: Comparative Studies of Newly Industrialising Societies", Progress in Geography, vol. 8, 1976 Edward
70. Gunder Frank, Capitalism and Underdevelopment in Latin America, Monthly Review Press, New York
71. Celso Furtado: The Economic Growth of Brazil, University of California Press, 1963
72. Frants Fanon: The Wretched of the Earth, Penguin Books, 1967
73. Ibid p. 27-148

"Indian Problem" in Latin America contends that the basic of this problem lies in the extension of the capitalist expropriation of surplus out to the farthest reaches of society[74]. The contradictions of uneven development and of international as well as national and regional polarisation, in turn receive more detailed analysis in the study on the historical underdevelopment of Brazil[75]. The monopolistic nature of the structure of capitalism, finally, forms the centre of the analysis in the last study, on the underdevelopment of contemporary Brazilian agriculture[76]. The persistence of these underdevelopment generating contradictions of capitalism through out the history of capitalist development energes from all the studies covered by the book.

Fannon[77] argues that the Third World is not a homegeneous world. The differences are born of colonial history. Fannon hides nothing when he says that in order to fight against us the former colony must fight against itself or, rather, the two struggles form past of a whole.

McGee[78], took the initiative in developing a theory of colonial urbanisation. He was well acquainted with the situation in South East Asia. Unlike Hoselitz and Friedmann,

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74. Ibid p. 149-172
75. Ibid p. 173-308
76. Ibid p. 308-356
77. Fannon p. 9-10
78. T.G. McGee, The Urbanisation Process in the Third World G. Bell and Sons, London, 1971.

he did not assume that heterogenetic cities were more likely to be generative than parasitic in terms of economic growth. He took a different stand and argued that in the context of the majority of Third World countries, it seems that the theoretical frame-work which regards the city as the prime catalyst of change must be disregarded. He asserted that in order to understand properly the role of cities, one would have to investigate the condition of underdevelopment which characterized these countries and of which the cities were only a part[79].

The major contribution of McGee, however lay in his theory of urban involution[80]. The theory provides a sectoral model of the urban economy within the frame-work of dependent capitalism. In his analysis he has examined some of the reasons for the lack of revolutionary activity in the larger cities of the underdeveloped world. The facts of this model have been presented within the dynamic analysis of the penetration of capitalism. An attempt has also been made to assess what implications this might have to predictions of revolutionary change. But he does not elaborate on the implications of dependent capitalism in terms of the other aspects of urbanisation process, i.e. the patterns of growth of urban areas, the development of primacy or the economic

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79. Ibid, p. 31

80. T.G. McGee, 1971 op. cit. refer chapter 3, Revolutionary change and the Third World City: A Theory of Urban Involution" pp. 64-96

base of the colonial cities. Lack of empirical evidence to support his formulations is also felt in the study.

McGee's contributions have however, been revived in the recent works of Slater[81] and Milton Santos[82]. Their work was primarily concerned with the wider question of the spatial organisation of underdevelopment. But they have also pointed out the need for a new approach to the study of urbanisation in the underdeveloped countries. Santos appears to be cautious of the debate whether cities in these countries are parasitic or generative, orthogenetic or heterogenetic, immature or mature. In his opinion it is not even genuine debate since substantive problems are not involved and crucial questions are not answered.

Inspite of the stimulations provided by the works of McGee, Slater, Santos and others scholars on the urban process within the regional structure of colonial underdevelopment, the urban research in India remained unconcerned with the historical factors which had a significant impact on the contemporary urbanisation in the country.

A bulk of literature exists on the distribution of cities in India and their internal morphology and external

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81. David Slater, "Geography and Underdevelopment", Antipode, 1977, vol. 9, No. 3 pp. 1-21

82. Milton Santos, "Planning Underdevelopment", Antipode, 1977, vol. 9 No. 3, pp. 86-97

forms[83]. The poineering works in this field were those of Singh[84] and Alam[85]. Following their pattern and approach of number of scholars worked on the urban geography of individual towns and cities with special reference to their setting, morphology, functions and umland. The studies on historical growth of the port towns also came up but the analysis was confined to the delineation of their hinterland and to the description of the urban landscape of the ports and their demographic characteristics. Attempts were also made to classify Indian cities according to their functions as measured through the occupational and employment data[86].

Literature has multiplied on a larger scale in case of urban planning. But the emphasis has been on the individual city[87]. Sophisticated mathematical and statistical methods have also been applied in the analysis of urban systems, urban growth and the process of urbanisation[88].

A large number of economists, demographers and sociologists have also contributed to this field. Some of the

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83. The literature is reviewed by G.S. Gosal, "Urban Geography" in A Survey of Research in Geography published by the Indian Council of Social Science Research, New Delhi, 1972 pp. 203-25

84. R.L. Singh, Banaras: A Study in Urban Geography, Banaras, 1955

85. S.M. Alam: Hyderabad - Secunderabad: A Study in Urban Geography, Allied Publishers, Bombay, 1965

86. Kusum Lata: Morphology of Indian Cities, N.G.S.I., 1973

87. G.S. Gosal of cit, foot note 26

88. See Allen G. Noble & A.K. Dutt: Indian Urbanisation & Planning, Tata McGraw Hill, New Delhi, 1977

most notable among the social scientists are Asok Mitra[89] and Ashish Bose[90]. These scholars have provided a lot of information on the quantitative aspects of urban growth in India. But their work does not provide adequate explanations since their approach has been demographic and their analysis has been more or less quantitative. These works prove useful only for exploratory research.

Chattopadhyay and Raza[91] wrote a paper which was concerned with the organisation of space in a colonial set up. They have tried to present the sequence of the evolution of urban systems in such economies. They have also brought out the complex web of the socio-economic inter-linkages which accompained this evolution. In fact their study has paved the way for several subsequent works undertaken in this field.

In the subsequent writings[92] Raza has maintained that inspite of the many positive modifications introduced within

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89. Asok Mitra, Calcutta: India's City, Calcutta, 1963. For a detailed bibliography of Mitra's works related to urbanisation, see L. Jackobson & V. Prakash, Urbanisation & National Development, Sage Publications, 1971 p. 282

90. Ashish Bose: Patterns of Population Change in India, 1951-61, Allied Publishers New Delhi. For a detailed bibiography see L. Jackobson et. al. op. cit. pp. 254-55

91. Boudhayan Chattopadhyay and Moonis Raza "Regional Development: The Analytical Frame", Indian Journal of Regional Science, vol. VII, No. 1

92. Moonis Raza and Atiya Habeeb, "Characteristics of Colonial Urbanisation - A Case Study of the Satellite Primacy of Calcutta 1850-1921" in Manzoor Alam (ed), Urbanisation in Developing Countries, Osmania, Hyderabad, 1976

it since independence the regional structure of underdevelopment in India established by the Imperialist power to meet the requirements of its exploitative mechanism during the colonial period, still persists in its essential characteristics[93]. It is contended that the suction mechanism operates from the tiny hamlet to the international centre through a chain of local, sub-regional and national centres. Urban agglomerations in such economies act as foreign trade outlets. Port towns are said to be serving as focal points of a suction mechanism. It has been urged that the satellitic primate city of Calcutta which has grown up like a canibal ate up much that was vital in its hinterland. It became a potent instrument of urban atrophy. Spatial structure of modified underdevelopment in independent India has also been dealt with. The socio-economic interlinkages which accompany the evolution of spatial structure have been presented in the literary style.

Atiya Habeeb[94] has measured statistically the extent and magnitude of the phenonmena of urban atrophy in terms of a dimunition in the size of urban areas. Characteristics of "satellitic" primacy, economic structure and industrial base

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93. Cf. Moonis Raza, Atiya Habeeb & Amitabh Kundu - Spatial Organisation and Urbanisation in India - A Case Study of Underdevelopment, Occasional Paper No. 9, C.S.R.D./ S.S.S. Jawaharlal Nehru University, New Delhi, 1977

94. Atiya Habeeb, Characteristics and Processes of Urbanisation in Colonial India - A Case Study of Calcutta and Hinterland (1850 - 1921) Ph. D. Thesis, Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi, 1979

of colonial cities and the tertiarization of the colonial urban economy have been widely discussed in the study. It has been brought out that the colonial primate cities do not fit into the accepted models given for western primate cities. Certain hypotheses about satellitic primacy pertaining to their exogerous imposition, phenomenal growth, demographic characteristics and socio-economic functions have been tested through statistical analysis. So far as the economic structure of colonial cities is concerned, a general review of the sectoral distribution of the working population in the cities in the hinterland of Calcutta has been presented. The stagnant industrial base and the excessive tertiarization of the colonial urban economy have also been analysized in the study. A model of the tertiary sector of the colonial cities has been built around the demand and the supply factors involved in the growth of the tertiary sector and around the assumption that the proliferation of tertiary services in colonial cities was a symptosm of economic stagnation and not of growth.

This brief suvery shows how meagre is the literature on the relationship between the spatial organisation and sectoral shifts in work-force. Whatever the models of spatial organisation have been developed they are incapable of explaining the Third World realities. It is in this context that a developed and a less developed district in the green revolution belt of a

Third World country have been chosen to unravel some of the micro level tendencies of the pattern of sectoral shifts in work-force in relation to spatial organisation.

1.2 Objectives, Data Base and Methodology

The present dissertation deals with the sectoral shifts in work-force in relation to spatial organisation in Ludhiana and Mahendergarh district over the decade 1961-71. The study aims at exploring the relationships between economic development as reflected in sectoral shifts, on the one hand, and the organisation of space, as reflected in the redistribution of population among different size class of settlements, on the other. The behaviour of these relationships has been analysed firstly, in a comparative frame-work as between a developed district,- Ludhiana and a less developed district - Mahendergarh; and secondly, in a dynamic context, in response to the development process during the sixties. The main objectives of the study are:-

(i) to identify a developed and a less developed district in the Punjab and describe the physical, economic and social facts of the personalities of the two districts;

(ii) to attempt a brief review of the theories of spatial organisation and to assess the work done in the field;

(iii) to explore the relationship between the settlement size and the type of economic activity in a developed and a less developed district;

(iv) to find out the nature of relationship between the zi size of the settlement and the growth rate of the work-force in different industrial categories of the two districts;

(v) to explore the relationship between the settlement size and the change over the decade in the participation rate in different industrial categories of the work-force in the case of a developed and a less developed district.

The study is based on census data for 1961 and 1971, by and large available in the District Census Handbooks of Mahendergarh and Ludhiana. The following nine-fold industrial categorisation of the work-force was adopted in the 1961 census:-

(i) Cultivators

(ii) Agricultural Labourers

(iii) Mining, quarrying, livestock, forestry, fishing, hunting and plantations, orchards and allied activities

(iv) Household Industry

(v) Other and household industries

(vi) Construction

(vii) Trade and Commerce

(viii) Transport, Storage and Communication

(ix) Other services

The industrial classification of the work-force underwent the following changes in 1971:-

(i) Category III of 1961 viz. Mining, quarrying, livestock, forestry, hunting and plantations, orchards and allied activities

were split into two to constitute categories III and IV of 1971. Category III of 1971 now includes livestock, forestry, fishing and plantations, orchards and allied activities and category IV constitutes mining and quarrying.

(ii) Category V of 1971 has two parts (a) Household industry which constituted category IV of 1961, and (b) other than household industry which constituted category V of 1961.

Since the objective of the dissertation is to study the organisation of space in relation to sectoral shifts in the work-force between 1961 and 1971, the question of the comparability of data is quite important. The industrial classification of the work-force as introduced in 1961 has been taken into consideration in the present study for obvious reasons.

The definition of "worker" has also undergone a change in 1971. A person was considered to be a worker in the 1961 census in terms of his participation in any economically productive work. In the case of regular employment in any trade, profession, service, business or commerce, a person was taken as a worker if he was employed during any of the 15 days preceeding the day on which he was enumerated. The 15 days rule was, however, not applied in the case of seasonal work like cultivation, livestock, dairying, household industry. In such cases, if a person had put in an hour's regular work a day throughout the greater part of the working season he was considered as a "worker".

In the 1971 census, on the other hand, each person was asked to declare as to what his/her main activity was. A "worker" was defined clearly as a person whose main activity was participation in any economically productive work. Work also included effective supervision and direction of work.

The conceptual differences between the two definitions of the term "worker" can be summarised as follows:-

(i) While the dichotomy between "worker" and"non-worker" in 1971 was based on labour time disposition, it was based on gainful occupation irrespective of time spent in 1961.

(ii) The type of and order in which the economic questions were asked in the two census were different.

(iii) While the reference period prior to the date of enumeration for regular work was one week in 1971, it was a fortnight in 1961[95].

Because of the differences in the definition as in the censuses, the total number of workers as well as the participation rates have gone down in 1971 as compared to 1961. Krishnamurty[96] is, however, of the opinion that the census

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95. Census of India, 1971, Series I, Miscellaneous Studies, Paper I of 1974, p. 1

96. Krishnamurthy, J. "Working Force in 1971 Census" Economic and Polititai Weekly, vol. VII No. 3, January, 1975, p. 115

finding of 1971 was an underestimate. The Registrar General's office has also taken up a sample survey using 1961 and 1971 concepts to assess the extent of disparity in the 1961 and 1971 estimates and for the sake comparability of the two Census data, worked out "adjustment factors". Since this formula was evolved for the state level, it could not be used in our study as we are concerned with the district level data. Additionally, the formula has not been worked out for each category or sector, rendering it inapplicable for our study.

However, the problem may be solved to some extent, by considering male workers only at the two points of time. It is no doubt true that there has been decline in the labour force from 1961 to 1971. But it has mariginally affected the male labour force[97]. It is the number of female workers that has gone down considerably. An important reason for this is that the definition of "worker" adopted in 1971 was much stricter than the one adopted in 1961. This has obviously eliminated a large number of female workers from the category of the working population. It was, therefore, considered to be more appropriate in this study to use the male working population rather than the total working population for purposes of comparability and computing growth rates.

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97. The 1971 census shows a decline in the labour force from 189 million in 1961 to 184 million in 1971. But the number of male workers went up from 129.1 million in 1961 to 149.1 million in 1971. While the number of female workers went down from 59.5 million in 1961 to 31.3 million in 1971.

The proportionate share of workers employed in the three sectors[98] of the economy and nine industrial categories of work-force in the two districts have been worked out in the following size-groups of rural and urban settlements:-

Size-groups of rural settlements:-

Class XII	(Less than 200 persons)
Class XI	(200 - 499 persons)
Class X	(500 - 999 persons)
Class IX	(1000 - 1999 persons)
Class VIII	(2000 - 4999 persons)
Class VII	(5000 and above persons)

Size-groups of urban settlements:-

Class VI	(With less than 5000 persons)
Class V	(5000 - 9999 persons)
Class IV	(10000 - 19999 persons)
Class III	(20000 - 49999 persons)
Class II	(50000 - 99999 persons)
Class I	(100000 and above persons)

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98. The three sectors of the economy are primary, secondary and tertiary. The primary sector is made up of industrial categories I, II and III of 1961 census and categories I, II, III and IV of 1971 census. The secondary sector includes categories IV, V and VI of 1961 census and categories Va, Vb and VI of 1971 census. The tertiary sector is composed of categories VII, VIII and IX of both 1961 and 1971 census.

While classifying the settlements in different size-groups, the year 1961 has been taken as the base year. The settlement classified in a particular size-group in 1961 has been kept in the same size-group in 1971 as well, even if its population has corssed the upper limit of that size-group.

Sectoral shifts in the work-force have been studies from two perspectives. Firstly, taking the universe of the work-force of a particular category in the district as a whole its share in the different size-groups of settlements has been computed. These figures indicate the processes of relocation of economic activity in terms of the size-groups. Secondly, taking the universe of the work-force as a whole in the particular size-group of settlement, the shifts within it have been analysized.

The strategy of the green revolution has led to the emergence of two clusters of developed belts in India. The first belt comprises of Tamil Nadu coastal plains while the second consists of Punjab - Haryana - Western Uttar Pradesh. With a view to study the impact of green revolution on the sectoral distribution of the work-force, the Punjab appears to be quite suitable.

Economic historian generally agree that a rise in agricultural productivity generally precede or accompanies

industrial development[99]. Rostow's stages theory of economic growth has generalised the historical experence relating to the role of agriculture in the achievement of "the take-off into self sustained growth"[100]. According to him 'the preparation of a viable base for modern industrial structure required that quite revolutionary changes be brought in two non-industrial sectors-agriculture and social over head capital, most notably in transport'[101]. He has focussed a powerful spot light upon the distinctive but converging consequences of the revolution in agriculture and consequently upon its particular important role in the period of pre-conditions[102]. The general requirement of the transition is to apply quick yielding changes in productivity to the most accessible and naturally productive resources[103]. This implies that higher productivity in agriculture may be considered to be major attribute of the agricultural revolution in a country like India. In other words, the "Green Revolution" required revolutionary changes in the field of agricultural production. Since the Punjab has achieved a high level in the yield per hectare as well as the production and the growth rate in the two has also been quite high, its experience may be

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99. Simon Kuznets, Six Lectures on Economic Growth, The Free Press of Glonceo, New York, 1960, pp. 59-60

100. W.W. Rostow, The Stages of Economic Growth, The Cambridge University Press, 1962

101. Ibid, pp. 25-26

102. Ibid, p. 24

103. Ibid, p. 21

analysed with a view to see sectoral shifts in the work-force in relation to settlement size. Since it is intended to proceed in this analysis on the basis of settlement levels, it was considered appropriate not to cover the whole of the Punjab but to concentrate attention on a developed and a less developed district within the region.

Mitra[104] has identified Ludhiana as one of the most developed district and Mahendergarh as one of the less developed district in the Punjab. In classifying the districts on the basis of the levels of development, he has taken into consideration the general ecology of the area, agricultural infrastructure, participation in traditional sector, potential of human resources, distributive trade, manufacturing and infrastructure and organised industrial activity in the modern sector. Physical, economic and demographic facets of the personalities of the two districts suggest that these two spatial units are poles apart in their levels of development[105].

Since the objective of the study is to analyse the sectoral shifts in work-force in relation to spatial organisation the problem of the selection of temporal units acquires great importance. The two selected spatial units lie in the heartland

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104. Ashok Mitra, Levels of Regional Development in India, Pt. A (i), Census of India, 1961. Ludhiana was one of the thirteen districts which ranked the highest when the districts were arranged according to the levels of development in the Panjab state. Mahendergarh alongwith Hoshiarpur were at the lowest but one level of development.

105. Supra p. 47

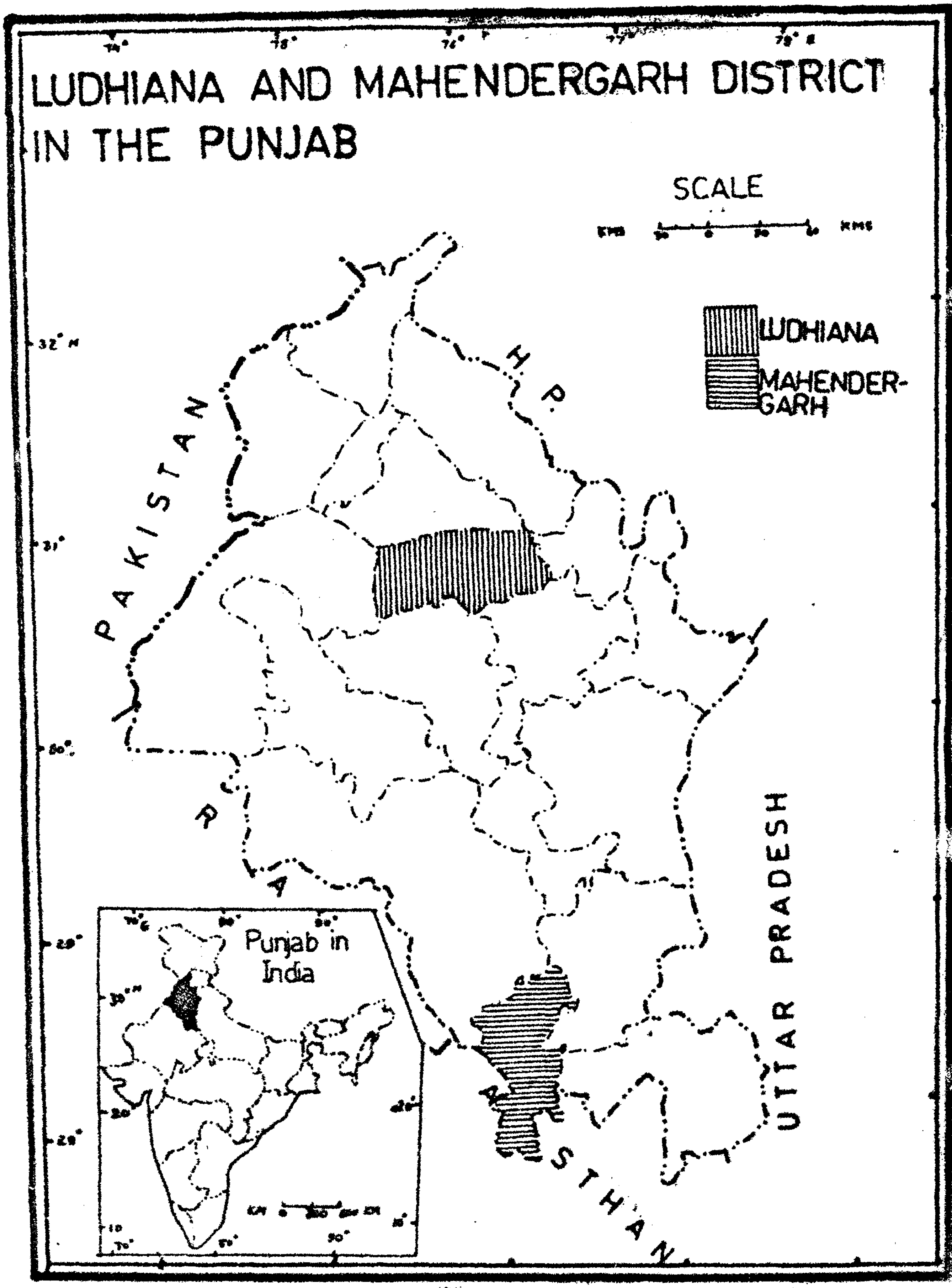
LUDHIANA AND MAHENDERGARH DISTRICT IN THE PUNJAB
SCALE
LUDHIANA
MAHENDER-GARH
PAKISTAN
H.P.
RAJASTHAN
UTTAR PRADESH
Punjab in India

Fig. 1

of the Green Revolution. The year 1961 and 1971 have been selected with a view to capture the effect of green revolution on occupational structure of the population. The 1961 period will give us the pre-green revolution results while the data for 1971 will show the broad pattern of post green revolution scene. Level of output and productivity was raised considerably during this decade. The use of new seeds coupled with scientific inputs such as chemical fertilisers, insecticides and pesticides resulted in substantial growth in out put of crops. The adoption of new technology and the consequent impact of green revolution on income distribution and the political implications of rapidly increasing power of cultivators in the green revolution area had a far reaching impact on the sectoral distribution of work-force. This process was certainly accompained by sectoral shifts in the work-force.

Further it is only during this decade that the developmental efforts of our country as a whole gathered momentum and it was felt that the question whether these have led to any significant change in the sectoral distribution of the work-worce in the Green Revolution belf would be of interest.

1.3 Organisation of the Study

The dissertation is composed of six chapters. In the first chapter, the problem has been stated, the received theories of spatial organisation and sectoral shifts in the work-force have been critically reviewed and the need to go beyond these formulations has been stressed.

The second chapter is devoted a description of the ecological, demographic, economic and spatial characteristics of the two districts. This is intended to serve as a backdrop for the inter-play of sectoral and spatial processes, which would be studied in the rest of the dissertation.

An analysis of the patterns of spatial organisation and changes in the sectoral distribution of the work-force in Ludhiana and Mahendergarh on the aggregated level of the district as a whole has been attempted in the third chapter. The frequency distribution of rural as well as urban settlements by population size at the two points of time are presented in relation to the sectoral changes in the work-force.

The problem of sectoral shifts in work-force in relation to different size-groups of settlements has been discussed in the fourth chapter. All the three sectors of the economy and nine industrial categories of the work-force have been taken into account while relating the changes in the sectoral distribution of the work-force with the settlement size.

The patterns of change in the sectoral distribution of the work-force in the rurban centres i.e. large villages (with a population of two thousand and above) and small towns (with a population ten thousand and above) has been analysed in the fifth chapter. This has been done with a view to escape the limitations of the dichotomous classification of settlement into "rural" and "urban" and with a view to treat the rural-urban

spectrum as a continuum.

A summaryof finding is presented in the sixth chapter, which also indicates that significant research questions that have come up as a result of this study.

CHAPTER - II

ECOLOGICAL, DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS OF LUDHIANA AND MAHENDERGARH DISTRICT

While studying a particular phemomena over a spatial unit, it is advisable to describe the regional structure of the area in order to get one-self acquainted with the prevailing conditions which may, in the ultimate analysis, prove useful in explaining the variable itself. The districts of Ludhiana and Mahendergarh have been selected with a view to study sectoral shifts in the work-force in relation to spatial organisation in the heartland of the Green Revolution. Before going into the real exercise, let us describe their ecological, demographic and economic characteristics:

2.1 Locational Aspects:- Ludhiana district lies in the central portion of the present Panjab state situated in 30^0 34' - 31^0 01' North latitude and 75^0 18' - 76^0 20 East longitude (refer Fig. 1). The district extends over an area of 3857 square kilometres. It is bounded by district Jullunder on the north, by district Ropar in the east, by district Ferozepur on the west and by district Patiala and Sangrur on the south (refer Fig. 2). The river Satluj forms its northern boundary separating it from Jullunder district (refer fig. 2)

Mahendergarh district, on the other hand, is one of the southern most district in the Panjab plain. It lies between North latitude 27^0 47' and 28^0 48' and East longitude 75^0 48' and 76^0 28'. On its north are situated the districts of Hissar

LUDHIANA IN REGIONAL SETTING

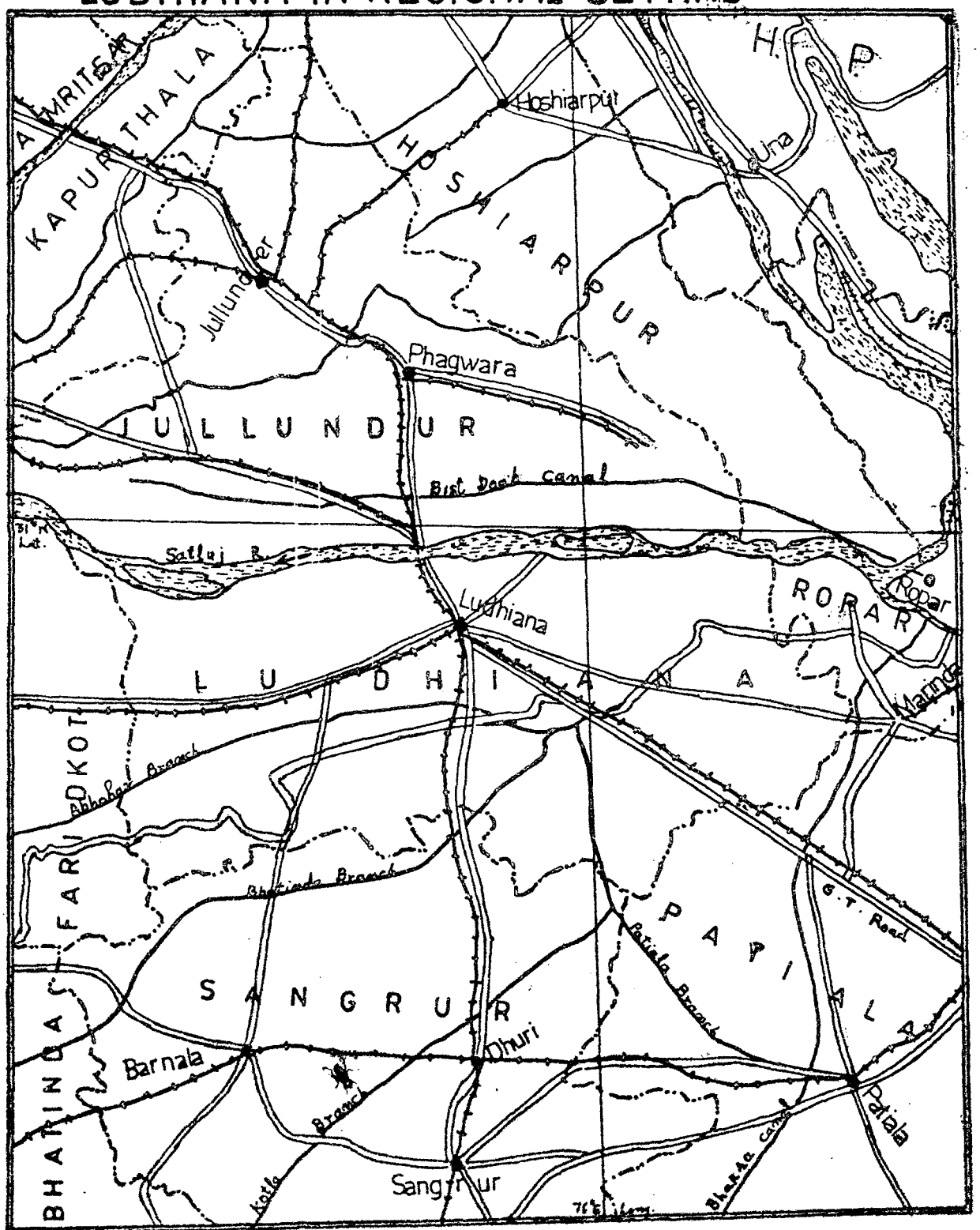

Fig. 2

MAHENDERGARH IN REGIONAL SETTING

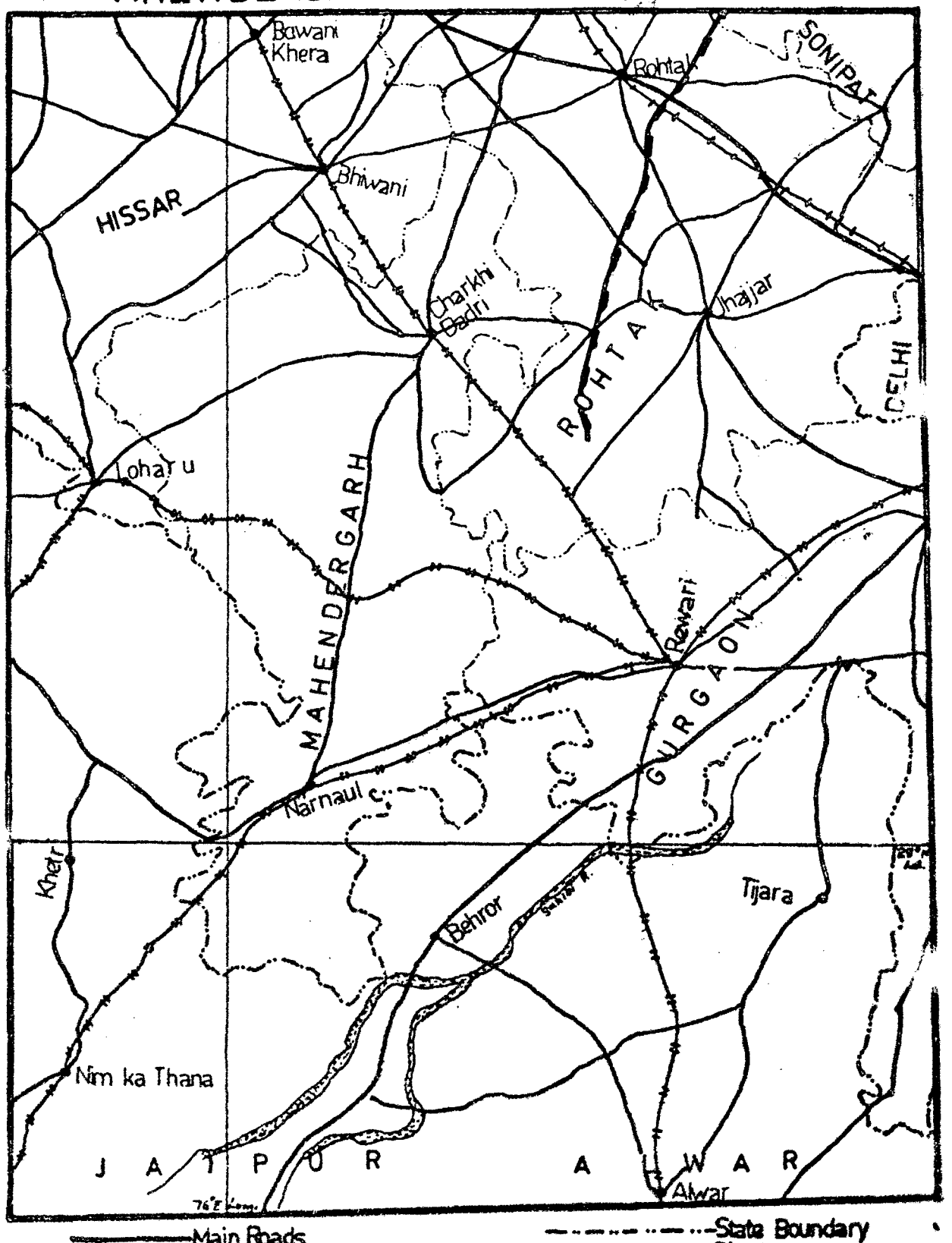

Fig. 3

and Rohtak, the former covering it up even in the north-west and the latter in the north-east (refer Fig. No. 3). On its east it adjoins district Gurgaon. On all other sides, the district is surrounded by the state of Rajasthan. To the south-east lies district Alwar. To the south are the districts of Jaipur and Sikar and on the south west and west is district Jhunjhunu of Rajasthan. In fact tahsil Narnaul of Mahendergarh district juts deep into Rajasthan territory. The thrust looks almost an intrusion into that state. The area is, therefore, a meeting ground of two district cultures and there is a perceptible influence of the Rajasthani mode of life at least on the people of this part of the district (refer fig. 3).

2.2 Physical Base:- The district of Ludhiana does not have any striking physical features. In the north, the district has a low lying alluvial tract along the Sutlej between its old course and the new course. This is popularly known as the "bet" land. The up-land or locally known as "dhia" forms the southern part of the district. When there is flood in the river Sutlej the "bet" are gets flooded but the "dhia" land remains unaffected. In Mahendergarh, on the other hand, the ranges which are part of the great Aravalli chain are a marked feature of the district. The Dhosi hill touches a height of about 2100 feet above the sea-level. The low land in the district abounds in sand and dunes, particularly in Mahendergarh tahsil.

So far as the study of soil types is concerned, the entire district of Ludhiana consists of alluvial soils. Both the 'bet' and the 'dhia' land are very fertile except for some areas of Samrala tahsil where sand ridges abound. Mahendergarh district, on the other hand, has loamy soils which can be divided into Dakar, Kasuli and Bhur. These are hard, light and sandy soils respectively. The Dakar is mainly found in the Dadri tehsil and the Kausli towards the west of the road running from Narnaul to Dadri and it changes into sandy loam near the hills. The Bhur is found all over the district yet it is more common in Mahendergarh tahsil.

In Ludhiana, Sutlej flowing along the northern boundary of the district is the important river. The river enters Samarala tahsil of the district and flows west for about 60 miles forming the boundary line between Jullunder and Ludhiana districts. Besides the river Sutlej, there is the Budha nala, which flows in the old course of the Sutlej. by the side of Ludhiana city and joins river Sutlej in Jagraon tahsil. Mahendergarh district, on the other hand, does not have any perennial river. There are, however, a few small streams and channels which flow only during the monsoon. The Dohan and Krishnawati are important among them. These streams originate near Jaipur hills and fan out in the plains of Mahendergarh and Narnaul tahsils respectively.

Climatically, the two districts are not very much different. They partake the climate of the Panjab plains. The temperature starts rising in the month of March and on a number of days crosses

115°F during mid May to June. In the winter, the temperature remains at a low level around 30 - 35°F in the months of December and January. The weather is severe in Mahendergarh district because of the presence of sandy soil and the shortage of water. Being very near to the Great Indian Desert, the district gets frequent dust storms in summer. The rainy season in the region sets in by the first week of July and lasts till the end of September, Some rains are also received from mid December to mid February. Ludhiana district is again suitably placed so far as the average annual rainfall in the two districts is concerned, Mahendergarh districts situated at the tail end of both the Bay of Bengal and the Arabian sea currents of the monseon, gets very little amount of rain. The rainfall during winter season is also sometimes negligible.

2.3 Demographic Characteristics:- The district of Ludhiana had a population of 1,419,421 in 1971. The average denisty of population works out to be 368 persons per sq. km. The highest denisty of population has, however, been reported in Ludhiana tahsil (483 persons per sq. km.) followed by Samrala (305 persons) and Jagraon (261 persons). The district of Mahendergarh had a population of 691,639 in 1971 extending over an area of 3959 Km^2. Thus the density of population works out to be 200 persons per sq. km. against the state figure of 227 persons per sq. km. The highest density of population has been reported in Narnaul tahsil (255) while the lowest density in Dadri tahsil (179).

The percentage of rural population to total population in Ludhiana district is 65.19 percent against the corresponding figure of 76 percent for Punjab state. The level of urbanisation is the highest in Ludhiana tahsil (47.83) while the lowest was reported in Samrala tahsil (15.28). Almost every 10th person in Mahendergarh district lives in its urban areas. Level of urbanisation is the highest in Narnaul tahsil (13.91) followed by Mahendergarh (9.17) and Dadri tahsil (17.50). The proportion of rural population to total population of the district of Mahendergarh is 89.78 percent against the corresponding proportion of 82.34 percent for Haryana state.

The sex-ratio in Ludhiana district is 846 females per 1000 males. This is lower than the state figure of 865. Maximum number of females per 1000 males has been reported in Jagraon tahsil (890) followed by Samrala (846) and Ludhiana tahsil (832). In Mahendergarh, the sex-ratio has been returned at 900 which is slightly higher than the corresponding state figure standing at 867. Mahendergarh and Narnaul tahsils have sex-ratio of 910 and 909 respectively while in Dadri there are 885 females for every 1000 males.

The higher proportion of urban population in Ludhiana accounts for higher literacy rate in the district. Highest literacy rate has been reported in Ludhiana tahsil (45.96) followed by Jagraon (38.56) and Samrala tahsil (36.64). Among the females too, though the literacy rate in the district is 35 percent only, yet it is the highest in the state. Lower

proportion of urban population in Mahendergarh accounts for lower incidence of literacy in the district. The literacy rate for the district has been returned at 26.03 percent against the state figure of 26.89 percent. The male and female literacy rates have been returned at 41.00 percent and 9.40 percent respectively. The highest and the lowest literacy rates have been recorded in Narnaul (29.65) and Mahendergarh (21.48) tahsil respectively.

About 30 percent of the total population of Ludhiana is engaged in various industrial categories of the work-force. At the tahsil level, Ludhiana again leads in the percentage of workers to total population. During the last three decades there has been a shift towards industrialisation in the district. Despite all this, a vast majority of population still depends upon agriculture. This is reflected in the structure of the work-force. In 1951, 53.7 percent of the working population was engaged in agriculture and allied activities. The corresponding figures for 1961 and 1971 were 53.9 and 50.8 percent respectively. The percentage of working population engaged in agriculture and allied activities is still less in case of Ludhiana tahsil (38.72 percent). The district can truely speak high of its manufacturing industry where 16.41 percent of the total work-force is employed. Ludhiana tahsil has, however, 23.84 percent of its working population engaged in manufacturing industry.

The workers constitute about 25.61 percent of the total population of Mahendergarh according to the data collected at the

1971 census. Dadri tahsil (28.31) has the highest proportion of its population engaged in economic activities followed by Mahendergarh (24.01) and Narnaul tahsil (23.96). The economic data relating to 1971 census further reveal that 72.71 percent of the working population is dependent on agriculture. The corresponding figures for 1951 and 1961 were 85.11 and 80.92 respectively. In fact Mahendergarh and Dadri tahsils are highly dependent on agriculture as the proportion of workers engaged in agriculture and allied activities stands at 74.75 and 74.64 respectively. Narnaul tahsil is, however, less dependent on agriculture since the proportion of workers engaged in agriculture and allied activities is 68.67. The district has 3.41 percent of its labour-force in household industry but only 2.41 percent in manufacturing industry. In the household industry, Narnaul tahsil takes a lead while in manufacturing activity Dadri tahsil dominates.

2.4 Land Use:- So far as the land-use is concerned, nearly 85 percent of the total area in both the districts is under cultivation. Very high proportion of the land under cultivation in these two districts is due to the fact that they are free from physical handicaps and the deficiency of rainfall is made up by irrigation facilities particularly in Ludhiana district. The areaunder forest is almost negligible in both the districts and one ninth of the total area is not available for cultivation. The reason for small acreage of forests in Ludhiana is that the district is mostly a flat are which is more suited for cultivation than for forestry. Cultivable wasteland, mainly due to water

logging, is also not substantial being only 3.33 percent of the total area. The percentage of area under different land-uses in Ludhiana and Mahendergarh districts is given below:-

Table 2.1

Land-use in Ludhiana and Mahendergarh Districts[1]

Land-Use	Percentage			
	Ludhiana		Mahendergarh	
Forests	0.16		0.60	
Net Sown Area	85.35		84.61	
Irrigated land		66.07		10.23
Unirrigated land		29.18		89.77
Cultivable waste	3.33		3.28	
Not Available for Cultivation	11.26		11.51	

As is obvious from the table, the position with regard to the land under forests is highly unsatisfactory in both the districts. The area under forest in Mahendergarh is about 0.60 percent of the total land while it is desirable that at least 20 percent of the total area should be covered by forests. Mahendergarh tahsil has the highest percentage i.e. 1.11 percent of its area under forest cover while Narnaul tahsil has practically no forest land (only 0.25 percent of its area covered

1. Source of Data: District Census Handbooks (1971) of Mahendergarh and Ludhiana

by forests). In Ludhiana district, Jagraon tahsil leads in the proportion of area under forests. The cultivable waste for the district of Mahendergarh works out to 3.28 percent of its total area. The total cultivable waste is 27858 acres as against the total area of 850555 acres. Narnaul tahsil has the highest percentage of areas as cultivable waste (4.04 percent) followed by Dadri (3.13 percent) and Mahendergarh tahsil (2.77 percent). In Ludhiana, cultivable waste is the highest in Ludhiana tahsil (5.38 percent) followed Samrala(2.94) and Jagraon (2.04).

2.5 Economy:- The economy of Ludhiana district continues to be agro-based. Revolution in the agricultural productivity in the late sixties is a marked feature of the district. It is also, side by side, developing its manufacturing sector. The district is well known for its small scale industries manufacturing woollen, hosiery and engineering goods. Ludhiana city has been called the "Small Scale Industrial Capital" of India. Mahendergarh, on the other hand, is predominantly agricultural. It has, however, the dubious distinction of being the most backward district of Haryana - both agriculturally and industrially. The biggest bane of agriculture in the district is the lack of assured and adequate irrigation facilities. The district does not have any worthwhile industrial unit except a cement factory at Dadri and few cottage industries like the manufacture of slates, stone-carving and marble in Narnaul and Kund village.

A study[2] in the performance of the Indian agriculture shows

2. G.S. Bhalla and Y.K. Alagh, Performance of Indian Agriculture: A Districtwise Study, A joint project of Jawaharlal Nehru University and Planning Commission, Govt. of India.

that the gross agricultural output has been found higher in Ludhiana district as comparative to Mahendergarh district both at the sixties and the seventies. The gross agricultural output (in '000 Rs.) in Ludhiana and Mahendergarh district for the seventies was 939203.12 and 201419.02 respectively. The corresponding figures for the sixties were 496081.21 and 129510.12 respectively. In the industrial field too, Ludhiana has shown spectacular progress. The gross industrial output (in '000 Rs.) for Ludhiana stood at 89134.08 in 1974. The corresponding figures for Mahendergarh district was only 1241.48[3]. This shows how the two districts are different from each other in their agricultural and industrial development.

The structure of the work-force may, however, prove to be a better tool in understanding the three sectors of the economy of these districts. At the 1971 census, about 51.28 percent the work-force of Ludhiana and 74.43 percent the work-force of Mahendergarh district was employed in the primary sector. The corresponding figures for the secondary sector were 22.25 and 6.75 respectively. In the tertiary sector, the proportion of these two districts stood at 26.47 and 18.83 respectively (refer table 2.2). Ludhiana exceeds Mahendergarh so far as the proportion of workers engaged in household industry, non-household industry, construction, trade and commerce, transport and communication and other services in concerned.

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3. Statistical year book (1976) for Punjab and Haryana states.

Table 2.2

Distribution of working population in different industrial categories of the work-force in Ludhiana and Mahendergarh districts (1971)

Sector/category		Ludhiana (%)		Mahendergarh (%)	
(a)	Primary Sector	51.28		74.43	
	(i) Cultivators		32.85		61.11
	(ii) Agricultural labourers		17.94		11.60
	(iii) Mining, quarrying etc.		0.49		1.72
(b)	Secondary Sector	22.25		6.74	
	(iv) Household industry		3.90		3.41
	(v) Non-household industry		16.41		2.40
	(vi) Construction		1.91		0.91
(c)	Tertiary Sector	26.47		18.33	
	(vii) Trade & commerce		9.94		3.95
	(viii) Transport & commun.		3.54		0.97
	(ix) Other services		12.99		13.91

The description of various characteristics of agriculture, industries and social infrastructure will however provide a better understanding of the economy of the two districts.

2.5.1 Agricultural Development:- So far as the pattern of agricultural development in the two districts is concerned Ludhiana appears to be well placed. The district of Mahendergarh is still on the path to achieve its objectives. The following table shows some of the interesting features.

Table 2.3[2]

Ludhiana and Mahendergarh districts:
Patterns of Agricultural Development
(1960's and 70's)

Variable	Ludhiana	Mahendergarh
Output per hectare 1960's (Rs.)	1586.73	364.13
Output per hectare 1970's (Rs.)	2124.89	548.13
Growth rate of output per hectare (1960's - 70's)	+ 33.92	+ 50.54
Fertilizer per hectare in nutrient tons (1960's)	14.63	0.79
Fertilizer per hectare in nutrient tons (1970's)	93.57	3.30
Growth rate of fertilizer per hectare (1960's - 70's).	+539.57	+317.72
Tractors per 1000 hectares (1960's)	5.19	0.29
Tractors per 1000 hectares (1970's)	11.49	1.10
Growth rate of tractors per 1000 hect.	+121.38	+279.31
Pumpset per 1000 hect. (1960's)	35.77	1.57
Pumpset per 1000 hect. (1970's)	114.19	19.91
Growth rate of pumpsets per 1000 hect.	+219.23	+1247.61
Irrigated area as % to total cropped area (1960's)	73.70	7.00
Irrigated area as % to total cropped area (70's)	96.21	11.34
Growth in the % of irrigated area (60's-70's)	+30.54	+61.53

2. Source of data: "Performance of Indian Agriculture: A

Ludhiana exceeds Mahendergarh in the output per hectare, fertilizer per hectare, tractor per 1000 hectares, pumpsets per 1000 hectares and irrigated area as percent to total cropped are in sixties as well as in seventies. So far as the growth rate of output per hectare, growth rate of tractors per 1000 hectares, growth rate of pumpsets per 1000 hectares, and growth rate of irrigated area as percent to total cropped area is concerned, Mahendergarh has surpassed Ludhiana although the growth rate in the absolute number has been less in the former than in the latter.

Wheat, maize, groundnut, cotton and sugarcane are the major crops of Ludhiana district. The important crops of Mahendergarh district are bajra, jowar, gram, sarson, barley and wheat. Means of irrigation in Ludhiana district are tube-wells and canals. The Sirhind canal, the gift of the Sutlej river, passes through this district. Although navigation is not possible in the canal as the supply of water is erratic and its banks are generally lower than the adjoining plateau, yet it has proved to be a great boon to the district as its water is used primarily for irrigation. In Mahendergarh, well is the most important source of irrigation. Recently, the tube-well irrigation has also shown signs of growth. In fact, the biggest bane of agriculture in the district is the lack of assured and adequate irrigation facilities. Only about 10 percent of its cultivated area is irrigated. The scope for the extension of irrigation facilities

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Districtwise Study" - A joint project of J.N.U. and Planning Commission under the directorship of G.S. Bhalla and Y.K. Alagh

is limited not only by its uneven and undulating topography but also due to the lack of availability of sub-soil water. The district abounds in sand and sand dunes and barren low hills of the Aravalli system. Sufficient part of the district is therefore rocky. The problem of the advancing "Great Indian Desert" adds complexity to the situation.

The area under high yielding varieties in Ludhiana is reported to be going up year after year because of the existing irrigation facilities. The district has the distinction of having the highest yield per hectare in wheat in India. Not only this, the district is leading major wheat growing countries of the world in yield per hectare. About 77 percent of the total cultivated area in the district is occupied by this crop. Both intensive and extensive methods of cultivations have been adopted in increasing the productivity of wheat. It is reported that the high yielding varities of wheat were first introduced in this district during the Rabi season of 1965 - 66 in an area of 70 hectares covering about 100 farming families. The area under high yileding varities of wheat increased by 97 percent during 1969 - 70 and in 1971 - 72 the whole area under wheat was covered by the high yielding varities[3]. According to the information released by Pubjab Agricultural University, the contribution of Ludhiana district to the central wheat pool from one acre of wheat is 6 times of India and about double of Pubjab state. Mahendergarh district, on the other hand, has not shown any significant change

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3. Statistical Year Book, Pubjab State, 1976

in agricultural productivity. Agriculture in the district is in fact a gamble in the monsoons. The tremendious growth in the agricultural output can not be obtained unless the water supply to the farmers is assured. The rainfall in the district is not only deficient but is marked by its capricious behaviour which is so characteristic of the arid areas. The failure of the rains even today creates conditions of famine and makes the district look as desolate as a desert. The failure of the monsoons in 1979 had an adverse impact on the Kharif as well as rabi crops in the district.

2.5.2 Industrial Development:- The district of Ludhiana has done well in the industrial sector since independence. It is reputed for its small industries not only in Pubjab but also in India. Ludhiana city has been rightly called "Small Scale Industrial Capital" of India because of its commanding position in hosiery manufactures, engineering goods and cycle industry. It is estimated that about eighty percent demand of the entire country in woollen hosiery is met by Ludhiana. Woollen hosiery goods are also exported to a large number of countries. Engineering goods, cycle and cycle parts are also exported to a number of countries in competition with the traditional exporters of these goods.

Industrial activity is steadily growing in Khanna, Jagraon and Samrala. This becomes clear when one looks at the pattern of change of the work-force in manufacturing activity. Khanna town has become a fast growing centre of small industries like manufacture

of small machines, cycles and cycle parts and woollen hosiery. Samrala and Jagraon towns are also getting industrialised with the establishment of iron re-rolling plants.

Agriculturally deficient, the district of Mahendergarh is no less backward industrially also. Except perhaps for the cement factory at Dadri, the district does have any worthwhile industrial unit. A few cottage industries can also be named like the manufacture of slates, stone-carving and marble, all based on the material produced or quarried locally. From the point of view of minerals, however, this district is the most important of all the district in the state as it holds out promise of good mineral yield. The district is known to have good mineral prospects though it has not yet started production of these minerals on a large scale and therefore these have not contributed towards the economic development of the district.

The following indicators will, however, give a better picture of the level of industrial development in the two districts. The table shows that the district of Mahendergarh has lagged behind in the level as well as the growth rate of these indicators of industrial development.

(refer table 2.4)

Table 2.4

Mahendergarh & Ludhiana districts : Indicators of Industrial Development.

	Indicator	Ludhiana	Mahendergarh
1.	Percent household and non-household manufacturing workers to total workers (1971).	20.31	5.81
2.	Percent household and non-household manufacturing workers to total workers (1961).	23.33	7.45
3.	Percent non-household manufacturing workers to total workers (1971).	16.41	2.40
4.	Percent non-household manufacturing wprkers to total workers (1961).	13.41	1.38
5.	Percent household to non-household manufacturing workers (1971).	23.82	142.22
6.	Percent household to non-household manufacturing workers (1961).	74.46	439.86
7.	Percent secondary workers to total workers (1971)	22.25	6.74
8.	Percent secondary workers to total workers (1961)	25.22	8.32
9.	Percent increase in non-household manufacturing workers (1961-71).	+74.12	+43.98
10.	Percent increase in household manufacturing workers (1961-71).	-44.04	-53.42
11.	Percent registered to unregistered establishment in manufacturing processing and servicing (1971)	8.68	2.18
12.	Percent Government to total establishments in manufacturing processing and servicing (1971)	99.62	99.34

2.5.3 Social Infra-Structure:- So far as the social infra-structure in the two districts is concerned, the district of Ludhiana better placed.

Educational facilities in the district of Ludhiana are available in 683 primary schools, 102 middle schools, 98 high or higher secondary schools and 21 degree colleges. Degree colleges are also located in 8 villages. No other district in the Pubjab state has so many degree colleges in rural areas. In Mahendergarh, there are 396 primary schools, 83 middle schools and 57 high or higher secondary schools. In addition, there are three degree colleges and 12 Vocational Training Institutions. Incidentally, all the Vocational Training Institutions are located in Narnaul tahsil.

There are 4.22 medical institutions per 100 sq. km. in the district of Ludhiana which is quite high in comparison to the state figure of 2.69. Ludhiana tahsil has the highest number of medical institutions per 100 sq. km. whereas Jagraon tahsil has the lowest number. The difference is, however, not marked. The number of medical institutions per 100 sq. km. for Mahendergarh district as a whole comes out to three only. Narnaul tahsil has an average of four thus exceeding the district average of three. On the other hand, Mahendergarh and Dadri tahsils fall short of the district average of three by one.

So far as the electrification of villages in Ludhiana district is concerned, the district lags behind Mahendeegarh where 100 percent electrification has been achieved. Out of 969 villages in Ludhiana district, only 600 could be electrified upto March, 1969. But on the question of rural drinking water supply the district of Mahendergarh is the worst affected.

Out of 969 villages in Ludhiana, 366 villages are connected by pucca roads, 91 villages by Katcha road, 3 villages by pucca and katcha roads, 28 villages by pucca road and rail, 2 villages by pucca, katcha roads and rail and 6 villages by katcha road and rail. The facility of pucca roads to the villages is, however, better within a small radius of the towns as compared to the villages lying at the peripheral zone. In Mahendergarh district, on the other hand, all the settlements have access to the pucca roads.

The district of Ludhiana has a number of post offices also. Samrala tahsil (8.44) has the highest number of post offices per 100 sq. km. whereas Ludhiana tahsil (7.69) has the lowest number. There are, however, 7.78 post offices per 100 sq. km. in the district while the corresponding figure for the Punjab state is 5.96. The total number of villages having post offices is 294 while telegraph offices are located in 12 villages. Five villages also enjoy the telephone facilities. The district of Mahendergarh, on the other hand, has only four post offices per 100 sq. km. as against 3 reported in Ludhiana. The number of post offices per 100 sq. km. is reported to be the highest in Narnaul tahsil (5.0). Dadri and Mahendergarh tahsils equal the district average of four post offices.

2.6 Settlement Structure:- In Ludhiana there are 1010 settlements including 35 uninhabited ones. Out of the total 975 inhabited settlements, 969 are rural. The district of Mahendergarh, on the other hand, is constituted of 5 towns and

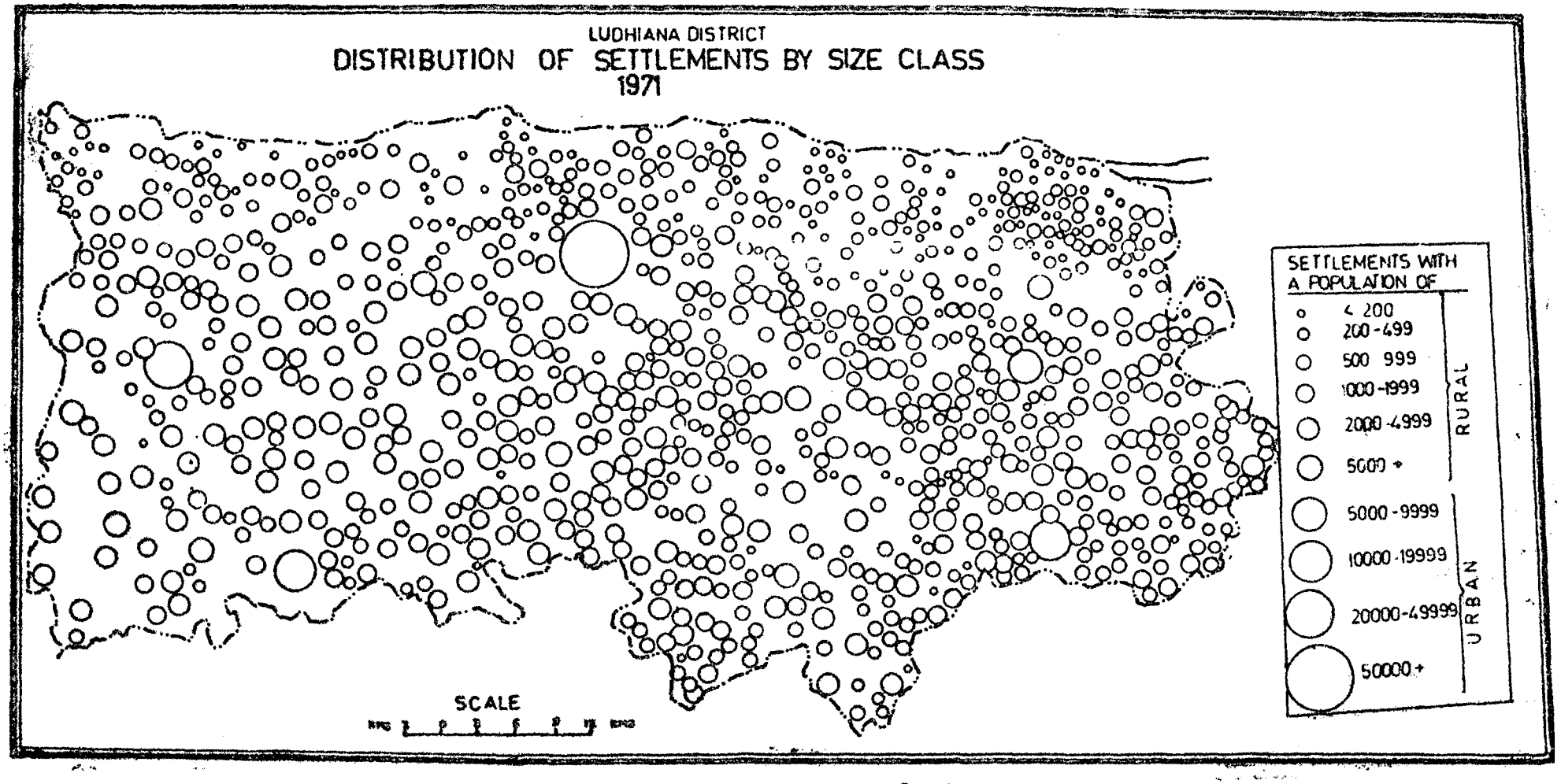

LUDHIANA DISTRICT
DISTRIBUTION OF SETTLEMENTS BY SIZE CLASS
1971
SETTLEMENTS WITH A POPULATION OF
< 200
200 - 499
500 999
1000 - 1999
2000 - 4999
5000 +
5000 - 9999
10000 - 19999
20000 - 49999
50000 +
RURAL
URBAN
SCALE

Fig. 4

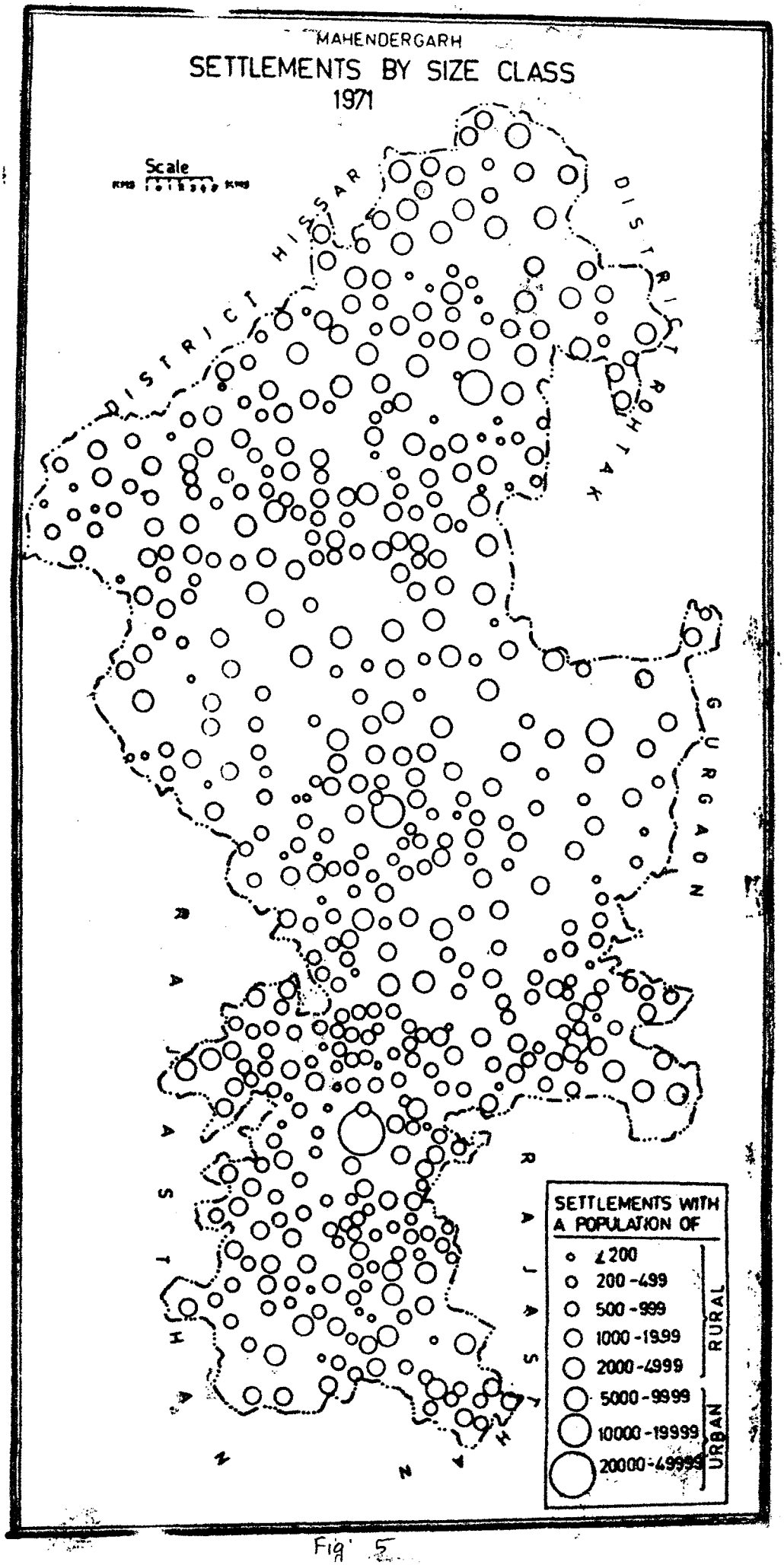

MAHENDERGARH
SETTLEMENTS BY SIZE CLASS
1971
Scale
DISTRICT HISSAR
DISTRICT ROHTAK
GURGAON
HARYANA
SETTLEMENTS WITH A POPULATION OF
< 200
200 - 499
500 - 999
1000 - 1999
2000 - 4999
5000 - 9999
10000 - 19999
20000 - 49999
RURAL
URBAN

Fig. 5

558 villages (refer fig 4 and 5). About 35.91 percent of the villages in Ludhiana are of small size (below 500 persons) having only one tenth of the rural population. More than 57 percent of the rural population is living in medium size villages (500 - 1999 persons) which account for less than 54 percent of the total villages in the district. The remaining one - tenth of the rural settlements account for about 33 percent of the rural population. About one seventh of the villages in Mahendergarh are small in size (below 500 persons) accomodating a little more than four percent of the rural population of the district. About three-fourth of the total villages are of medium size (500 - 1999 persons) accomodating 68 percent of the rural population. The rest of the villages account for about one fourth of the rural population (refer Fig. 4 and 5).

At the 1971 census, the district of Ludhiana had six urban centres viz, Ludhiana, Khanna, Jagraon, Samrala, Raikot and Doraha. Ludhiana city is accomodating more than 81 percent of the urban population of the district. The functional distribution of towns of Ludhiana district is shown in table 2.5.Out of six towns at the 1971 census, Ludhiana was the only monofunctional town. Raikot, Khanna and Doraha are bi-functional towns. Raikot is a primary activities-cum-trade and commerce-cum-industrial towns. Jagraon and Samrala are multi-functional towns, the former being trade and commerce-cum-industry-cum-services town while the latter services-cum-trade and commerce-cum-primary activities.

Table 2.5

Ludhiana District: Distribution of towns by functional categories[4]

Sr. No.	Functional category	No. of towns & their names
1.	Industry	1 (Ludhiana)
2.	Trade & commerce-cum-industry	2 (Doraha & Khanna)
3.	Primary activities-cum-trade and commerce	1 (Raikot)
4.	Trade and commerce-cum-industry -cum-services	1 (Jagraon)
5.	Services-cum-trade and commerce -cum-primary activities	1 (Samrala)

The five towns in the district of Mahendergarh are Narnaul, Mahendergarh, Charkhi Dadri, Kanina, and Ateli. Narnaul is the largest town in the district accounting for about 45 percent of the urban population. Of the five towns in the

4. At the 1971 census, towns have been classified on the basis of the percentage of total workers engaged in each of the five classes (The nine categories of economic activity were clubbed into five - first three activities were combined so as to make primary activity, household and manufacturing were clubbed so as to make industry and other categories remained unchanged) of economic activity. A town where 40 percent or more of the total workers are engaged in one occupation, has been classified as a monofunctional town e.g. service town, industrial town etc. If this condition is not satisfied then the next predominant occupation is taken into account and if the total of the two comes to 60 percent or more the town has been classified as bi-functional town e.g. Trade & commerce-cum-industry town. If the total of the workers engaged in the two major occupations does not come up to 60 percent, the third predominant occupation is taken into consideration and the town is categories as multifunctional town e.g. service-cum-trade and commerce-cum-primary activities.

district, Kanina is mono-functional specialising in primary activities (refer table 2.6). Ateli is bi-functional (commerce-cum-services) in character while Charkhi Dadri, Mahendergarh and

Table 2.6

Mahendergarh District:Distribution of towns by functional categories

Sr. No.	Functional categories	No. of towns along with their names
1.	Commerce-cum-services	1 (Ateli)
2.	Industry-cum-services-commerce	1 (Charkhi Dadri)
3.	Primary activities	1 (Kanina)
4.	Services-cum-commerce-cum-industry	1 (Mahendergarh)
5.	Primary activities-cum-services-cum-trade and commerce	1 (Narnaul)

Narnaul are multi-functional specialising in industry-cum-service-cum-commerce; services-cum-trade and commerce respectively.

Briefly, one can say that Ludhiana district has a definite edge over all the districts in the state both in the field of agriculture as well as in small industries. Therefore, we can treat this district as one of the most developed district in the Punjab. Mahendergarh, on the other hand, has lagged behind in developmental activities and it can be treated as one of the less developed districts in the Punjab.

CHAPTER - III

SECTORAL SHIFTS IN THE WORKFORCE AND THE ORGANISATION OF SPACE - THE OVERALL PATTERN IN LUDHIANA AND MAHENDERGARH DISTRICT

3.1 Frequency Distribution of Villages According to Population Size:-

According to the 1971 census, there are 542 inhabited villages of all size classes having about seven lakh people in Mahendergarh district (refer table 3.3, 3.5 and Fig. 6 and 7). The rural settlements of the district are grouped into six categories : 2.95 percent of the villages come under the twelfth category of the size-class (below 200 persons). The villages of this size-class are inhabited by only 0.26 percent of the rural population. About 11.81 percent villages are between the size of 200 to 499 persons inhabited by 3.88 percent population. The tenth size-class (500-999 persons) includes 37.45 percent of the villages having 24.65 percent of the rural population. This size-class has the highest number of villages. About 43.45 percent people live in 36.72 percent villages of the ninth size-class (1000-1999 persons). The eighth size-class (2000-4999 persons) consists of 10.70 percent villages inhabited by 25.75 percent population. Lastly, 0.37 percent villages are inhabited by 2.01 percent population in the size-class of above 5000 and above persons (for cumulative results refer Fig. 11 and 13).

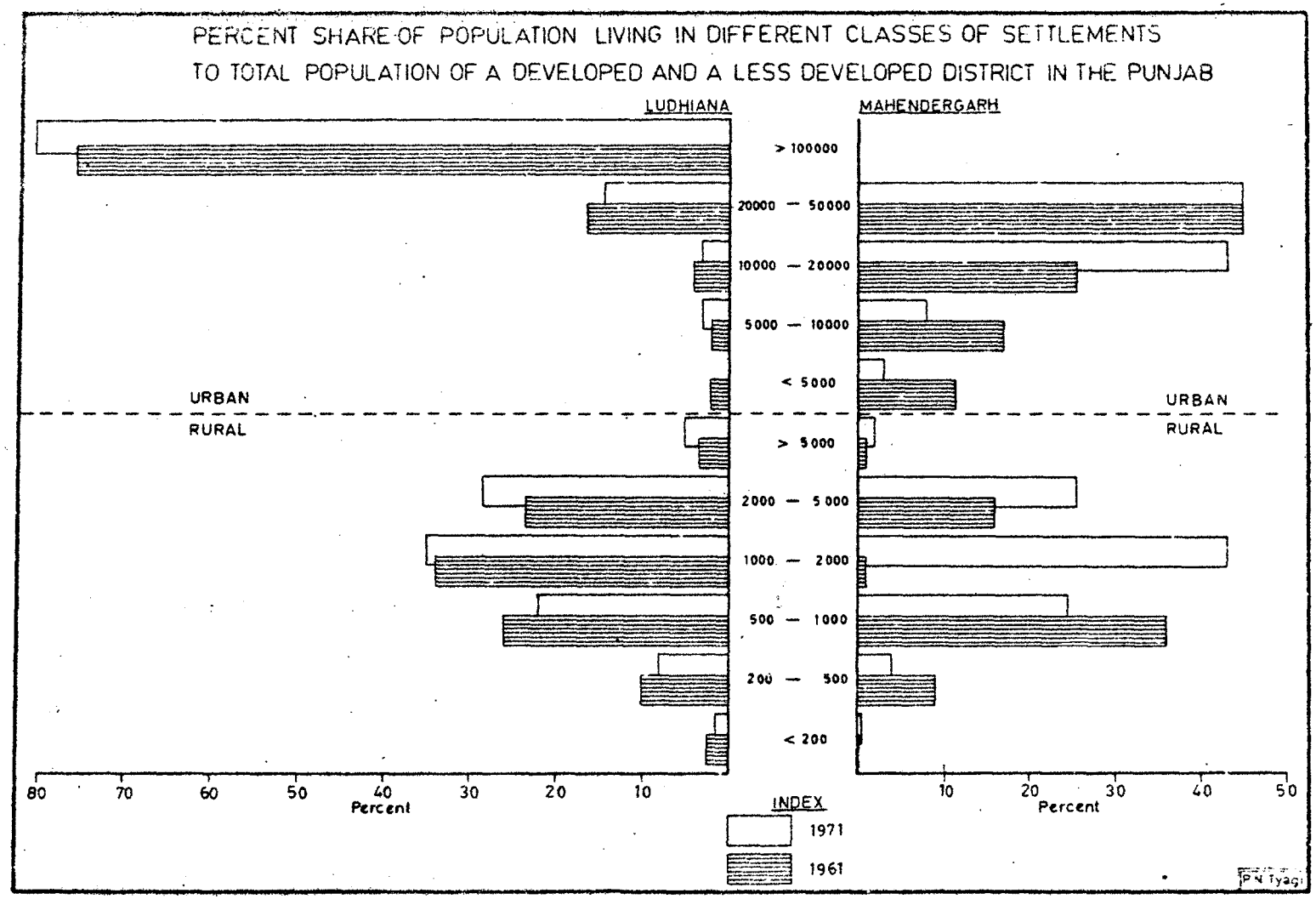

PERCENT SHARE OF POPULATION LIVING IN DIFFERENT CLASSES OF SETTLEMENTS
TO TOTAL POPULATION OF A DEVELOPED AND A LESS DEVELOPED DISTRICT IN THE PUNJAB
LUDHIANA
MAHENDERGARH
> 100000
20000 — 50000
10000 — 20000
5000 — 10000
< 5000
URBAN
RURAL
URBAN
RURAL
> 5000
2000 — 5000
1000 — 2000
500 — 1000
200 — 500
< 200
80 70 60 50 40 30 20 10
Percent
10 20 30 40 50
Percent
INDEX
1971
1961
P N Tyagi

Fig. No. 6.

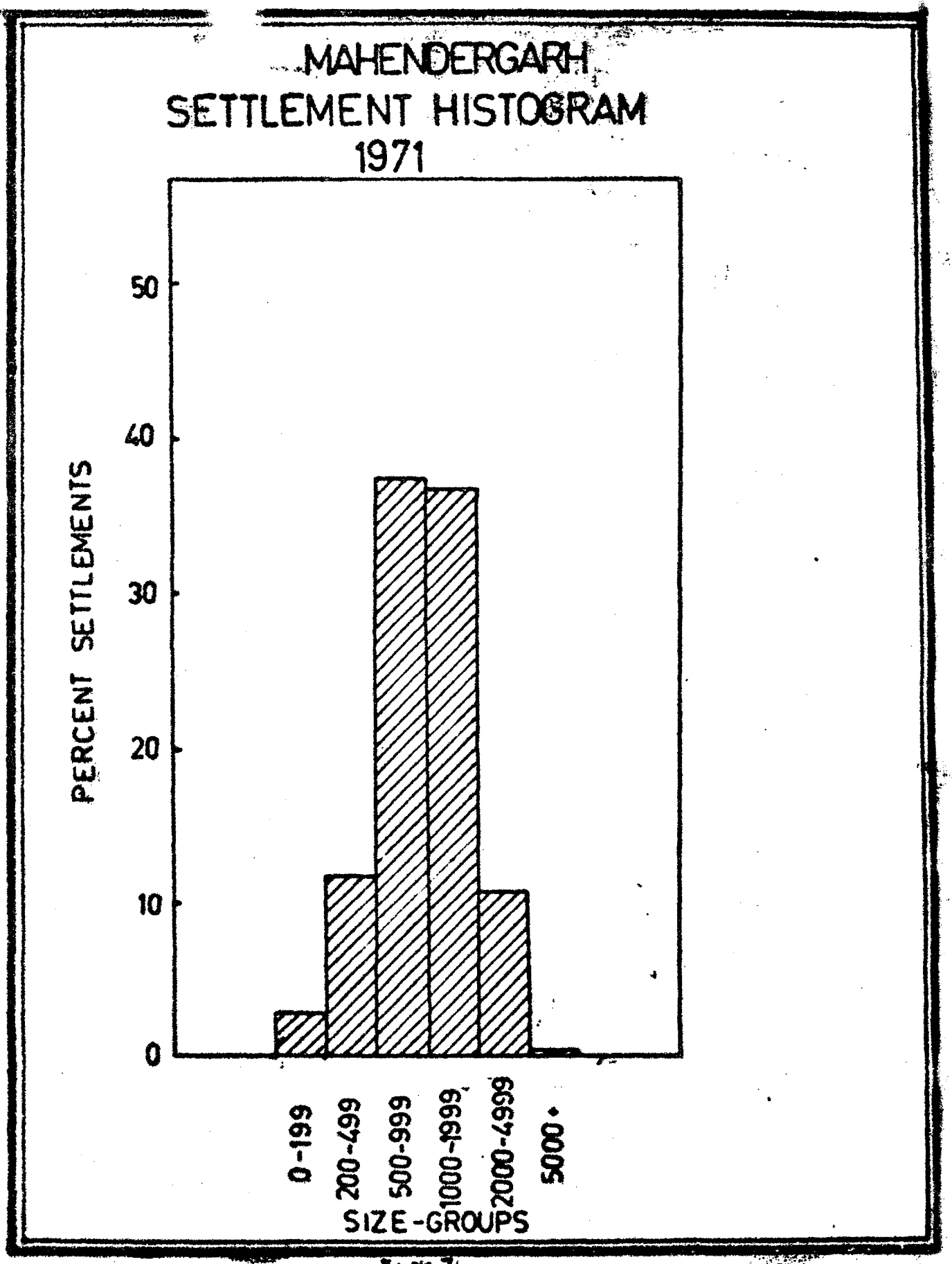
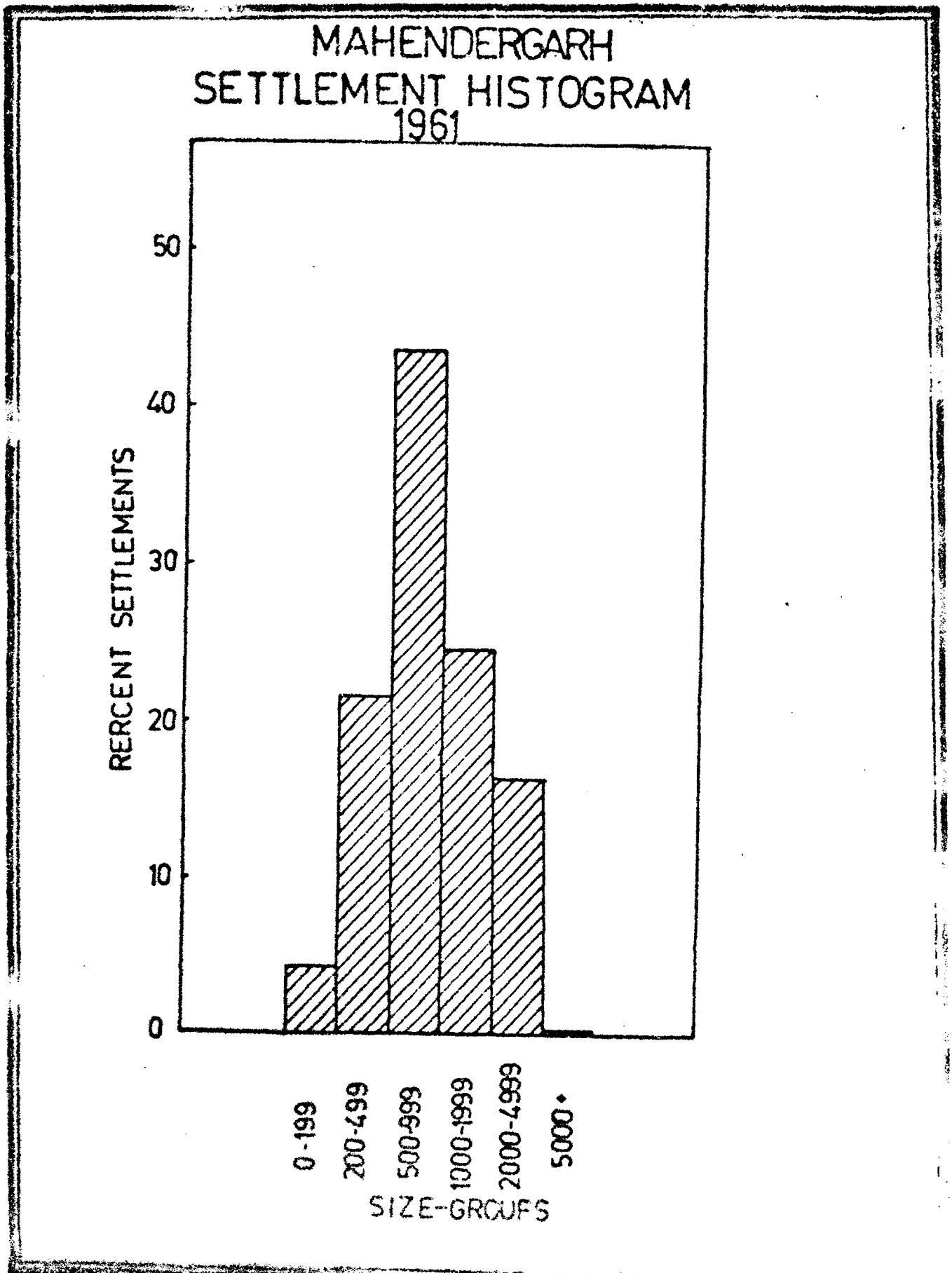

MAHENDERGARH
SETTLEMENT HISTOGRAM
1971
PERCENT SETTLEMENTS
50
40
30
20
10
0
0-199
200-499
500-999
1000-1999
2000-4999
5000+
SIZE-GROUPS

Fig No. 7


MAHENDERGARH
SETTLEMENT HISTOGRAM
1961
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0
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200-499
500-999
1000-1999
2000-4999
5000+
SIZE-GROUPS

Table 3.1

Ludhiana and Mahendergarh Districts: Changes in the percentage of total number of rural settlements by size classes

District	Year	∠200	200-499	500-999	1000-1999	2000-4999	5000+	Total
Ludhiana	1961	159 (18.51)	205 (23.86)	256 (29.80)	175 (20.37)	60 (6.98)	4 (0.48)	859
	1971	131 (13.52)	217 (22.39)	282 (29.10)	236 (24.36)	96 (9.91)	7 (0.72)	969
	% G.R.	-17.61	+5.85	+10.16	+34.86	+60.00	+75.00	+12.81
Mahendergarh	1961	23 (4.21)	177 (21.43)	239 (43.77)	135 (24.73)	31 (5.68)	1 (0.18)	546
	1971	16 (2.95)	64 (11.81)	203 (37.45)	199 (36.72)	58 (10.76)	2 (0.37)	542
	% G.R.	-30.43	-45.30	-15.06	+47.41	+87.10	+100.00	-0.73

Table 3.2(a)

Ludhiana and Mahendergarh District : Changes in the percentage of Rural Population by size classes

District	Year	∠200	200-499	500-999	1000-1999	2000-4999	5000+	Total
Ludhiana	1961	18307 (2.59)	71251 (10.07)	186872 (26.40)	240252 (33.94)	165461 (23.38)	25633 (3.62)	707776
	1971	15654 (1.69)	75037 (8.11)	206859 (22.35)	323361 (34.94)	263735 (28.50)	40713 (4.40)	925359
	% G.R.	-14.49	+5.31	+10.70	+34.59	+59.39	+58.83	+30.74
Mahender-garh	1961	2411 (0.49)	44058 (8.90)	179393 (36.25)	183910 (37.16)	79900 (16.15)	5206 (1.05)	494878
	1971	1635 (0.26)	24065 (3.88)	153096 (24.65)	269814 (43.45)	159888 (25.75)	12474 (2.01)	620972
	% G.R.	-32.19	-45.38	-14.66	+46.71	+100.11	+139.61	+25.48

Percentages are indicated within parenthesis.

Putting in a nut-shell, 14.76 percent villages are small in size (below 500 persons) having only 4.14 percent of the rural population, while 74.17 percent villages are of medium size (500-1999 persons) accomodating 68.10 percent of rural population; the large size villages are few in number (11.07 percent) with about 27.76 percent of rural population. For every large village there are about seven medium size villages in Mahendergarh district. So, the medium size villages dominate the scene of human settlements. Thus it has been observed that in Mahendergarh district, medium size villages are numerically high (74.17 percent) with two third (68.10 percent) of the total rural population; besides large number of people (27.76 percent) are also living in large size villages of the district.

It has been observed that the percentage of population and also of settlements under population size-class of less than 1000 persons have decreased in 1971 in comparison to that of the year 1961 (refer table 3.3, 3.4, 3.5,3.6, and Fig. 6, 7 and 9). On the contrary, the percentage of the population and settlements with 1000-1999 persons, 2000-4999 persons and 5000 and above persons have withessed increase. In 1961, the district had 25.64 percent villages in small size group (below 500 persons) accomodating only 9.29 percent of the rural population. Medium size villages (500-1999 persons) accounted for 68.50 percent of the total villages and at the same time consisting of 73.41 percent of the rural population. The large size villages (with 2000 and above persons) though accounting for 5.86 percent of the

Table 3.3
Cumulative Frequency (in %) Distribution of villages in Mahendergarh and Ludhiana district (1971)

Size-class	Mahendergarh			Ludhiana		
	No. of villages	% of villages	Cumulative %	No. of villages	% of villages	Cumulative %
0-199	16	2.95	2.95	131	13.52	13.52
200-499	64	11.81	14.76	217	22.39	35.91
500-999	203	37.45	52.21	282	29.10	65.01
1000-1999	199	36.72	88.93	236	24.36	89.37
2000-4999	58	10.70	99.63	96	9.91	99.28
5000+	2	0.37	100.00	7	0.72	100.00
Total	542	100.00	-	969	100.00	-

Table 3.4
Cumulative Frequency (in %) Distribution of villages in Mahendergarh and Ludhiana district (1961)

Size-class	Mahendergarh			Ludhiana		
	No. of villages	% of villages	Cumulative %	No. of villages	% of villages	Cumulative %
0-199	23	4.21	4.21	159	18.51	18.51
200-499	117	21.43	25.64	205	23.86	42.37
500-999	239	43.77	69.41	256	29.80	72.17
1000-1999	135	24.73	94.14	175	20.37	92.54
2000-4999	31	5.68	99.82	60	6.98	99.52
5000+	1	0.18	100.00	4	0.48	100.00
Total	546	100.00	-	859	100.00	-

Table 3.5
Cumulative Frequency (in %) Distribution of population in various size class of villages in Mahendergarh & Ludhiana district (1971)

Size-class	Mahendergarh			Ludhiana		
	No. of people	% of population	Cumulative %	No. of people	% of population	Cumulative %
0-199	1635	0.26	0.26	15654	1.69	1.69
200-499	24065	3.88	4.14	75037	8.11	9.80
500-999	153096	24.65	28.79	206859	22.35	32.15
1000-1999	269814	43.45	72.24	323361	34.94	67.09
2000-4999	159888	25.75	97.99	263735	28.50	95.59
5000+	12474	2.01	100.00	40713	4.41	100.00
Total	629721	100.00	-	925359	100.00	-

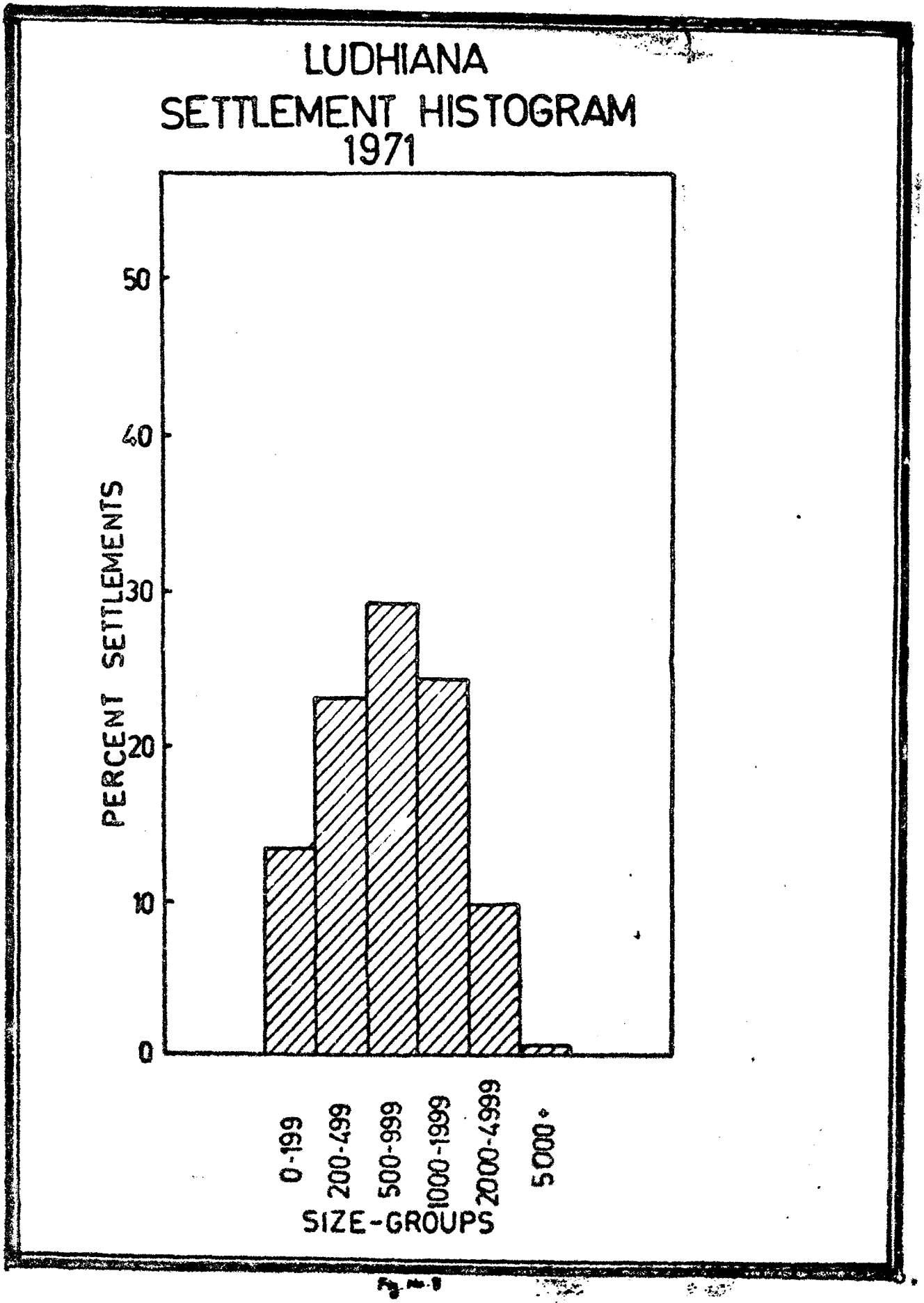
Table 3.6
Cumulative Frequency (in %) Distribution of population in various size class of villages in Mahendergarh & Ludhiana district (1961)

Size-class	Mahendergarh			Ludhiana		
	No. of people	% of population	Cumulative %	No. of people	% of population	Cumulative %
0-199	2411	0.49	0.49	18307	2.59	2.59
200-499	44058	8.90	9.39	71251	10.07	12.66
500-999	179393	36.25	45.64	186872	26.40	39.06
1000-1999	183910	37.16	82.80	240252	33.94	73.00
2000-4999	79900	16.15	98.95	165461	23.38	96.38
5000+	5206	1.05	100.00	25633	3.62	100.00
Total	494878	100.00	-	707776	100.00	-

total villages of the district inhabited 17.20 percent population (for comulative results refer figure 12 and 14).

In Ludhiana district, on the other hand, the twelfth size-group (0-199 persons) accounted for 13.52 percent of the total villages inhabited by only 1.69 percent of the rural population in 1971 (refer table 3.3, 3.5, and figure 6 and 8). The second size-group (200-499 persons) had 22.39 percent of the total villages having 8.11 percent rural population. About 29.10 percent villages are in the size-group of 500-999 persons inhabited by 22.35 percent of the rural population. This size class has the highest number of villages. The ninth size-group (1000-1999 persons) includes 24.36 percent of the total villages and 34.94 percent of the rural population. This size-group has the highest number of persons. About 9.91 percent villages consisting of 28.50 percent of the population fall under the eighth size-group (2000-4999 persons). The seventh size-group (5000 and above persons) had 0.72 percent of the villages and 4.40 percent of the rural population.

Briefly one can say that 35.91 percent of the villages in Ludhiana district are of small size (below 500 persons) having only 9.80 percent of the rural population. About 57.29 percent of the rural population is living in medium size villages (500-1999 persons) which account for 53.46 percent of the total villages in the district. The remaining 10.63 percent of the rural settlements may be termed as large size (2000 persons and above) which account for a large share of rural population


LUDHIANA
SETTLEMENT HISTOGRAM
1971
PERCENT SETTLEMENTS
0
10
20
30
40
50
0-199
200-499
500-999
1000-1999
2000-4999
5000+
SIZE-GROUPS

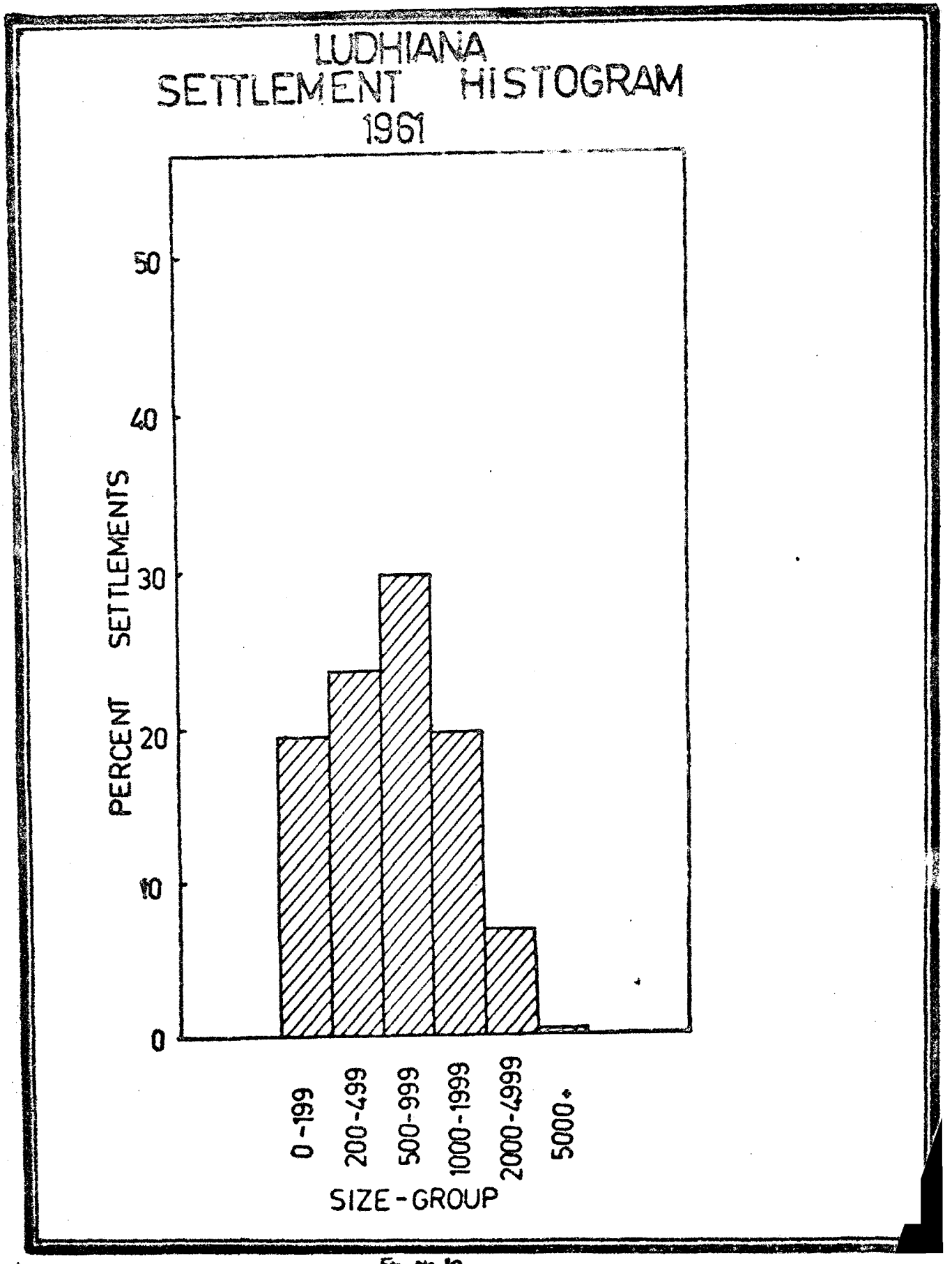

LUDHIANA
SETTLEMENT HISTOGRAM
1961
PERCENT SETTLEMENTS
0
10
20
30
40
50
0-199
200-499
500-999
1000-1999
2000-4999
5000+
SIZE-GROUP

Fig No. 10

(32.90 percent).

In 1961, Ludhiana had 18.51 percent villages in the lowest rung of settlements (0-199 persons). This size-group, however accomodated only 2.59 percent of the rural population (refer table 3.4, 3.6 and figure 6 and 10). The small size-group of settlements (below 500 persons) had 42.37 percent of the total villages accounting for only 12.66 percent of the rural population. The medium size-group (500-1999 persons) had 50.17 percent of the total villages and 60.34 percent of the rural population in the district. The large size-villages (2000 and above persons) had 7.46 persons of the total villages which accounted 27.00 percent of the rural population.

So far as the growth rate of settlements and population is different size-groups is concerned, it is the large size-group which have experienced high positive growth rate in both the districts. In Ludhiana, the size-groups 2000-4999 and 5000 + have experienced growth rate of +60.00 and +75.00 respectively so far as the number of settlements is concerned. The corresponding figures in these size-groups for Mahendergarh district are +87.10 and +100.00 respectively. As regards the growth of population in Mahendergarh district is concerned, the size-groups 2000-4999 and 5000+ have experienced growth rate of +100.11 and +139.61 respectively. The corresponding figures for these size-groups in Ludhiana district are 59.39 and 58.83 respectively. The size-groups 0-199, 200-499 and 500-999 have experienced nagative growth rate of number of settlements and population as

LUDHIANA AND MAHENDERGARH: CUMULATIVE PERCENTAGE DISTRIBUTION OF VILLAGES (1971)

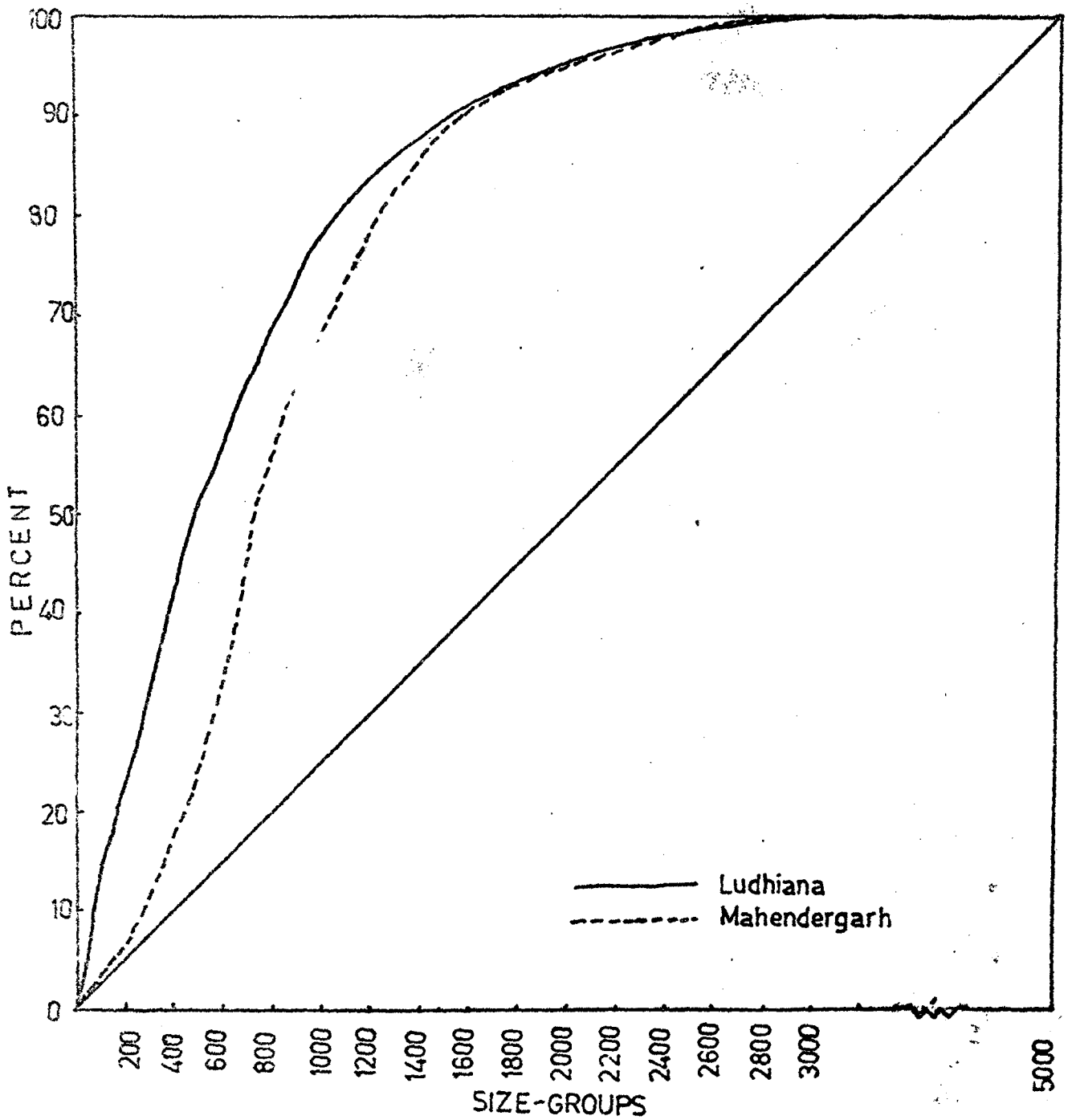


Fig. No. 11

LUDHIANA AND MAHENDERGARH : CUMULATIVE PERCENTAGE
DISTRIBUTION (1981)

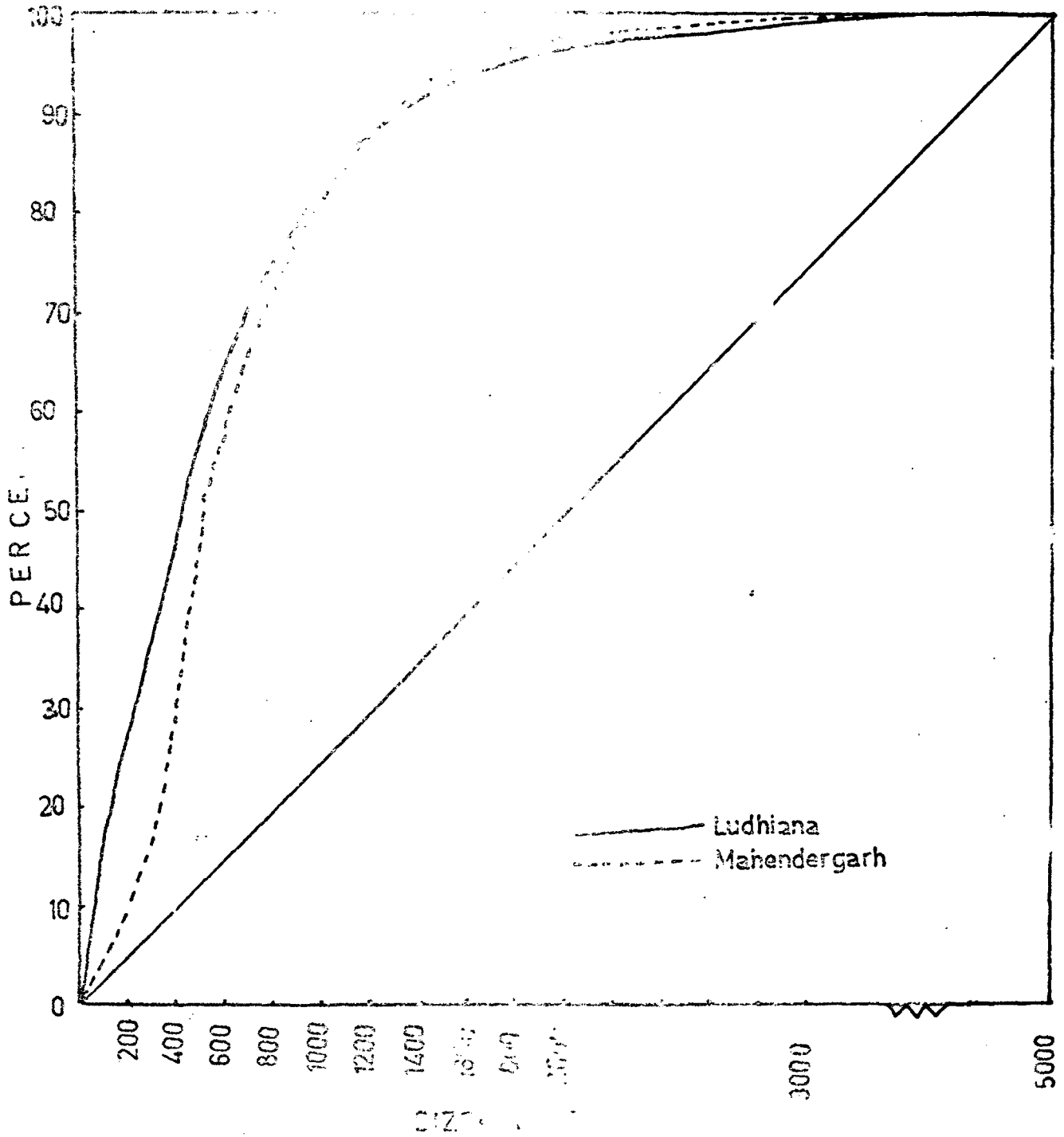


Fig. No. 12.

LUDHIANA AND MAHENDERGARH: CUMULATIVE PERCENTAGE DISTRIBUTION OF POPULATION IN VARIOUS SIZE CLASS OF VILLAGES (1971)

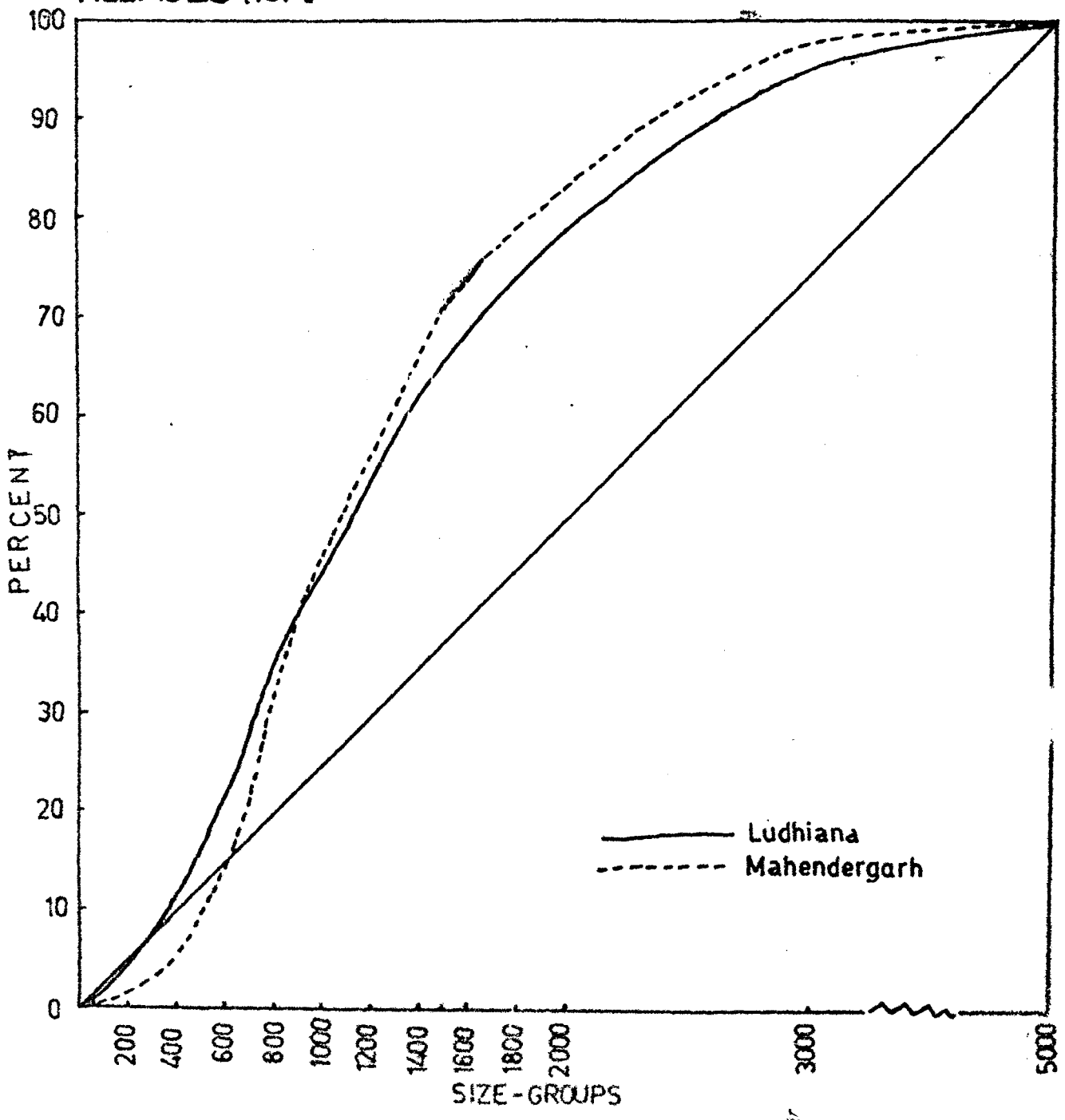


Fig. No. 13.

LUDHIANA AND MAHENDERGARH : CUMULATIVE PERCENTAGE DISTRIBUTION OF POPULATION IN VARIOUS SIZE CLASS OF VILLAGES (1961)

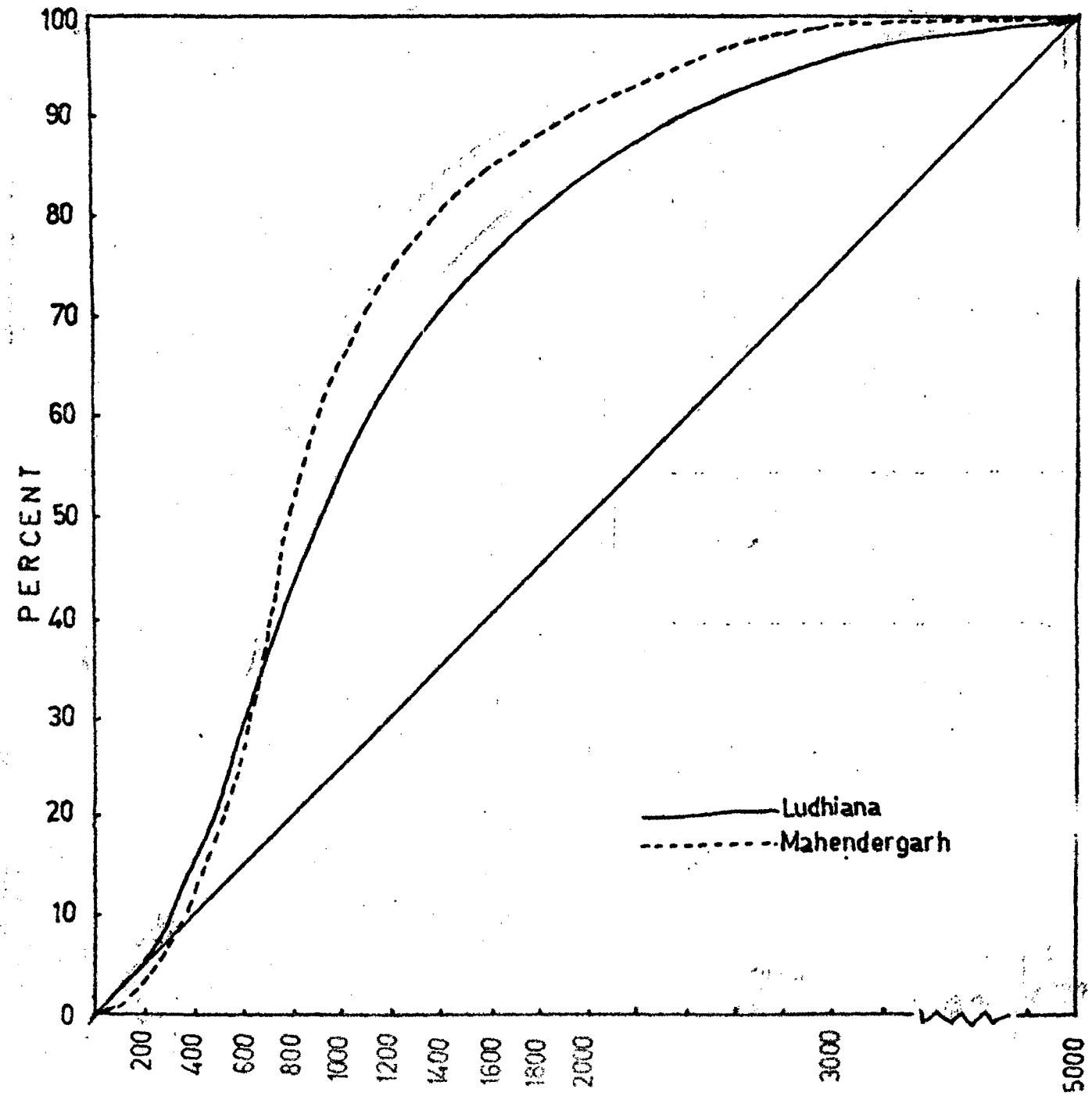


Fig. No. 14.

well. This is largely due to the transfer of some villages to Bhiwani district. In Ludhiana district, it is the lowest size-group which has experienced negative growth rate of number of settlements and that of population. The rest of the size-groups have, however, experienced positive growth rate in both the districts.

Briefly, the smaller size settlements i.e. size-class less than 500, have grown only marginally in Ludhiana district. In the case of Mahendergarh the change is negative and very high. With regard to the population size in large settlements i.e. in size classes 1000-1999, 2000-4999 and 5000 and above, the growth rate in Ludhiana has been much lower than that in Mahendergarh. It can be inferred from the above analysis that while adjustment in the rural base in the less developed district during the sixties has resulted in a more efficient system of settlements, this process has been relatively weaker in a developed district[1].

3.2 Frequency Distribution of Urban Settlements According to Population Size:-

So far as the urban settlements in the two districts are concerned, they are accomodating 34.81 percent population of Ludhiana and 10.22 percent population of Mahendergarh district. In 1971, Ludhiana had six urban settlements while Mahendergarh had only five. Ludhiana does not have class VI and class II

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1. Moonis Raza; A Framework for the Study of Rural - Urban Interactions in the Asia context, A paper presented in Bangkok, February, 1980

Table 3.2 (b)

Ludhiana and Mahendergarh District: Changes in the percentage of Urban Population by size classes

District	Year	⁄5000	5000-9999	10000-19999	20000-49999	50000-99999	100000+	Total
Ludhiana	1961	-	5439 (1.73)	11239 (3.57)	54033 (17.17)	-	244032 (77.53)	314743
	1971	-	13358 (2.73)	11709 (2.39)	67819 (13.71)	-	397850 (81.18)	490098
	% G.R.	-	+145.60	+4.18	+25.51	-	+63.03	+55.71
Mahender-garh	1961	6103 (11.52)	9071 (17.12)	13839 (26.13)	23959 (45.23)	-	-	52972
	1971	1937 (2.74)	5875 (8.31)	30980 (43.84)	31875 (45.11)	-	-	70667
	% G.R.	-68.26	-35.23	+123.86	+33.04	-	-	+33.40

Percentages are indicated within parenthesis.

urban settlements while Mahendergarh is deprived of class I and class II urban settlements. In Ludhiana, it is the class I settlement i.e. Ludhiana city which dominate the whole urban scene. It is accomodating about 81.18 percent of urban population of the district. In 1961, its share was a bit smaller i.e. 77.53 percent. Jagraon and Khanna towns fall in the order of class III urban settlements which accomodated about 17.17 percent of the urban population of the district in 1961 and 13.71 percent of the urban population of the district in 1971 (refer table 2.2). In 1971 class IV settlement of Raikot and class V settlement of Samrala had 2.39 percent and 2.73 percent of urban population of the district respectively. In 1961, the share of the two towns was 3.57 and 1.73 respectively.

The over-all growth rate of urban population over the decade has been +55.74 percent for Ludhiana district. The corresponding figure for Mahendergarh is, however, smaller i.e. +33.40 percent. The highest growth rate of urban population in Ludhiana district has been reported in class V size-group of settlement (+145.60 percent) followed by class I size-group (+63.03 percent), class III size-group (+25.51 percent) and lastly class IV size-group (+4.18 percent). The high growth rates of urban population in class V size-group is due to the addition of Doraha town to this size-group in the 1971 census.

Mahendergarh, on the other hand, had five urban settlements in 1961 as well as in 1971. Narnaul, a class III urban

settlement, is the largest town of the district. In 1971, it alone accomodated about 45.11 percent of urban population of the district. Its share in 1961 was a bit larger i.e. 45.23 percent. The growth rate of population in this category corresponds to the growth rate of urban population of the district. Class IV size-group has experienced maximum growth rate of urban population in the district. This is due to the addition of Mahendergarh town to this size-group in 1971. In 1961, this size-group had the town of Charkhi Dadri only. From mere 26.13 percent of the urban population of the district in 1961, this size-group rose to have a share of 43.84 percent of the urban population of the district in 1971. Class V urban size-group has experienced negative growth rate 35.23 percent because of the transfer of Mahendergarh town from this size-group to the next higher urban size-group. Kanina town got transferred over the decade from class VI size-group to class V size-group. The share of the former size-group in the urban population of the district fell from 17.12 percent in 1961 to 8.31 percent in 1971. The highest megative growth rate of urban population has been recorded in the lowest size-group of urban settlements. This is due to the transfer of Kanina town from this size-group to the next higher size-group.

Broadly, one may note that the growth rate of urban population in Ludhiana district is largely due to its lone urban industrial centre, Ludhiana, the other towns growing at a much slower rate even in comparison with those in Mahendergarh.

3.3 Sectoral Changes in the Work-force:-

At the 1971 census, 28.85 percent population of Ludhiana district and 39.01 percent population of Mahendergarh district was engaged in some form of economic activity. The corresponding figures for the year 1961 were 29.58 and 25.60 respectively. The growth rate of the work-force has been higher in the developed district (+42.29 percent) rather than the less developed district (-17.12).

The proporation of workers in the primary sector to total workers has been relatively very high in the agriculturally less developed district as compared to the developed district (refer table 3.7). This proportion has increased over the decade

Table 3.7

Ludhiana and Mahendergarh Districts: Changes in the percentage of work-force in different sectors of the economy (1961-71)

District	Year	Percent to total workers		
		Primary	Secondary	Tertiary
Ludhiana	1961	44.67	25.22	30.11
	1971	51.28	22.25	26.47
	% G.R.	+63.36	+25.42	+25.12
Mahendergarh	1961	81.56	8.32	10.12
	1971	74.43	6.74	18.83
	% G.R.	-24.32	-32.25	+54.42

in Ludhiana but declined in case of Mahendergarh. The growth rate of the work-force in this sector has also been reported very high in Ludhiana (+63.36 percent) as compared to Mahendergarh

PERCENT SHARE OF WORKERS IN DIFFERENT INDUSTRIAL CATAGORIES TO TOTAL WORKERS IN A DEVELOPED AND A LESS DEVELOPED DISTRICT IN THE PUNJAB

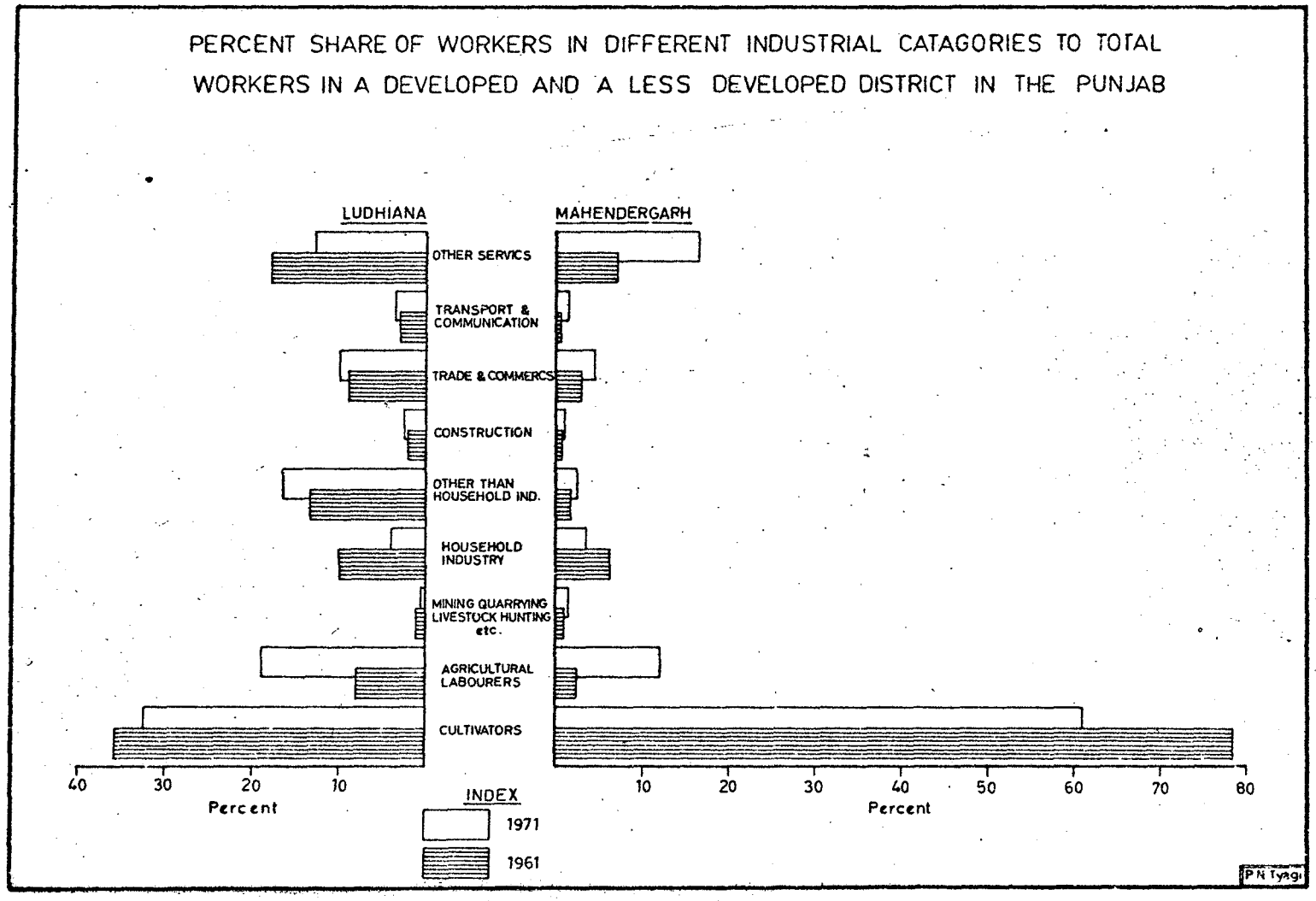

Fig. No. 15

Table 3.8
Ludhiana and Mahendergarh District:
Changes in the percentage of industrial categories of the work-force (1961-71)

District	Year	% to total workers									% to total population		
		Cultivators	Agri. lab.	Min. quarr. etc.	H. Ind.	N.H. Ind.	Construction	Trade & comm.	Trans. & commu.	Other services	Non-workers.	Workers	Population
Ludhiana	1961	36.19	7.80	0.68	9.92	13.41	1.88	8.81	3.26	18.04	70.42	29.58	
	1971	32.85	17.94	0.49	3.90	16.41	1.91	9.94	3.54	12.99	71.15	28.85	
	% G.R	+29.18	+227.19	+3.47	-44.04	+74.12	+44.59	+60.69	+54.50	+2.48	+37.41	+42.29	+38.81
Mahendergarh	1961	78.92	2.00	0.64	6.07	1.38	0.85	2.67	0.59	6.86	74.40	25.60	
	1971	61.11	11.60	1.72	3.41	2.40	0.91	3.95	0.97	13.91	60.99	39.01	
	% G.R.	-35.82	+379.78	+123.39	-53.42	+43.98	-10.90	+22.77	+36.67	+67.96	+53.98	-17.12	+26.25

(-24.32).

If we look at the share of workers in different industrial categories of the work-force it becomes clear that the percentage of cultivators to total workers was very high in Mahendergarh as compared to Ludhiana (refer table 3.8 and fig. 15). In 1971, the district of Mahendergarh had 61.11 percent of its working population as cultivators. The corresponding figure for the year 1961 was, however, very high i.e. 78.92. In Ludhiana, on the other hand, the proportion of cultivators to total workers in 1961 and 1971 was 36.19 and 32.85 respectively. These figures show that the share of the work-force engaged in cultivation has come down over the decade in both the district. Although Ludhiana has shown decline in the proportion of ~~experienced~~ workers engaged in cultivation yet it has experienced positive growth rate of the work-force in this category. The district of Mahendergarh has hsown negative growth rate of the work-force in cultivation.

So far as the proportion of workers engaged as agricultural labourers is concerned both the district have shown increase in the percentage figure over the decade. However, the growth rate of the work-force in this category has been higher in Mahendergarh (+379.78) as compared to Ludhiana (+227.19) despite the fact that in a particular year Ludhiana has a large proportion of workers engaged as agricultural labourers as compared to Mahendergarh (refer table 3.8).

Actually the growth of the work-force in agricultural sector in Ludhiana has been due to certain inter-sectoral shifts in working population mainly the movement of people from household industry to the agricultural sector. High growth rate of agricultural labourers in Ludhiana should not be taken as a result of the developing capitalistic relations based on, hired labour-force in other sectors of the economy. This becomes obvious when we observe that the growth rate of agriculrual labour in the agriculturally backward district of Mahendergarh has been significantly higher than that of Ludhiana. One can infer from the above analysis that the increase in agricultural labourers even in Ludhiana may be due to distress mobility of the population from one low productive sector to another.

Mining, quarrying, hunting, fishing, forestry etc. has not shown any significant change in Ludhiana. In case of Mahendergarh, however, there has been very high positive growth rate of the work-force in this category. The share of the work-force in this category to total work-force of the district has increased from 0.64 percent in 1961 to 1.72 in 1971. Very high positive growth rate in Mahendergarh district is due to the discovery of minerals in some area[2].

The above analysis shows that the changes in the proportion of primary sector workers mainly due to the change in the proportion of agricultural labourers.

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2. Supra p. 103-4

About one fourth of the working population of Ludhiana and one fifteenth of the working population of Mahendergarh is engaged in the secondary occupations. Both the districts have shown decline over the decade in the proportion of workers in this sector to total workers of the district. Inspite of decline in the proportion of workers in the secondary sector, Ludhiana has experienced positive growth rate of the work-force in this sector. Mahendergarh district has, however, shown negative growth rate of the work-force in this sector.

Analysis of the data at the disaggregate level will, however, provide a better understanding of the situation. In the household industry, both the districts have shown negative growth rate of the work-force. The decline in the proportion of workers in the household industry has been higher in Ludhiana but the negative growth rate of the work-force in this category has been higher in the less developed district (-53.42) than the developed district (-44.04). In Ludhiana, the proportion of workers is household industry to total workers went down from 9.92 in 1961 to 3.90 in 1971. In Mahendergarh the corresponding figures for 1961 and 1971 were 6.07 and 3.41 respectively.

Ludhiana district enjoys a commanding position in manufacturing industry with 16.41 percent of working population engaged in this economic activity in 1971. Its share in 1961 was, however, a bit smaller i.e. 13.41 percent. Mahendergarh district, on the other hand, has increased its share of the work-force in this activity from 1.38 in 1961 to 2.40 percent in 1971. The

growth rate of the work-force has also been high in Ludhiana (+74.12) as compared to Mahendergarh (+43.98). This aggregated picture for Ludhiana is, however misleading in drawing inferences for the district as a whole since the growth rate in the manufacturing sector is soley due to its growth rate in Ludhiana city[3].

In the construction activity, both the district have shown increase over the decade in the proportion of workers in this activity to total workers. In Ludhiana, the proportion has increased from 1.88 in 1961 to 1.91 in 1971 while in Mahendergarh the proportion has increased from 0.85 in 1961 to 0.91 in 1971. Ludhiana has shown positive growth rate of +44.59 while Mahendergarh has shown negative growth rate of -10.90.

So far as the tertiary sector is concerned, the proportion of workers has declined in Ludhiana (from 30.11 in 1961 to 26.47 in 1971) but increased in Mahendergarh (from 10.12 in 1961 to 18.83 in 1971). But both the districts have shown positive growth rate of workers in this sector, the growth rate being higher in Mahendergarh (+54.42) than in Ludhiana (+25.12).

Let's analysis the trend of different industrial categories of the work-force within the tertiary sector itself.

In trade and commerce, both the districts have experienced increase over the decade in the proportion of workers engaged in this economic activity. In Ludhiana the share has increased from 8.81 in 1961 to 9.94 in 1971 while in Mahendergarh district the share has increased from 2.67 percent in 1961 to 3.95 percent

in 1971. In Mahendergarh, on the other hand, the proportion has gone up from 0.59 percent in 1961 to 0.97 percent in 1971. Again the growth rate has been higher in Ludhiana (+54.50) as compared to Mahendergarh (+36.67).

So far as the category of other services is concerned, both the districts have shown positive growth rate of the work-force, the growth rate being higher in Mahendergarh (+67.96) as compared to Ludhiana (+2.48). But the proportion of the work-force in this economic activity has gone down in Ludhiana (from 18.04 in 1961 to 12.99 in 1971) while it has shown increase in case of Mahendergarh (from 6.86 in 1961 to 13.91 percent in 1971).

It can be observed that the proportion of workers in household industry, manufacturing industry, construction, trade and commerce transport and communication and other services to total workers has been found higher in case of developed district rather than a less developed district. It has also been found that Ludhiana has higher proportion of workers as agricultural labourers when compared to Mahendergarh.

The analysis of sectoral shifts in the work-force in the two district suggests that it has been relatively more development oriented in the case of Ludhiana than in that of Mahendergarh. This can also be inferred from the fact that the growth rate of the work-force has been higher in the former than in the latter. But these results can be misleading in drawing inferences for the

district as a whole since the growth rate of the work-force in secondary and tertiary sectors are solely due to their growth rate in Ludhiana city. The high growth rate of urban work-force in Ludhiana district is mainly due to the result of the growth rate of the work-force in Ludhiana city itself. The growth of urban sectors in Ludhiana city does not produce any multiplier effect in the regional economy[4]. This can well be judged from the absence of corresponding growth in rural areas and smaller towns of the district. As has already been pointed out the high growth rate of workers in the agricultural sector in Ludhiana is mainly because of the movement of people from household industry to the agricultural sector. High growth rate of agricultural labourers in Ludhiana should not be taken as a result of the developing capitalistic relations based on hired labour. This may also be due to the non-absorption of labour-force in other settors of the economy.

The growth of manufacturing activity in Ludhiana city does not have any significant impact on the district economy as such. In Mahendergarh district, on the other hand, although the sectoral change have been of a lower order they are spread more uniformly in space resulting in a relatively better spatial hierarchy. The result obtained from the foregoing analysis regarding the sectoral shifts in the work-force and their impact

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4. Moonis Raza (1980), op. cit.

on spatial organisation in a developed and a less developed district in the Green Revolution Belt show that the problem has an important regional dimension and it has to be explored on micro level.

CHAPTER - IV

SECTORAL SHIFTS IN THE WORK-FORCE AND THE ORGANISATION OF SPACE

The occupational structure of population is related to a large extent with the function and size of the settlements. While the urban population gains its livelihood primarily from secondary and tertiary occupations, the rural population mainly from primary activities. Similar generalisation can also be made about the size and function of the settlements. Increase in the size of settlements and vertical shifts in the work-force from primary to secondary and tertiary activities proceed together in response to each other. In order to identify some of these micro level tendencies, a case study of two sample districts has been undertaken. The results of the analysis are as follows:-

4.1 Primary Sector and the Spatial Organisation of Settlements:-

The following table shows the proportion of primary sector workers in different size-groups of rural settlement to total primary sector workers in the two districts (refer table 4.1). The table shows that the proportion of workers in different size-groups of rural settlements to total workers in the primary sector of the district has remained

Table 4.01

Size-group	Mahendergarh		Ludhiana	
	P.C.[1] 1961	P.C. 1971	P.C. 1961	P.C. 1971
0-199	0.58	0.62	3.76	4.16
200-499	9.53	10.12	12.72	12.36
500-999	37.18	37.10	28.82	29.16
1000-1999	37.50	36.73	32.08	31.46
2000-4999	14.12	14.27	20.96	21.03
5000+	1.09	1.16	1.66	1.83
Total	100.00	100.00	100.00	100.00

more or less constant over the decade in both the districts.

Table 4.2 shows the proportion of workers in the primary sector to total workers in different size-groups of

Table 4.02

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.[2]	G.R.[3]	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
0-199	91.82	91.68	-0.14	+16.69	86.22	91.30	+5.08	+65.61
200-499	85.05	81.84	-3.21	+16.60	77.28	82.20	+4.92	+45.86
500-999	83.90	80.58	-3.32	+ 9.63	68.73	78.67	+9.94	+51.45
1000-1999	81.47	79.24	-2.23	+ 7.60	61.82	72.83	+11.01	+46.83
2000-4999	75.71	73.86	-1.85	+11.00	60.32	74.43	+14.11	+50.25
5000+	75.91	75.44	-0.47	+17.42	43.79	64.60	+20.81	+65.13
Average	82.46	79.18	-3.28	+ 9.85	65.28	76.37	+11.09	+49.73

1. "P.C" stands for percentage
2. "P.C. Diff." stands for the difference in the percentage figures for 1961 and 1971
3. "G.R." stands for the growth rate which has been derived

rural settlements and the percentage growth rate of the work-force in the primary sector of the two districts. It can be seen from the table that the proportion of workers engaged in the primary sector to total workers in almost all the size-groups of rural settlements has been higher in Mahendergarh district, yet this share has declined over the decade (from 82.46 to 78.18). The rate of the decline has, however, not been uniform, the maximum being recorded in the size-group of 200-499 (from 85.05 to 81.84) followed by the size-group of 500-999 (from 83.90 to 80.58). To the contrary, all the size-groups of rural settlements of Ludhiana district have experienced drastic increase in the share of the primary sector, the highest being in the size-group of 2000-4999 (from 60.32 to 74.43) followed by the size-group 1000-1999 (from 61.82 to 72.83). The overall increase in the proportion in the district has been from 65.28 to 76.37.

Ludhiana district has also experienced very high growth rate of the work-force in the primary sector, the maximum being +65.61 in the size-group 0-199 followed by +65.13 in the size-group 5000+ and +51.45 in 500-999 size-group. It is the two extreme size-groups which have experienced very high growth rate of the work-force in the primary sector in Ludhiana district. The smallest size-group (0-199) has most of its settlements in the "bet" area of the district. The high growth rate of the work-force in the primary sector in the smallest size-group of Ludhiana is due to the fact that the

bet region in the district has attracted a lot of cultivators and agricultural labourers. The high growth rate of the work-force in 5000+ size-group is due to the sectoral shifts in the work-force primarily the movement of people from household industry to the category of agricultural labourers. The overall growth rate of the work-force in the primary sector in this developed district has been mainly due to certain inter-sectoral shifts in population primarily the movement of people from household industry to the agricultural and allied activities. The growth rate of the work-force in the primary sector in Mahendergarh district has, however, been slightly less than the growth rate of total working population in the district. Inter-sectoral shifts in the work-force mainly from agriculture and allied activities to tertiary activities is again responsible for low growth rate of the work-force in the primary sector in the district.

Distinct pecularities have also been observed in case of urban settlements of Mahendergarh and Ludhiana. Table 4.03

Table 4.03

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
VI	21.80	21.51	-	-
V	13.14	13.84	7.55	6.81
IV	18.87	17.84	23.66	16.84
III	46.19	46.81	33.34	36.23
II	-	-	-	-
I	-	-	35.45	40.12
Total	100.00	100.00	100.00	100.00

shows the proportion of primary sector workers in different size-groups of urban settlements to total workers in the primary sector of Ludhiana and Mahendergarh districts separately. The table reveals that in Mahendergarh district, the proportion of workers in a particular size-group in the primary sector to total workers in the primary sector has remained constant over the decade.

In Ludhiana district, however, proportion of workers in the primary sector in large order urban settlements to total workers in the primary sector has increased considerably over the decade. This is probably because of the distress mobility of labour from one low productive sector to another in the urban settlements of Ludhiana, Khanna, and Jagraon. Class IV and Class V settlements of Ludhiana district have shown decrease in the percentage of workers in the primary sector in these size-groups to total workers in the primary sector though the proportion of workers in the primary sector to total workers has increased over the decade in these size-groups. The contradictory results are due to the fact that the share of these two size-groups in the urban primary sector workers is very small.

The following table shows the proportion of workers in the primary sector to total workers in different size-grooups of urban settlements and the percentage growth rate of workers in different size-groups of the two districts. The table reveals that the proportion of workers in the primary sector

Table 4.04

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
VI	36.61	41.16	+4.55	+21.48	-	-	-	-
V	15.56	16.62	+1.06	+21.62	18.20	22.16	+3.96	+77.04
IV	13.34	11.61	-1.73	+ 9.19	28.43	35.46	+7.03	+39.75
III	20.58	19.81	-0.77	+17.02	8.60	13.96	+5.36	+113.40
II	-	-	-	-	-	-	-	-
II	-	-	-	-	1.77	2.29	+0.52	+122.22
Avr.	19.75	19.02	-0.73	+15.47	3.98	4.79	+0.81	+96.31

to total workers in the urban settlements has remained more or less constant in Mahendergarh district, class VI and class V settlements showing marginal increase over the decade and class IV and class III settlements showing marginal decline. The overall situation is that the district has experienced marginal decline over the decade from 19.75 to 19.02.

In Ludhiana district, on the other hand, every size-group of urban settlements has shown increase in the proportion of workers in the primary sector to total workers, the maximum increase being in class IV urban settlements followed by class III and class V. On the whole, there has been an overall increase in this proportion from 3.98 to 4.79 (refer table 4.04).

The vast difference lies in the growth rate of urban work-force in this sector. The overall growth rate of urban work-force in Mahendergarh district is +15.47 while the

corresponding figure for Ludhiana is +96.36. Class IV settlements in both the districts have experienced minimum growth rate of the work-force in the primary sector. In Ludhiana district, class I settlement has experienced maximum growth rate (+122.22) followed by class III and class V settlements. In Mahendergarh district, maximum growth rate of urban work-force in the primary sector has taken place in class V settlements (+21.62) followed by class VI and class III settlements while Ludhiana does not have any class II and class VI settlements.

The above analysis shows that a higher proportion of the total labour force engaged in agriculture and associated form of employment has been found in an economically less developed district. But the Clarkian[4] hypothesis that in an economically developed areathere is almost invariably through time a tendency for this ratio to fall has not been found to be true in case of Ludhiana district. In case of this developed district there has been an increase in the proportion of workers engaged in the primary sector to total workers and the growth rate of workers in this sector has been relatively very high and positive. In Mahendergarh district, on the other hand, there has been decline in the proportion of workers in the primary sector to total workers and the growth rate of the work-force in this sector has been found to be equating with the growth rate of the total work-force of the district.

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4. Colin Clark: The Conditions of Economic Progress, 1967

It will be more interesting to take up the separate industrial categories of the work-force within the primary sector itself.

4.1.1 Cultivators:- Our Census[5] defines cultivator as a person who is engaged in cultivation by oneself or by supervision or direction in one's capacity as the owner or lessee of land held from Government or as a tenant of land held from private persons or agencies for payment of money, kind or share. The following table shows the proportion of workers engaged as cultivators in different size-groups of rural settlements to total cultivators of the district. It is obvious that the proportion of cultivators in different

Table 4.05

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
0-199	0.56	0.61	4.19	4.78
200-499	9.59	10.24	13.00	12.29
500-999	37.48	37.95	28.12	28.19
1000-1999	37.49	36.74	31.95	31.44
2000-4999	13.80	13.43	21.11	21.65
5000+	1.08	1.03	1.63	1.70
Total	100.00	100.00	100.00	100.00

size-groups of rural settlements to total cultivators of the district has remained more or less constant over the decade,

5. Census of India (1971), General Population Tables, India

the maximum percentage being in the size-group 500-999 and 1000-1999 in both the districts. However, there are wide variations in the growth rate of cultivators of the two districts. Table 4.06 shows the proportion of workers engaged as cultivators to total workers in different size-groups of rural settlements and the percentage growth rate of cultivators in these districts. In Mahendergarh district, there has been

Table 4.06

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
0-199	84.78	75.32	-9.46	+3.77	77.89	68.13	-9.71	+36.89
200-499	82.25	69.17	-13.08	+1.90	64.04	52.85	-11.19	+12.96
500-999	81.25	68.80	-12.45	+3.35	54.35	49.44	-4.91	+20.36
1000-1999	78.79	66.16	-12.63	-6.52	49.98	47.21	-2.70	+17.92
2000-4999	70.95	58.05	-12.90	-6.89	49.24	54.45	+5.21	+23.02
5000+	72.87	55.73	-17.14	-9.62	34.84	39.02	+4.18	+25.36
Average	79.23	66.10	-13.13	-4.55	52.92	49.59	-3.33	+19.95

negative growth rate of cultivators in all size-groups (except 0-199 and 200-499). In Ludhiana district, all the size-groups of settlements have shown positive growth rate of cultivators ranging from +36.89 in 0-199 size-group to +12.96 in 200-499 size-group(refer table 4.06).

The proportion of cultivators to total workers in different size-groups of rural settlements have shown decline

in both the districts. But the decline is comparatively sharp in case of Mahendergarh district. If one looks at the proportion of workers engaged as cultivators to total agricultural workers in the two time periods it will be found that the decline has been a bit sharp in case of Ludhiana in almost all the size-groups of rural settlements (refer Appendix-I). One more interesting feature is that the increase in the size-group of settlements is accompained by the consequent increase in the "declining rate" of proportion of cultivators to total agricultural workers (refer Appendix-I). The overall decrease in the percentage of cultivators to total workers has been 13.13 for Mahendergarh district but 2.33 in Ludhiana district. The maximum decline in this percentage value has been in small size-groups of settlements. It has also been found that it is the smaller order settlements which have maximum percentage of workers as cultivators. As we go from small order settlements to large order settlements, the percentage of workers engaged in cultivation goes on declining. This is largely due to the increasing number of functions performed by large order settlements (refer table 4.06).

In Ludhiana district, however, the last two size-groups of settlements i.e. 2000-4999 and 5000+ have shown some marginal increase in the percentage of cultivators to total workers over the decade. The results show that a less developed district is throwing workers out of cultivation while a developed district is accomodating worker in

cultivation displaced mainly from household industry and tertiary sector.

In case of urban settlements of a developed and a less developed district, it is found that the former has shown some significant changes in the percentage of cultivators in different size-groups to total cultivators while in the latter the situation has remained more or less constant (refer table 4.07). The decrease in the percentage figure in class IV settlement of Ludhiana district is not because of decrease in the cultivators but because of the decrease in the

Table 4.07

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
VI	21.64	25.15	-	-
V	10.92	12.60	9.10	8.06
IV	18.56	18.13	31.49	24.78
III	47.40	44.10	37.57	34.68
II	-	-	-	-
I	-	-	21.85	32.47
Total	100.00	100.00	100.00	100.00

percentage to total cultivators. The tremendious increase in the cultivators of class I settlement is due to certain inter-sectoral shifts which has doubled the total number of workers in this category. Inter-sectoral shifts takes

place because of the fact that secondary and tertiary sectors are not creating so much of employment potential which can absorb the persons added by high growth rate of population of the city.

So far as the growth rate of cultivators over the decade is concerned, Ludhiana district has shown positive growth rate (+34.56), the highest being in class I size-group (+100.00). Ludhiana city which was at the top in changing its share of cultivators to total workers has thus shown maximum positive growth rate also. Mahendergarh district has shown negative growth rate of the work-force engaged in cultivation. However, class VI and class V settlements in the district have shown positive growth rate. This is due to the fact that Mahendergarh, Kanina and Ateli are primarily agricultural towns.

The following table shows the proportion of workers engaged as cultivators to total workers in different size-

Table 4.08

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
VI	35.22	34.18	-1.04	+4.87	-	-	-	-
V	11.76	10.75	-1.01	+4.08	12.81	10.52	-2.29	+19.34
IV	11.93	8.38	-3.55	-11.81	22.14	20.75	-1.39	+5.90
III	19.20	13.26	-5.94	-16.02	5.68	5.36	-0.32	+24.20
II	-	-	-	-	-	-	-	-
I	-	-	-	-	0.63	0.74	+0.11	+100.00
Average	17.96	13.52	-4.44	-9.74	2.33	1.92	-0.41	+34.56

groups of urban settlements and the percentage growth rate of cultivators. The table depicts that there has been an overall decrease in the percentage of workers engaged in cultivation to total workers in both the district. In Mahendergarh district, all size-groups of urban settlements have shown decline in the percentage of workers engaged as cultivators to total workers. In Ludhiana district, class I settlement has shown only marginal increase in the percentage value, the rest of them showing decline.

But if one looks at the proportion of workers engaged as cultivators to total agricultural workers, it will be found that this proportion has decline over the decade in all the size-groups of urban settlements in both the districts. However, the decline has been sharp in case of Ludhiana than in that of Mahendergarh. In both the districts, it has been found that as we go from smaller size-groups of settlements to large size-groups of settlements, the "declining rate" of proportion of cultivators to total agricultural workers goes on increasing (refer Appendix-II).

4.1.2 Agricultural Labourers:- Census of India defines agricultural labourer as a person who works in another persons' farm for wages and does not have any risk in the cultivation[6].

In case of rural settlements of Mahendergarh and Ludhiana districts, the percentage of agriculrural labourers

6. Census of India (1971) op. cit.

in different size-groups to total agricultural labourers has remained more or less constant over the decade (refer table 4.09).

Table 4.09

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
0-199	1.45	0.77	1.84	2.99
200-499	8.42	9.75	11.32	12.60
500-999	28.46	33.62	31.90	30.90
1000-1999	36.98	35.22	32.84	31.48
2000-4999	23.34	18.64	20.37	19.93
5000+	1.32	1.97	1.70	2.07
Total	100.00	100.00	100.00	100.00

Table 4.10 shows the proportion of agricultural labourers to total workers in different size-groups of rural settlements and the percentage growth rate of agricultural labourers in the two districts. It can be noticed that

Table 4.10

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
0-199	6.67	16.36	+9.69	+186.36	7.60	22.59	+14.99	+364.87
200-499	2.20	11.35	+9.15	+524.31	12.40	28.81	+16.41	+217.84
500-999	1.88	10.51	+8.60	+536.54	13.73	28.69	+14.96	+176.55
1000-1999	2.37	10.95	+8.58	+413.30	11.40	25.06	+13.65	+173.73
2000-4999	3.67	13.89	+10.22	+330.41	10.57	24.25	+13.68	+179.36
5000+	2.69	18.44	+15.75	+707.50	8.09	25.19	+17.10	+248.54
Average	2.42	11.40	+8.98	+438.96	11.77	26.26	+14.49	+185.56

the overall growth rate of agricultural labourers was very high in case of Mahendergarh district (+438.96) rather than Ludhiana (+185.56). High growth rate of agricultural labourers is due to the non-absorption of labour-force in other sectors of the economy. It is this distress mobility of labour which has increased the proportion of agricultural labourers. The growth rate of agricultural labourers in Mahendergarh district was highest in 5000+ size-group (+707.50) followed by 500-999 size-group (+536.54) and 200-499 size-group (+524.31). In 5000 and above size-group, very high growth rate is due to abnormal increase in agricultural labourers in Bond Kalan settlement of Dadri tahsil. In Ludhiana district, the maximum growth rate of agricultural labourers was recorded in 0-199 size-group (+364.07) followed by 5000+ size-group (+248.54) and 200-499 size-group (+217.84).

The two districts have shown an increasing participation rate of the work-force in the category of agricultural labourers. It seems as if the work-force displaced by the first industrial category of the work-force i.e. cultivators has been reinstated in this category. However, the shifts in the work-force from household industry cannot be denied either.

In the less developed district, the proportion of workers engaged as agricultural labourers has increased from 2.42 to 11.40 (about five fold). In Ludhiana district, the percentage of workers has increased from 11.77 to 26.26 (about two fold.).

Proportion of workers engaged as agricultural labourers to total agricultural workers in different size-groups of rural settlements has increased over the decade in both the districts. However, the increase has been relativly sharp in case of Ludhiana. A glance at the table makes it clear that the increase in the size-group is accompained by the increase over the decade in the "increasing rate" of proportion of workers engaged as agricultural labourers to total agricultural workers (refer Appendix-III).

So far as the urban settlements of the two districts are concerned, both of them have shown high positive growth rate of agricultural labcurers (+990.14) in Mahendergarh and also in Ludhiana (+410.07). Table 4.11 shows the percentage growth rate of the work-force in this category and the proportion of workers engaged in this category to total workers

Table 4.11

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
VI	0.06	6.42	+6.36	+10400.00	—	—	—	—
V	1.57	4.14	+2.57	+200.00	4.39	10.95	+6.56	+262.90
IV	0.28	2.41	+2.13	+954.54	5.93	13.87	+7.94	+164.29
III	0.37	6.02	+5.65	+1834.78	2.11	8.14	+6.03	+407.55
II	-	-	-	-	-	-	-	-
I	-	-	-	-	0.26	1.21	+0.95	+698.87
Avr.	0.51	4.71	+4.20	+990.14	0.80	2.50	+1.70	+410.07

in different size-groups of urban settlements. The table shows that large order urban settlements have shown high positive growth rate in comparison to smaller order settlements.

ii Significant changes have also been observed in the percentage of workers engaged in the category of agricultural labourers in different size-groups to total agricultural labourers (refer table 4.12).

Table 4.12

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
VI	1.40	13.56	-	-
V	50.70	13.95	9.05	6.49
IV	15.49	14.98	24.52	12.71
III	32.39	57.49	40.58	40.38
II	-	-	-	-
I	-	-	25.83	40.46
Total	100.00	100.00	100.00	100.00

The change is marked in class I and class IV urban settlements of Ludhiana where the former has shown increase in the percentage value from 25.83 to 40.46 while in the latter, it has decreased over the decade from 24.52 to 12.71. In Mahendergarh district, most of the size-groups have shown significant variation in the percentage value, the maximum being in class V settlement in which the percentage value has come down over the decade from 50.70 to 13.95 (refer table 4.12).

So far as the percentage of workers engaged in the category of agricultural labourers to total workers in different size-groups of urban settlements in concerned, the two districts are on the same path, showing significant increase in the percentage value in all the size-groups of urban settlements. In Mahendergarh district, the proportion has increased over the decade from 0.51 to 4.71 while in Ludhiana district it has increased from 0.80 to 2.50 (refer table 4.12).

The proportion of workers engaged as agricultural labourers to total agricultural workers in different size-groups of urban settlements have also shown similar results (refer Appendix-IV). It has been found that the increase in the size-group of settlements is accompained by the consequent increase over the decade in the "increasing rate" of the proportion of agricultural labourers to total agricultural workers in both the districts.

4.1.3 Mining & Quarrying, hunting, fishing, forestry and livestock industry etc.

In both the districts, the percentage of workers engaged in mining and quarrying, livestock, forestry and livestock industry in different size-groups of rural settlements to total workers engaged in this category has remained almost conctant over the decade (refer table 4.13).

Table 4.14 shows the percentage growth rate of the work-force in this category and the proportion of workers engaged in this

activity to total workers in different size-groups of the rural settlements of Ludhiana and Mahendergarh districts. As depicted

Table 4.13

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
0-199	0.09	0.04	3.46	3.52
200-499	6.79	7.68	15.14	11.93
500-999	34.42	27.55	29.86	29.40
1000-1999	37.53	46.42	28.71	35.49
2000-4999	20.68	17.40	19.28	18.02
5000+	0.49	0.91	3.55	1.60
Total	100.00	100.00	100.00	100.00

Table 4.14

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
0-199	0.14	0.12	-0.02	-	0.72	0.52	-0.20	+12.82
200-499	0.59	1.31	+0.72	+168.11	0.83	0.53	-0.30	-12.35
500-999	0.76	1.27	+0.51	+90.25	0.64	0.53	-0.11	+9.22
1000-1999	0.80	2.12	+1.32	+193.43	0.50	0.55	+0.05	+37.15
2000-4999	1.09	1.91	+0.82	+99.52	0.50	0.43	-0.07	+3.68
5000+	0.33	1.25	+0.92	+340.00	0.85	0.38	-0.47	-50.00
Average	0.08	1.68	+1.60	+137.24	0.59	0.51	-0.08	+10.93

in the table there has been variation in the growth rate of workers engaged in this category. In Mahendergarh district, overall growth

rate of workers engaged in mining, fishing, forestry, hunting and livestock industry etc. has been +137.24 while in case of Ludhiana the corresponding figure is +10.93.

It is obvious that the growth rate of the work-force engaged in mining and quarrying, hunting, fishing, forestry and livestock industry etc. is not related with the size-group of rural settlements. It is actually the location of mines which determines the percentage of the work-force in this particluar activity and not the size of the settlement.

Percentage of workers engaged in mining, quarrying, fishing, forestry and hunting etc. to total workers in different size-groups of rural settlements reveals that Mahendergarh district has experienced increase in the proportion of workers in this category to total workers in all size-groups of rural settlements (except 0-199 where the proportion has come down from 0.14 to 0.12) while in Ludhiana district every size-group of rural settlements has shown decline in the participation rate in mining, quarrying, fishing, hunting, etc. In Ludhiana district, the fall in the participiation rate in this economic activity is due to the lack of discovery of new mineral zones and also due to the mechanisation of agriculture which has given a set back to the livestock industry.

Mahendergarh district is comparatively rich in minerals. Deposits of iron-ore, calcite and marble etc. have been traced out in the villages of Solab, Khadna, Pali, Zairpur and Kund

especially after the formation of Haryana state. The exploration of these minerals, although on a small scale, has attracted considerable work-force.

In the urban sector, however, both the districts have shown negative growth rate while keeping their level nearly same over the decade in the percentage of workers engaged in mining and quarrying, fishing, hunting etc. in each size-group to total workers engaged in this category (refer table 4.15).

Table 4.15

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
VI	11.42	6.87	-	-
V	29.42	34.35	1.93	2.76
IV	24.57	29.77	1.38	3.35
III	34.85	29.77	14.87	15.78
II	-	-	-	-
I	-	-	81.82	78.11
Total	100.00	100.00	100.00	100.00

Table 4.16 shows the proportion of the workers engaged in mining and quarrying, hunting, fishing, livestock and forestry to total workers in different size-groups of the urban settlements and the percentage growth rate of the work-force in this category.

In Mahendergarh district, all the size-groups of urban settlements have experienced negative growth rate while in

Ludhiana class I and class III settlements have shown negative growth rate.

Table 4.16

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
VI	1.32	0.55	-0.77	-55.00	-	-	-	-
V	2.22	1.72	-0.50	-11.76	0.99	0.68	-0.31	-
IV	1.12	0.81	-0.31	- 9.30	0.35	0.53	+0.18	+70.00
III	1.00	0.59	-0.48	-36.06	0.82	0.46	-0.36	-25.92
II	-	-	-	-	-	-	-	-
I	-	-	-	-	0.87	0.33	-0.54	-33.33
Avr.	1.27	0.79	-0.48	-25.14	0.85	0.36	-0.49	-30.17

4.2 Secondary Sector and the Spatial Organisation of Settlements:-

Secondary sector includes household industry, manufacturing industry and construction activity. In case of rural settlements of Mahendergarh district, percentage of work-force in the secondary sector in different size-groups to total workers in the secondary sector has remained more or less constant over the decade. The maximum percentage of share of the work-force in the secondary sector is mainly in three size-groups of settlements viz. 500-999, 1000-1999 and 2000-4999. In Ludhiana also the percentage of workers in the secondary sector in different size-groups of settlements to total workers in the secondary sector has remained unaltered over the decade (refer table 4.17).

Table 4.17

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
0-199	0.17	0.08	0.82	1.48
200-499	8.18	8.32	6.62	8.88
500-999	33.84	35.29	25.78	27.15
1000-1999	38.72	35.30	38.98	39.90
2000-4999	17.45	19.43	23.83	20.21
5000+	1.61	1.55	3.93	2.38
Total	100.00	100.00	100.00	100.00

The following table shows the proportion of workers in the secondary sector to total workers in different size-groups of rural settlements and the percentage growth rate of the work-force in the secondary sector.

Table 4.18

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
0-199	2.88	0.90	-1.98	-63.15	4.52	4.37	-0.15	+51.22
200-499	7.64	4.70	-2.94	-25.45	9.65	7.81	-1.84	+10.79
500-999	7.99	5.35	-2.64	-23.60	14.76	9.71	-5.05	-12.91
1000-1999	8.87	5.32	-3.55	-33.22	18.02	12.26	-5.76	-15.18
2000-4999	9.80	7.02	-2.78	-18.45	16.44	10.42	-6.02	-33.42
5000+	11.74	7.02	-4.72	-29.31	24.91	10.73	-14.73	-51.75
Average	8.63	5.52	-3.11	-26.74	15.66	11.96	-3.70	- 2.18

The table reveals that Mahendergarh district has shown negative growth rate in all the size-groups of rural settlements, the highest negative growth rate being in the lowest size-group of settlements. In Ludhiana district, however, the size-groups 0-199, 200-499 and 2000-4999 have shown positive growth rate while the rest of the size-groups of settlements being in the negative group.

Though some of the size-groups of Ludhiana district have shown positive growth rate of the work-force engaged in the secondary sector, yet these size-groups have experienced decline over the decade in the percentage of workers in the secondary sector to total workers. This may be due to the fact that the increase in the secondary sector workers may not be proportional to the increase if workers in other sectors. All the size-groups of rural settlements in both the districts have shown decline in the proportion figure the decling being comparatively sharp in case of Mahendergarh district.

Percentage of workers in the secondary sector in different size-groups of urban settlements to total workers in the secondary sector has remained more or less unaltered over the decade in both the districts (refer table 4.19).

Growth rate of the work-force in urban settlements has been very high in Ludhiana district (+80.12). This has been revealed in table 4.20 which shows the proportion of workers engaged in the secondary sector to total workers in different

Table 4.19

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
VI	7.22	5.71	-	-
V	13.18	11.68	0.86	0.65
IV	40.08	41.17	1.66	0.88
III	38.88	40.87	10.13	7.40
II	-	-	-	-
I	-	-	87.36	91.08
Total	100.00	100.00	100.00	100.00

Table 4.20

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
VI	15.13	11.25	-3.88	-19.65	-	-	-	-
V	19.15	14.43	-4.72	-14.15	21.95	20.45	-1.50	+35.48
IV	33.18	27.93	-5.25	+5.58	21.05	17.81	-3.24	- 4.36
III	20.29	17.79	-2.50	+6.65	27.67	26.65	-0.02	+31.57
II	-	-	-	-	-	-	-	-
I	-	-	-	-	46.62	50.58	+3.96	+87.79
Avr.	23.13	19.57	-3.56	+1.45	42.13	46.53	+4.40	+80.12

size-groups of urban settlements and the percentage growth rate of secondary work-force in these size-groups. The average growth rate of the work-force in secondary sector has been very low in Mahendergarh district (+1.45). Every size-group of urban

settlements in Ludhiana district has experienced positive growth rate (except class IV size-group), the maximum being in class I size-group where Ludhiana city is the only settlement.

In Mahendergarh district, smaller order urban settlements (class VI and class V) have shown negative growth rate while the larger settlements (class III and class IV) have shown positive growth rate of the work-force in the secondary sector.

Percentage of workers in the secondary sector in each size-group of settlement to total workers in the respective size-group will, however, give a better picture of the situation. The final results show that all the size-groups of urban settlements (except class I) in both the districts have shown decline over the decade in proportion of workers in the secondary sector to total workers. In fact the overall proportion of workers in the secondary sector to total workers in Ludhiana has increased over the decade from 42.13 to 46.53. This aggregated picture, however, is misleading in drawing inferences for the whole district since the growth rate in the secondary sector is solely due to the growth rate in Ludhiana city. Taking an overview, all the size-groups of rural and urban settlements of a developed district have shown higher participation rate in the secondary sector as compared to a less developed district. Let's take up each of the industrial categories of the work-force within the secondary sector itself.

4.2.1 Household Industry:- A household industry is defined in the census "as an industry conducted by the Head of the household himself/herself and/or mainly by the members of the household at home or within the village in rural areas and only within the premises of the house where in household lives in urban areas"[7]. The household industry should necessarily be run on a small scale. A factory run on the scale of a registered factory is not considered as a household industry.

Table 4.21 shows the proportion of workers engaged in household industry to total workers in different size-groups of rural settlements and the percentage growth rate of household work-force in these size-groups. The above table shows that

Table 4.21

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
0-199	1.97	0.25	-1.72	-84.61	3.57	0.94	-2.63	-58.54
200-499	6.35	3.23	-3.12	-37.89	6.85	3.38	-3.47	-32.35
500-1999	6.60	3.44	-3.16	-40.41	10.53	4.22	-6.31	-46.93
1000-1999	7.01	3.69	-3.32	-41.38	10.74	4.90	-5.84	-43.05
2000-4999	7.20	3.95	-3.25	-37.44	11.28	5.95	-5.33	-41.26
5000+	9.24	4.51	-4.73	-42.33	11.36	5.45	-5.91	-46.24
Average	6.87	3.59	-3.28	-40.19	10.20	6.37	-3.83	-20.02

both the districts have shown considerable changes in the percentage of workers engaged in household industry to total

7. Census of India (1971), op. cit.

workers. The decline in the percentage of workers in household industry to total workers has been comparatively sharp in Mahendergarh district. The overall proportion in Mahendergarh district has come down from 6.87 to 3.59 while in Ludhiana district, it has come down from 10.20 to 6.37. The maximum decline in the percentage of work-force has been in 5000+ size-group in case of both the districts.

More or less similar trend was obtained when the proportion of workers in the household industry to total workers in the household and non-household industry in different size-groups of rural settlements was computed. Here, the maximum decline was in case of smaller size-group of settlements in both the districts (refer Appendix-V).

However, the percentage of workers engaged in household industry in different size-groups of rural settlement to total workers engaged in the household industry has not shown much change except in a few size-groups of settlements viz. 500-999, 1000-1999 and 2000-4999 (refer table 4.22).

As is obvious from table 4.21, both the districts have shown negative growth rate of work-force engaged in household industry, the overall growth rate being -40.19 for Mahendergarh and -20.02 for Ludhiana. The maximum negative growth rate has been reported in the lowest rung of settlements in both the districts.

The urban settlements of the two districts have shown a similar pattern in the growth rate of work-force in the household industry as their rural counterparts have done. Table 4.24 shows the proportion of workers in the household industry to total workers in different size-groups of urban settlements and the percentage growth rate of work-force in the household industry. The table whows that the smaller order settlements have shown higher negative growth rate. Percentage

Table 4.22

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
0-199	0.15	0.03	0.99	0.73
200-499	8.50	8.83	7.22	8.58
500-999	35.14	35.01	28.25	26.48
1000-1999	38.48	37.71	35.66	35.10
2000-4999	16.12	16.86	25.10	26.35
5000+	1.59	1.53	2.75	2.76
Total	100.00	100.00	100.00	100.00

of workers in the household industry in different size-groups of settlements to total workers in the household industry has fluctuated in Mahendergarh district but has shown no significant changes in Ludhiana district (refer table 4.23).

In Mahendergarh district, class VI and class IV settlements have shown decline in the percentage value while the

Table 4.23

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
VI	22.01	11.58	-	-
V	12.44	14.83	4.05	2.21
IV	12.20	5.89	5.15	2.68
III	53.34	67.68	13.11	15.75
II	-	-	-	-
I	-	-	77.67	79.39
Total	100.00	100.00	100.00	100.00

rest two have shown increase in the corresponding figure. Percentage of workers engaged as household workers to total workers in different size-groups of urban settlements have also shown decline in the percentage value, the maximum decline being in the smaller order settlements (refer table 4.24).

Table 4.24

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
VI	12.16	3.48	-8.68	-69.02	-	-	-	-
V	4.54	2.80	-1.74	-29.80	13.03	3.94	-9.09	-55.97
IV	2.26	0.60	-1.66	-71.56	8.26	3.06	-5.20	-58.11
III	7.34	4.50	-2.84	-25.33	4.52	3.32	-1.20	- 3.35
II	-	-	-	-	-	-	-	-
I	-	-	-	-	5.19	2.48	-2.71	-17.82
Avr.	6.09	3.00	-3.09	-41.14	5.32	2.62	-2.70	-19.54

The trend has been more or less the same in case of the proportion of workers engaged in household industry to total workers in household and non-household industry in different size-groups of urban settlements (refer Appendix-VI).

4.2.2 Manufacturing Activity:- All other workers engaged in manufacturing, processing, servicing and repairs where such activities are not carried on the scale of household industry are included in the category of manufacturing activity[8].

Table 4.25 shows the proportion of workers engaged in manufacturing activity to total workers in different size-groups of rural settlements and the percentage growth rate of manufacturing workers in these size-groups. The above table

Table 4.25

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
0-199	0.14	0.50	+0.36	+300.00	0.76	3.21	+2.45	+560.97
200-499	0.49	0.72	+0.23	+ 77.19	2.04	3.32	+1.28	+122.35
500-999	0.51	0.95	+0.44	+110.54	2.90	4.18	+1.28	+ 90.75
1000-1999	0.63	0.85	+0.22	+ 51.00	5.67	5.95	+0.28	+ 30.87
2000-4999	1.19	2.22	+1.03	+111.73	3.87	2.73	-1.14	- 14.29
5000+	0.80	1.77	+0.97	+150.33	10.94	2.40	-8.54	- 75.39
Average	0.66	1.09	+0.43	+ 88.48	4.11	4.28	+0.17	+ 33.47

8. Census of India (1971), op. cit.

shows that both the districts have shown high positive growth rate of work-force in manufacturing activity in almost all the size-groups of rural settlements (except 2000-4999 and 5000+ size-groups of Ludhiana district). The lowest size-group of settlements i.e. 0-199 has experienced highest growth rate of work-force in both the districts. In Ludhiana district, this is mainly because of very high growth of workers in manufacturing activity in the villages of Agar Khurd, Karimpura, Bir Schenwal, Badalwal, Tarf Ghialewal, Hiran, Sherpur Khurd, Samrala Rural, Bardhal and Mazri. In Mahendergarh, the villages of Kuksi, Song, Lamba, Kholawas, Sarang, Gujarwas, Seegri, Selarpur Mehta, Abdul-nagar, Nirpur, Asrawas and Rai-Malikpur have shown considerable growth in the manufacturing activity. The lowest settlement size-group of Ludhiana district shows the growth rate of +560.97 in the manufacturing activity. The corresponding figure for Mahendergarh stands at +300.00. The overall growth rate of work-force in manufacturing activity has been +68.48 in Mahendergarh district and +33.47 in Ludhiana district. In Ludhiana district, it appears as if an increase in the size-group of settlement is followed by decling growth rate of work-force in manufacturing activity. In Mahendergarh district, however, medium size-groups of settlements have experienced low growth rate of work-force in manufacturing activity as compared to the size-groups which are at the two extremes (refer table 4.25).

So far as the percentage of workers in manufacturing activity to total workers in different size-groups of rural settlements is concerned, Mahendergarh district has shown increase in all size-groups. In Ludhiana, the size-groups 2000-4999 and 5000+ have shown decline in the participiation rate in manufacturing activity while the rest of them have shown an increase. As one goes from smaller size-groups of settlements to larger size-groups, one finds an increasing participiation rate in manufacturing activity (5000+ group being an exception in Mahendergarh district and 2000-4999 and 5000+ size-groups being exceptions in Ludhiana).

If we look at the proportion of workers engaged in non-household industry to total workers in household and non-household industry in the two census periods, it will be clear that there has been drastic increase in the proportion over the decade in all the size-groups of rural settlements in both the districts. The increase is, however, relatively higher in Mahendergarh (refer Appendix-VIII).

Proportion of workers in Manufacturing activity in different size-groups of rural settlements to total workers in manufacturing activity of the district has remained constant over the decade except in the size-groups 500-999 and 2000-4999 where it has experienced some considerable changes (refer table 4.26).

In case of urban settlements too the proportion of workers in manufacturing activity in different size-groups to

total urban workers in manufacturing avtivity of the districts has remained more or less unchanged over the decade. Here maximum increase or decrease in the percentage value does not go beyond three (refer table 4.27).

Table 4.26

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
0-199	0.11	0.25	0.52	2.61
200-499	6.83	6.42	5.35	8.91
500-999	28.41	31.74	19.34	27.64
1000-1999	35.73	28.62	46.47	45.86
2000-4999	27.57	30.97	21.41	13.75
5000+	1.43	1.97	6.58	1.21
Total	100.00	100.00	100.00	100.00

Table 4.27

Size-group	Mahendergarh		Ludniana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
VI	1.50	4.49	-	-
V	14.13	10.84	0.29	0.54
IV	52.08	49.51	1.07	0.62
III	32.28	35.14	9.38	6.24
II	-	-	-	-
I	-	-	89.25	92.32
Total	100.00	100.00	100.00	100.00

Table 4.28 shows the proportion of workers in manufacturing activity to total workers in different size-groups of urban settlements and the percentage growth rate of work-force in manufacturing activity in these size-groups.

So far as the growth rate of work-force is concerned, it is the two extreme size-groups which have shown high positive growth rate of the work-force in manufacturing activity. In Ludhiana district, class I size-group and class V size-group have shown growth rate of +105.09 and +269.87 respectively while the overall growth rate of urban work-force in manufacturing activity comes to be +98.29 (refer table 4.28).

Table 4.28

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
VI	1.98	6.54	+4.56	+256.66	-	-	-	-
V	12.33	9.90	-2.40	- 8.51	5.87	14.95	+9.08	+269.87
IV	27.12	24.52	-2.60	+13.37	10.87	10.97	+0.10	+ 14.10
III	10.59	11.31	+0.72	+29.81	20.38	21.35	+0.97	+ 37.90
II	-	-	-	-	-	-	-	-
I	-	-	-	-	37.55	44.88	+7.33	+105.09
Avr.	14.55	14.47	-0.08	+19.24	33.50	40.73	+7.23	+ 98.29

In Mahendergarh district, class III and class VI size-groups have experienced growth rate of +29.81 and +256.66 respectively while the overall growth rate of work-force in

in manufacturing activity has been +19.24. Very high growth rate of work-force in manufacturing activity in class VI size-group of Mahendergarh district is due to the very weak base of this size-group in manufacturing activity in the base year. From merely 30 workers in manufacturing activity in the base year 1961, the figure has gone upto 107 in 1971.

The overall percentage of urban work-force in manufacturing activity to total urban work-force has declined in Mahendergarh district but increased in Ludhiana. In Mahendergarh, it is the two extremem size-group (class VI and class III) which have shown an increase in the proportion of workers in this category to total workers. In Ludhiana district, however, all the size-groups of urban settlements have shown increase in the proportion the maximum increase being in class V size-group followed by class I and class III size-groups.

Percentage change of work-force in manufacturing and household industry in the two districts suggest that it has been relatively more developed oriented in the case of Ludhiana than in that of Mahendergarh.

4.2.3 Construction Activity:- Percentage of workers in construction activities in different size-groups of rural and urban settlements to total workers in construction activity of the district has remained constant over the decade (refer Appendix IX & X).

Proportion of workers in construction activities to total workers in different size-groups has not shown any sepcific pattern either. Table 4.29 gives us the proportion of workers in construction activities to total workers in different size-groups of rural settlements and the percentage growth rate of work-force in construction activity in these size-groups.

Table 4.29

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
0-199	0.89	0.12	-0.77	-83.33	0.18	0.21	+0.03	+ 80.00
200-499	0.82	0.74	-0.08	+ 8.33	0.75	1.10	+0.35	+100.00
500-999	0.89	0.94	+0.05	+24.12	1.31	1.29	-0.02	+ 30.49
1000-1999	1.22	0.77	-0.45	-29.93	1.60	1.39	-0.21	+ 8.45
2000-4999	1.40	0.84	-0.56	-31.85	1.28	1.29	+0.01	+ 23.45
5000+	1.68	0.74	-0.94	-48.00	2.62	2.88	+0.26	+ 22.76
Average	1.09	0.83	-0.26	-12.53	1.34	1.31	-0.03	+ 24.10

The table shows that there has been an overall decrease in the percentage of workers in construction activities to total workers in both the district.

The overall growth rate of work-force in construction activities has been negative in Mahendergarh district (-12.53) while Ludhiana district has shown positive growth rate of +24.10. All the size-groups of rural settlements in Ludhiana

district have shown positive growth rate of work-force in the construction activities, the maximum being +100.65 in 200-4999 size-group followed by +80.00 in 0-199 size-group. In Mahendergarh district, however, the size-groups 200-499 and 500-999 have shown positive growth rate while the rest of the size-groups have shown negative growth rate.

The following table shows the proportion of workers engaged in construction activity to total workers in different size-groups of urban settlements and the percentage growth rate of work-force in construction activity in these size-groups.

Table 4.30

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
VI	0.99	1.22	+0.23	+25.58	-	-	-	-
V	2.27	1.72	-0.55	+124.07	3.04	1.55	-1.49	+33.33
IV	3.39	2.81	-0.58	+ 42.14	1.90	3.78	+1.88	-13.46
III	2.35	1.97	-0.38	+ 58.60	2.75	2.97	+0.22	+ 3.84
II	-	-	-	-	-	-	-	-
I	-	-	-	-	3.47	3.21	-0.26	+ 2.09
Avr.	2.48	2.10	-0.38	+ 56.46	3.30	3.17	-0.13	+ 1.76

In both the districts, most of the size-groups of urban settlements have shown decline over the decade in the percentage of workers engaged in construction activity to total workers.

Only class VI size-group of Mahendergarh district and class III and class IV size-groups of Ludhiana have shown an increase in the proportion figure. Though the proportion has declined in most of the size-groups, yet there has been positive growth rate of work-force in construction activities, the overall positive growth rate being higher in Mahendergarh district (+56.46) as compared to its counterpart in the state of Punjab (+1.76).

4.3 Terrtiary Sector & the Spatial Organisation of Settlements:- There has been a considerable debate among Western economists on the subject of the definition of terrtiary occupation. But a broad consensus seems to have been reached on the definition given by Lampard[9]. According to him, the tertiary occupations are those activities which produce a non-material cutput. Most of the authorities agree that these technological productivity of the agricultural and manufacturing sectors which allow a growing proportion of labour force to be freed to engage in tertiary occupations.

The percentage of the work-force engaged in tertiary sector in different size-groups to total workers engaged in the tertiary sector in Mahendergarh and Ludhiana district has remained almost constant over the decade (refer table 4.31). Here one can find an interesting correlation that an increase in the size-group of rural settlements leads to an increase in the participiation rate in the tertiary sector upto 1000-1999 size-group of settlements.

9. E.E. Lampard, "The History of Cities in Economically Advanced Areas", in J. Friedmann and W. Alonso (1964) op. cit.

After this size-group, the situation becomes reverse, an increase in the size-group being accompained by the decrease in the participiation rate in the tertiary sector of the two districts.

Table 4.31

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
0-199	0.29	0.26	1.38	1.28
200-499	7.10	8.61	7.36	8.83
500-999	31.21	33.54	23.69	24.16
1000-1999	36.35	37.04	35.82	36.68
2000-4999	23.47	19.12	27.66	24.47
5000+	1.54	1.40	4.06	4.58
Total	100.00	100.00	100.00	100.00

Table 4.32 shows the proportion of workers in the tertiary sector to total workers in different size-groups of settlements and the percentage growth rate of the work-force in the tertiary sector. So far as the growth rate of the work-force in the tertiary sector is concerned, Mahendergarh district has shown high positive growth rate in all the size-groups of rural settlements. Ludhiana district has, however, experienced negative growth rate of work-force in all but one size-group of settlements.

A more fruitful exercise will be to analyse the percentage of workers in the tertiary sector in each size-group to total workers in the respective sise-group. Each and every size-group

of rural settlements of Mahendergarh district has shown an increase in the percentage of workers in the tertiary sector to total workers. The overall increase is about two-fold (from 9.48 to 15.28). The reverse is true for Ludhiana district where the overall decrease in the proportion has come down from 19.04 to 11.65 (refer table 4.32).

Table 4.32

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
0-199	5.21	7.53	+2.32	+65.71	9.25	4.31	-4.94	-27.05
200-499	7.30	13.44	+6.14	+123.07	13.05	9.98	-3.07	+ 4.67
500-999	8.10	14.06	+5.96	+98.05	16.49	11.61	-4.88	- 6.87
1000-1999	9.14	15.43	+6.29	+87.83	20.14	14.89	-5.25	- 7.83
2000-4999	14.47	19.10	+4.63	+50.14	23.22	7.54	-15.69	-60.40
5000+	12.34	17.50	+5.16	+67.75	31.25	24.66	- 6.59	-11.74
Average	9.48	15.28	+5.80	+84.31	19.04	11.65	-7.39	- 2.67

So far as the urban size-groups are concerned, the proportion of workers engaged in tertiary sector in different size-groups to total workers in the tertiary sector of the district has remained by and large unchanged except in class I and class III settlements of Ludhiana district (refer table 4.33). The increase in the share of workers in class I size-group is due to Ludhiana city.

Table 4.33

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
VI	9.28	7.71	-	-
V	18.98	17.79	1.83	1.73
IV	26.04	28.78	3.11	2.22
III	45.68	45.70	18.22	14.93
II	-	-	-	-
I	-	-	76.82	81.12
Total	100.00	100.00	100.00	100.00

Table 4.34 shows the proportion of workers in the tertiary sector to total workers in different size-groups of urban settlements and the percentage growth rate of the work-force in the tertiary sector.

Table 4.34

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
VI	48.24	47.58	-0.66	+ 6.57	-	-	-	-
V	65.28	68.93	+3.65	+20.22	59.84	57.37	-2.47	+39.40
IV	53.47	60.44	+6.97	+41.79	50.57	47.01	-3.56	+ 5.17
III	59.11	62.39	+3.28	+28.34	63.70	58.36	-5.33	+20.62
II	-	-	-	-	-	-	-	-
I	-	-	-	-	51.99	47.11	-4.88	+55.51
Avrg.	57.36	61.38	+4.02	+28.28	53.88	48.66	-5.22	+47.29

It seems as if the urban size-groups in Mahendergarh and Ludhiana districts have followed the pattern shown by their rural counterparts so far as the proportion of workers engaged in tertiary sector to total workers is concerned. In Mahendergarh district, only class VI settlements have shown an increasing trend. Therefore, the overall pattern for tertiary sector is similar for urban and rural settlements of the districts. Table 4.34 can be compared with table 4.32 in order to get a broad idea of resemblance of the results. The difference can be noticed only in the growth rate of the work-force in Ludhiana district.

It will be more useful to analyse the results of the different industrial categories of the work-force within the tertiary sector itself.

4.3.1 Trade and Commerce :- So far as the size-group of rural settlements and the distribution of the work-force in trade and commerce is concerned, one may start with the generalisation that an increase in the size-group of rural settlements is accompained by the consequent increase in the percentage of workers in trade and commerce to total workers.

The following table shows the proportion of workers engaged in trade and commerce to total workers in different size-groups of rural settlements and the percentage growth rate of workers in this category. It can be noted that the both the

districts have shown decline over the decade in the percentage of workers engaged in trade and commerce to total workers (excepting 0-199 and 200-499 size-group). The overall decrease in case of Mahendergarh district is from 1.75 in 1961 to 1.59 in 1971 while in case of Ludhiana it has come down from 3.35 in 1961 to 3.05 in 1971.

The growth rate of work-force in trade and commerce has been positive in both the districts. But an increase in the size-group of rural settlements is accompained by the consequent decrease in the growth rate of work-force in trade and commerce. In the size-group 0-199, Mahendergarh district has shown +400.00 percent growth rate while in the same size-group Ludhiana has shown +107.14 percent growth rate.

Table 4.35

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
0-199	0.14	0.64	+0.50	+400.00	0.77	1.03	+0.26	+107.14
200-499	1.08	1.15	+0.07	+ 29.60	1.78	1.93	+0.15	+ 48.20
500-999	1.21	1.11	-0.10	+ 5.26	2.57	2.29	-0.28	+ 18.18
1000-1999	1.58	1.46	-0.08	+ 2.53	3.45	3.13	-0.32	+ 13.05
2000-4999	3.69	3.26	-0.43	+ 0.42	5.16	4.25	-0.91	+ 0.40
5000+	3.91	3.25	-0.66	- 1.72	9.86	9.00	-0.86	+ 2.16
Average	1.75	1.59	-0.16	+ 4.10	3.35	3.05	-0.30	+ 11.61

Taking the urban ~~settlement~~ segment, all the size-groups of settlements have shown an increase over the decade in the percentage of workers engaged in trade and commerce to total workers (refer table 4.36).

Urban size-groups of Mahendergarh district do not show any specific pattern but in case of Ludhiana district, it is found that an increase in the size-group of settlements is accompained by the decrease in the declining rate of the percentage of the work-force engaged in trade and commerce to total workers.

Table 4.36

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
VI	20.75	22.93	+2.18	+19.42	-	-	-	-
V	29.77	31.83	+2.06	+21.73	19.40	28.20	+8.80	+111.31
IV	21.98	27.51	+5.53	+57.00	21.37	26.88	+5.51	+ 42.14
III	24.39	27.91	+3.52	+39.20	29.52	32.58	+3.06	+ 45.32
II	-	-	-	-	-	-	-	-
I	-	-	-	-	20.74	21.75	+1.01	+ 80.01
Ave.	24.21	27.92	+3.71	+38.26	22.09	23.31	+1.22	+ 72.11

Percentage growth rate of workers in trade and commerce has been highly positive in class I and class V settlements of Ludhiana districts and class IV size-group of Mahendergarh district.

So far as the proportion of workers in trade and commerce in different size-groups of rural and urban settlements to total workers in trade and commerce of the district is concerned, there has been no significant change over the decade (refer Appendix-XI, - XII). Same is true in case of transport and communications services (refer Appendix-XIII - XVI).

4.3.2 Transport and Communication:- Table 4.37 shows the proportion of workers in transport and communication to total workers in different size-groups of rural settlements and the percentage growth rate in this category. In almost all the size-groups of rural settlements of both the districts, there

Table 4.37

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
0-199	0.14	0.25	+0.11	+100.00	0.11	0.39	+0.28	+450.00
200-499	0.44	0.71	+0.27	+108.33	0.75	1.44	+0.69	+163.39
500-999	0.11	0.45	+0.34	+370.58	0.97	1.51	+0.54	+105.34
1000-1999	0.26	0.50	+0.24	+108.66	1.33	1.92	+0.59	+ 79.67
2000-4999	0.38	1.00	+0.62	+193.33	1.61	2.05	+0.44	+ 54.82
5000+	0.60	0.39	-0.21	- 22.22	2.84	2.26	-0.58	- 10.52
Average	0.24	0.58	-0.34	+169.03	1.24	1.73	+0.49	+ 79.17

has been an increase over the decade in the percentage of workers in transport and communications to total workers.

The overall proportion of workers in this category to total workers has gone up over the decade from 0.24 to 0.58 in case of Mahendergarh while in Ludhiana district it has come up from 1.24 to 1.73. The growth rate of work-force in most of the size-groups has been higher in Mahendergarh district as compared to Ludhiana. This may be due to the fact that Ludhiana district has already developed its transport net work while Mahendergarh, being a less developed district, is still developing the infra-structure for transport development. In Mahendergarh district, growth rate of work-force in transport and communication does not show any specific pattern while in case of Ludhiana district one can notice that an increase in the size-group of rural settlements is accompained by the decrease in the growth rate of workers in transport and communication to total workers (refer table 4.37).

The following table shows the proportion of workers engaged in transport and communication to total workers in different size-groups and the percentage growth rate of work-force in this category. It can be seen that all the size-groups of urban settlements have, however, shown decline over the decade in the percentage of workers in transport and communication to total workers. But there has been overall positive growth rate in the urban work-force engaged in transport and communication in case of both the districts. In Ludhiana, all the size-groups of urban settlements have shown positive growth rate

of the work-force in transport and communication while in case of Mahendergarh district class III and class V size-groups have shown negative growth rate of work-force in transport and communication.

Table 4.38

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
VI	5.81	3.66	-2.15	-31.81	-	-	-	-
V	5.11	5.06	-0.05	+24.78	5.80	5.50	-0.35	+37.80
IV	8.17	5.82	-2.45	-10.54	5.89	5.78	-0.11	+10.77
III	5.15	5.06	-0.09	+19.48	6.29	6.23	-0.06	+30.39
II	-	-	-	-	-	-	-	-
I	-	-	-	-	8.87	7.32	-1.55	+41.72
Aver.	6.06	5.23	-0.83	+ 3.48	8.32	7.13	-1.19	+39.62

4.3.3 Other Services:- Other services include the persons who are employed as Government servants, the municipal employees, the teachers, the political or social workers. In fact all types of economic activities carried on as a profession not covered by the earlier eight industrial categories of the work-force, are covered by the this category[10].

The following table shows the proportion of workers in other services to total workers in different size-groups of rural settlements and the percentage growth rate of the work-force

10. Census of India (1971), op. cit.

in this category. It can be noticed that the two districts are on different paths so far as the relationship between the size-group of settlement and the percentage of workers engaged in other services to total workers is concerned. All the size-groups of rural settlements of Mahendergarh district have shown an increasing participation rate in the "other services".

Table 4.39

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
0-199	5.25	6.62	+1.37	+50.00	8.36	2.89	-5.47	-45.84
200-499	5.80	11.57	+5.77	+141.51	10.51	6.59	-3.92	-14.08
500-999	6.78	12.48	+5.7	+110.05	12.94	7.79	-5.15	-20.31
1000-1999	7.29	13.47	+6.18	+105.67	15.35	9.83	-5.52	-20.16
2000-4999	10.39	14.83	-4.44	+ 62.45	16.44	1.22	-15.22	-90.92
5000+	7.82	13.84	+6.05	+109.48	18.57	13.33	- 5.24	-19.31
Average	7.48	13.10	+5.62	+100.30	14.30	6.86	-7.44	-38.57

The reverse is true for Ludhiana district.

In Mahendergarh, the overall increase has been from 7.48 in 1961 to 13.10 in 1971 while in Ludhiana district, the overall decrease over the decade has been from 14.30 to 6.86. So far as the growth rate of the work-force in this category is concerned, Mahendergarh district has experienced 100 percent positive growth rate while Ludhiana has shown negative growth rate (-38.57) of the work-force in the category of other services.

Table 4.40 shows the proportion of workers in other services to total workers in different size-groups of urban settlements and the percentage growth rate of the work-force in this category. The above table shows that all the size-groups of urban settlements of Mahendergarh district have shown increase over the decade in the porportion of workers in other services to total workers (except class VI size-group which has shown marginal decline in this participation rate). In Ludhiana district there has been decline over the decade in the percentage of workers engaged in other services to total workers, the maximum

Table 4.40

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
VI	21.67	20.97	-0.70	+4.57	-	-	-	-
V	30.38	31.49	+1.11	+17.98	34.63	23.67	-10.96	-0.61
IV	23.31	27.10	+3.79	+45.80	23.54	14.34	- 9.21	-20.24
III	29.57	29.90	+0.33	+20.92	27.88	19.54	- 8.34	- 7.33
II	-	-	-	-	-	-	-	-
I	-	-	-	-	22.37	18.02	- 4.35	+38.27
Avr.	22.71	28.22	+5.51	+24.91	23.45	18.21	-5.24	+26.64

being in class V size-group.

So far as the growth rate of the work-force in this category is concerned, tnere has been overall positive growth

rate in both the districts. But when one takes up the problem according to size-groups, it is revealed that all the size-groups of urban settlements in Ludhiana district (except class I size-group) have shown negative growth rate of the work-force in other services. The aggregated picture like this can create mistallacy about the whole district. The overall positive growth rate of the work-force in other services in Ludhiana district is solely due to the weight exerted by Ludhiana city. It is because of the positive growth rate of class I size-group that the overall result for the district has been turned into positive (+26.64). In Mahendergarh, however, all the size-groups have shown positive growth rate, the maximum being in class IV settlement.

4.4 Traditional Sector and the Spatial Organisation of Settlements:-

The category of cultivators, agricultural labourers and household industry constitute the traditional sector of the economy. A glance at the data shows that the proportion of cultivators has declined in all the size-groups of settlements excepting class I settlement of Ludhiana and class VI settlement of Mahendergarh. The proportion of workers engaged in household industry has also declined in all the size-groups of settlements. But the proportion of workers engaged as agricultural labourers has increased over the decade in all the size-groups of settlements (refer table 4.41, 4.42 and fig. 16).

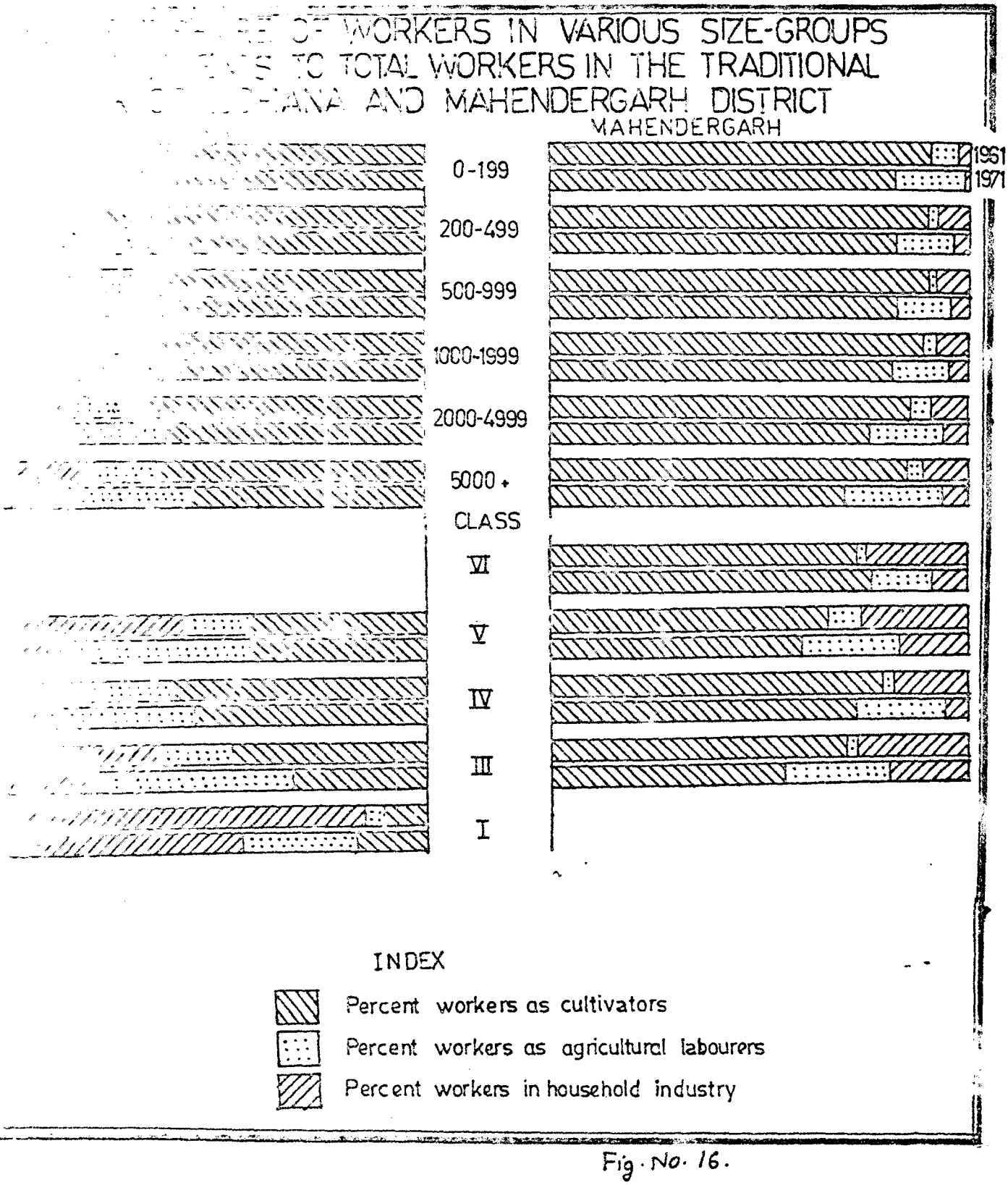
OF WORKERS IN VARIOUS SIZE-GROUPS
TO TOTAL WORKERS IN THE TRADITIONAL
AND MAHENDERGARH DISTRICT
MAHENDERGARH
1961
1971
0-199
200-499
500-999
1000-1999
2000-4999
5000+
CLASS
VI
V
IV
III
I
INDEX
Percent workers as cultivators
Percent workers as agricultural labourers
Percent workers in household industry

Fig. No. 16.

Table 4.41

Proportion of cultivators, agricultural labourers and workers in the household industry to total worker in the traditional sector

Year/Size-group	Mahendergarh			Ludhiana		
	P.C. Cult.	P.C. Agri. Lab.	P.C. workers in H. Ind Ind.	P.C. Cult.	P.C. Agri. Lab.	P.C. workers in H. Ind.
1961						
0-199	90.76	7.13	2.10	87.44	8.53	4.01
200-499	90.60	2.42	6.96	76.87	14.89	8.23
500-999	90.53	2.10	7.36	69.13	17.46	13.40
1000-1999	89.35	2.69	7.95	69.25	15.83	14.90
2000-4999	86.70	4.49	8.80	69.25	14.86	15.87
5000+	86.30	3.23	11.07	64.17	14.90	20.90
Average	89.50	2.73	7.76	70.65	15.71	13.62
1971						
0-199	81.92	17.79	0.28	74.33	24.63	1.03
200-499	82.57	13.55	3.86	62.13	33.87	3.18
500-999	83.12	12.70	4.16	60.02	34.83	5.13
1000-1999	81.87	13.55	4.57	61.17	32.47	6.35
2000-4999	76.46	18.30	5.21	62.54	30.49	6.85
5000+	70.82	23.43	5.73	56.00	36.16	7.82
Average	81.50	14.06	4.42	60.30	31.93	7.75
1961						
VI	74.23	0.13	25.62	-	-	-
V	65.77	8.80	25.42	42.38	14.51	43.09
IV	80.17	1.92	17.89	60.99	16.32	22.74
III	71.33	1.40	27.26	46.17	17.13	36.74
II	-	-	-	-	-	-
I	-	-	-	10.50	4.27	85.22
Average	73.07	2.10	24.81	27.57	9.48	62.93
1971						
VI	77.53	14.55	7.90	-	-	-
V	60.73	23.42	15.83	41.37	43.10	15.51
IV	73.54	21.16	5.29	55.05	36.81	8.12
III	56.25	25.31	18.94	31.85	48.38	19.75
II	-	-	-	-	-	-
I	-	-	-	16.78	27.81	55.94
Average	63.70	22.19	14.10	27.25	35.54	37.18

Table 4.41 shows the proportion of cultivators, agricultural labourers and workers in the household industry to total workers in the traditional sector of Ludhiana and Mahendergarh district.

In case of rural settlements of Mahendergarh, the overall proportion of cultivators to total workers in the traditional sector has declined over the decade from 89.50 to 81.50. In case of Ludhiana, it has declined from 70.65 to 60.30. Thr proportion of agricultural labourers to total workers in the traditional sector has increased over the decade from 2.73 to 14.06 in case of Mahendergarh and from 15.71 to 31.93 in case of Ludhiana. Thus the proportion of agricultural labourers has become seven times in case of Mahendergarh but has only doubled in case of Ludhiana. But the districts have shown decline in the proportion of workers in the household industry to total workers in the traditional sector. Almost similar results have also been obtained in case of this proportion in the urban settlements.

The causes and the broad correlations discussed in case of the primary and secondary occupations hold valid in this sector too.

CHAPTER - V
SECTORAL SHIFTS IN THE WORK-FORCE AND THE RURAL-URBAN CONTINUUM

The basic difference between the rural and urban settlements is that of size and function. While the urban settlements are larger in size and the chief occupations of the people are industry, trade, commerce or administration, most of the people in villages are engaged in agricultural work. Some other occupations such as fishing, lumbering, mining or herding are also found in villages, but in such villages there is a lack of commercial or shopping centres and industries.

In contemporary research, there is a growing tendency to think in terms of a continuum rather than a dichotomous distinction. Under this conception, a given settlement is treated as neither completely rural nor completely urban, but rather as having a mix of rural and urban attributes in varying degrees along a continuum. Actually, the transition from a purely rural community to an urban one is not abrupt but gradual. There is no clear cut boundary line which would show a definite cleavage between the rural and the urban community[1].

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1. P. Sorokin and C.C. Zimmerman, Principles of Rural-Urban Sociology, New York, 1929, p. 14

The city and the village may be regarded as two poles in reference to one or the other of which all human settlements tend to arrange themselves[2]. Writers like Gross[3], Spaulding[4], Raza[5], Stewart[6], Yuan[7] and Schnere[8] have thought it necessary to rediscover the inadequacy of the "rural-urban dichotomy". Therefore, a new label for an old idea has crept into the literature i.e. the "rural-urban continuum".

As the construction of indices on the"mix of urban and rural attributes" is methodologically a complex task, for the limited purpose of the study, population size has been considered as the proxy for the same and the concept of the continuum has been examined herein under this assumption. Almost all writers on rural-urban differences stress the significance of population size. While most of them agree that "characterization of community as urban on the basis of size alone is obviously arbitrary"[9], no one has suggested a

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2. Louis Wirth, "Urbanism as a Way of Life", American Journal of Sociology, XLIV, July 1938, p. 3
3. N. Gross, "Sociological Variation in contemporary Rural Life", Rural Sociology, 13 September 1948, pp. 256-269
4. I.A. Spaulding, "Serendipity and the Rural-Urban Continuum", Rural Sociology, 16 March 1951, pp. 29-36
5. Moonis Raza, Atiya Habeeb, Amitab Kundu, "Rural-Urban Continuum in India, "Indian & Foreign Review, vol. 12, No. 15, 1975
6. Charles T Stewart, "The Urban-Rural Dichotomy: Concepts and uses", The American Journal of Sociology, vol. 64, No. 2, September 1958, pp. 152-58
7. D.Y. Yuan: "The Rural-Urban continuum: A case Study of Taiwan", Rural Sociology, vol. 29, No. 3, September 1964, pp. 247-60
8. Leo F. Schnore, "The Rural-Urban variable: an urbanite's perspective" Rural Sociology, vol. 31, No. 2, June 1966
9. Wirth, op. cit. p. 4

practical basis for including other variables among the criteria of urbanism to be applied to all settlements in a standard fashion.

With a view to examine the relative efficiency of a tri-chotomous division in catching the mances of vertical differentiation in the Indian settlement system, large order rural settlements (above 2000 persons) and the smaller order towns (less than 10000 persons) may be termed as rurban centres. The study of these rurban centres is of greater significance because it represents the lower end of central place continuum. The theories developed for central place should hold good not only for large urban places but also for all the hierarchic levels including rurban.

Before going into the real exercise of sectoral shifts in the work-force, let's have a look at the development of the concept of rurban centres. The concept is a new branch of settlement geography where physical landscape is mostly set in the right direction by social behaviour[10] and the cultural landscape of the society. Rurban centres have been variously described as "rurban settlements" by R.L. Singh[11], "rurban community" by Galpin[12], "urban villages" by Dickinson[13] and

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10. R.B. Mandal, "Rurban Centres in Bihar Plains" Indian Geographical Studies, No. 1, 1973, pp. 12-23
11. R.L. Singh et al, "Mungra Badshapur: A Rurban settlement in the Ganga Ghaghra Doab West "The National Geographical Journal of India, vol. IV, 1960, pp. 199-206
12. C.G. Galpin, "The Social Anatomy of an Agricultural Community" Research Bulletin 34, University of Wisconsin, 1915, referred by R.B. Mandal (1973), pp. cit.
13. R.E. Dickinson, "The Distribution and Functions of the Smaller Urban Settlements of East Anglia,"Geography, No. 95, vol. XVII, part I, 1932, pp. 20-30

"sub town" by Smailes[14]. Recent geographic literature is enriched by some important studies of rurban centres. Among them, most prominent are Gloward and Stafford[15], Berry and Garrison[16], King[17] and Thomas[18]. Monkhouse[19] has used the term rurban as being synonymous to that of "rurban". While rurban centre is a small urban centre or large village having some importance of secondary and tertiary occupations, rural-urban fringe is a zone of transition around a town in which urban functions, land use and other activities are mixed with agricultural ones. This is the zone which separates the area exclusively devoted to urban uses from that exclusively devoted to agricultural uses.

Rurban centres have their own distinctive feature. Most of the smaller settlements are overgrown villages which still have their rural character. They show a combination of economic and social functions[20]. The small towns function as

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14. A.E. Smailes, "The urban Hierarchy in England and Wales" Geography, vol. XXIX, part 2, 1944, pp. 41-51
15. A. Gloward and J. Stafford, "The Functional Bases of Small Towns", Economic Geography, 1973, pp. 165-175
16. B.J.L. Berry and W.L. Garrison, "The Functional Bases of Central Place Hierarchy", Economic Geography, vol. 34, 1958, pp. 145-154
17. L.J. King, "The Functional Role of Small Towns in Canterbury" Proceedings of Third New Zealand Geographical Conference, Palmerston North, 1962
18. E.N. Thomas, "Some Comments on the Functional Bases for Small Iowa Towns", Iowa Buniness Digest, 1960, p. 10
19. F.J. Monkhouse, A Dictionary of Geography, Edward Arnold, London, 1972, p. 302
20. R.L. Singh and S.M. Singh, op. cit., p. 199

the economic and social nodes for their surrounding villages. Because of the intermediate location and the nature of evolution, the small town has certain advantages and offers unique opportunities in the general scheme of the rural-urban and agricultural-industrial continuum[21]. Therefore, the study of smaller urban settlements is of greater significance since they represent the basic connection between the dispresed agricultural population and the agglomerated urban population[22]. There are many characteristic features which distinguish rurban centres from rural settlements in terms their diversified economies, as well as from urban centres, which tend to acquire the character of islands in the vast sea of rurality[23].

The concept of rurban centres is useful because it provides a crucial link in the rural-urban continuum. There are full-fledged towns which lack something in their basic urban character and yet cannot be termed as rural settlements. To the contrary, there are villages which lie in between the rural and the urban hierarchy in terms of population size and functions. The geography of rural settlements would be incomplete without identifying such hybrid settlements, which have

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21. K.N. Singh, "Small Towns as Rural Development Centres in Uttar Pradesh", Abstract, Proceedings of Fifty-Fourth Session, Indian Science Congress Association
22. Kingsley Davis, "Urban Research and Significance", Urban Research Methods, Ed. J.P. Gibbs, New Delhi, 1966, p. xi
23. "Urban-Rural Differences in Southern Asia", Report on Regional Seminar, Delhi 1962, London, 1964, p. 3

a high potentiality of urban growth. By definition, the rurban centres are partly rural and partly urban. They work as "economic and social capitals" for the neighbouring villages. In our present study, the settlements having population between 2000 to 9999 have been considered as rurban centres. Our main emphasis in this chapter will be on the identification of patterns of change in the sectoral distribution of the work-force in a developed and a less developed district.

5.1 Primary Sector and the Rural-Urban Continuum:

As the size of the settlement increases, there is a decline in the proportion of the working population engaged in farm occupation. Rurban centres are constituted of middle size-groups in the hierarchy of settlements. They are neither completely rural nor urban but occupy a position just in between these two extremes. The predominant occupation of people in most of these rurban centres is agriculture. Let's look at the pattern of change of the work-force in a developed and a less developed district in the Green Revolution belt.

Proportion of workers in the primary sector in different size-groups of settlements to total primary sector workers of the district has remained more or less constant over the decade (refer table 5.1).

However, significant changes have been observed in the proportion of workers engaged in this sector to total workers more especially in Ludhiana district. In Mahendergarh, the

Table 5.1

Mahendergarh and Ludhiana District: Proportion of workers in different industrial categories of workers to total workers in the respective industrial categories of the district

	Male workers		I		II		III		IV	
	1961	1971	1961	1971	1961	1971	1961	1971	1961	1971
Mahendergarh										
2000-4999	78.46	78.52	87.89	87.51	90.18	85.02	73.41	84.65	76.53	80.58
5000+	6.04	6.28	16.95	6.72	5.10	9.01	1.75	4.44	7.56	7.34
VI	6.17	5.18	3.43	3.85	0.13	2.89	6.99	1.82	10.16	5.30
V	9.33	9.34	1.73	1.93	4.59	3.02	17.83	9.09	5.74	6.78
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Ludhiana										
2000-4999	87.56	86.76	92.10	92.00	91.14	89.13	80.07	86.87	87.12	88.59
5000+	9.55	9.52	7.11	7.24	7.61	9.29	14.76	7.72	9.57	8.89
VI	-	-	-	-	-	-	-	-	-	-
V	2.88	3.73	0.79	0.76	1.25	1.58	5.17	5.41	3.31	2.52
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Continued .....

Mahendergarh

	V		VI		VII		VIII		IX	
	1961	1971	1961	1971	1961	1971	1961	1971	1961	1971
2000-4999	41.52	55.15	74.59	70.23	40.41	36.15	25.95	50.81	63.71	69.80
5000+	2.17	3.51	6.91	4.96	3.29	2.79	3.11	1.62	3.70	5.22
VI	5.42	12.12	4.14	7.63	17.80	18.99	30.45	13.86	10.45	7.37
V	50.90	29.22	14.36	17.19	38.61	41.97	40.48	33.72	22.14	17.62
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Ludhiana

2000-4999	73.67	76.72	76.82	78.77	75.08	67.93	76.37	81.41	83.85	79.01
5000+	22.65	6.77	17.18	17.52	15.65	14.40	14.62	9.54	10.34	13.40
VI	-	-	-	-	-	-	-	-	-	-
V	3.67	16.51	6.01	3.71	9.28	17.67	9.01	9.05	5.81	7.59
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Continued .....

Mahendergarh

	Primary		Secondary		Tertiary	
	1961	1971	1961	1971	1961	1971
2000-4999	87.74	86.95	69.16	69.25	53.66	59.22
5000+	6.78	7.10	6.38	5.54	3.52	4.35
VI	3.34	3.62	8.40	8.28	14.06	11.02
V	2.14	2.33	16.06	10.93	28.76	25.41
Total	100.00	100.00	100.00	100.00	100.00	100.00

Ludhiana

2000-4999	91.82	91.01	82.70	83.45	81.19	61.47
5000+	7.27	7.52	13.67	9.48	11.93	20.16
VI	-	-	-	-	-	-
V	0.91	1.06	3.63	7.07	6.88	18.37
Total	100.00	100.00	100.00	100.00	100.00	100.00

overall proportion of workers in the primary sector to total workers has declined over the decade from 67.71 to 66.70 (refer table 5.2). The size-groups of 2000-4999 and 5000+

Table 5.2

Mahendergarh and Ludhiana District: Proportion of workers engaged in the primary sector to total workers

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
2000-4999	75.71	73.86	-1.85	+11.00	60.32	74.43	+14.11	+50.25
5000+	75.91	75.44	-0.47	+17.42	43.79	64.60	+20.81	+65.13
Class VI	36.61	41.16	+4.55	+21.48	-	-	-	-
Class V	15.56	16.62	+1.06	+21.62	18.20	22.16	+03.96	+77.04
Average	67.71	66.70	-1.01	+12.01	57.53	77.58	+20.05	+51.59

have also shown decline while the class VI and Class V size-groups have shown increase over the decade in the proportion of workers in the primary sector to total workers. The growth rate of the work-force in the primary sector has been +12.01. Ludhiana district has shown tremendious increase over the decade in the proportion of workers in the primary sector (from 57.53 to 77.58). The growth rate of the work-force in this sector has also been quite high (+51.09). This may be primarily due to non-absorption of labour-force in other sectors of the economy and the consequent mobility of population from one

sector of the economy to the other. All the size-groups of settlements have shown increase over the decade in the proportion ofworkers in the primary sector to total workers.

It can be seen that an increase in the size-group of settlements is accompained by the decrease in the proportion of workers in the primary sector to total workers in case of both the districts. Furthermore, it has been observed that the increase in the size-group of settlements is followed by the consequent increase in the growth rate of the work-force in the primary sector.

The study of different industrial categories of the work-force within the primary sector itself may reveal some more interesting features:

5.1.1. Cultivators: So far as the proprotion of workers in cultivation in different size-gourps of settlements to total cultivators of the district is concerned, it has remained more orless constant over the decade in case of both the districts (refer table 5.1). It is the first size-group i.e. 2000-4999 which is showing a very high share of this proportion (87.51 in Mahendergarh and 92.00 in Ludhiana at the 1971 census).

The overall proportion ofworkers engaged as cultivators to total workers has declined in Mahendergarh (from 63.35 in 1961 to 52.09 in 1971) but increased in Ludhiana (from 46.82 in 1961 to 51.39 in 1971). All the size-groups of Mahendergarh

have shown decline in the proportion, the highest decline being in 5000+ size-group (-17.14). In Ludhiana, on the other hand, class V size-group has shown decline in the proportion while the rest two size-groups have shown an increase (refer table 5.3).

Table 5.3

Mahendergarh and Ludhiana Districts: Proportion of workers engaged in cultivation to total workers

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
2000-4999	70.95	58.05	-12.90	-6.89	49.24	49.75	+0.51	+23.02
5000+	72.87	55.73	-17.14	-9.62	34.84	39.02	+4.18	+25.36
Class VI	35.22	34.18	-1.04	+4.87	-	-	-	-
Class V	11.76	10.75	-1.01	+4.08	12.81	10.52	-2.29	+19.34
Average	63.55	52.09	-11.26	-6.50	46.82	51.39	+4.48	+23.16

The overall growth rate has been positive in Ludhiana (+23.16) but negative in Mahendergarh (-6.50). Class VI and class V size-groups of Mahendergarh and all the size-groups of Ludhiana have shown positive growth rate of the work-force in cultivation. The first two size-groups of Mahendergarh i.e. 2000-4999 and 5000+ have shown negative growth rate of the work-force.

5.1.2. Agricultural Labourers: Significant changes have been observed in the proportion of agricultural labourers in different size-groups of settlements to total agricultural labourers of the district (refer table 5.1). In both the districts, smaller size-groups have shown decline in the proportion while the large size-groups have shown increase in the same.

In both the districts, proportion of workers engaged as agricultural labourers to total workers has shown significant increase (refer table 5.4). In Mahendergarh, the

Table 5.4
Mahendergarh and Ludhiana Districts: proportion of workers engaged as agricultural labourers to total workers

Size-groups	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
2000-4999	3.67	13.89	+10.22	+330.41	10.57	24.25	+13.68	+179.36
5000+	2.69	18.44	+15.75	+707.50	08.09	25.19	+17.10	+248.54
Class VI	0.06	06.42	+06.36	+10400.0	-	-	-	-
Class V	1.57	04.44	+02.57	+200.00	04.39	10.95	+06.56	+262.90
Average	3.20	12.82	+09.64	+356.51	10.16	25.81	+15.65	+185.68

overall proportion has increased from 3.20 in 1961 to 12.84 in 1971. In Ludhiana, the corresponding figures for the two time periods are 10.16 and 25.81 respectively. Smaller size-groups have shown higher increase in the proportion and vice-versa.

So far as the growth rate of the work-force in this category is concerned, both the districts have shown high positive growth rate. In both the districts, the growth rate has been higher in large size-groups of settlements. In Mahendergarh, class VI size-groups has experienced maximum growth rate while in Ludhiana, it is class V size-group which has experienced maximum growth rate in the district. In the agriculturally backward district of Mahendergarh, the growth rate has been significantly higher than that of Ludhiana. The growth rate of the work-force in this category has been +356.51 in case of Mahendergarh but only +185.68 in case of Ludhiana. It seems as if the work-force displaced by the category of cultivators has been reinstated in the present category. But the shift from the household industry cannot be denied either.

5.1.3. Mining and quarrying etc:- Significant changes have taken place in the proportion of workers in mining and quarrying etc. in different size-groups of settlements to total workers in mining and quarrying activity of the district. In both the districts the proportion of the work-force is increasing in smaller size-groups of settlements (refer table 5.1). In Mahendergarh, the proportion of the size-group 2000-4999 has increased over the decade from 73.43 in 1961 to 84.65 in 1971. But class V size-group has shown decline in the proportion from 17.83 to 9.09. In Ludhiana, the size-group 2000-4999 has shown an increase in the proportion (from 80.07 to 86.87)

while the size-group 5000+ has shown decline (from 14.76 to 7.72).

So far as the proportion of workers in mining and quarrying activity to total workers is concerned, the district of Mahenderg rh is better placed. At the 1971 census, about 1.78 percent of the total workers were engaged in this activity. The corresponding figure for Ludhiana is 0.47 (refer table 5.5). Taking the overall pattern for the rural-

Table 5.5

Mahendergarh and Ludhiana District: proportion of workers engaged in mining, quarrying etc. to total workers

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
2000-4999	1.09	1.91	+0.82	+99.52	0.50	0.43	-0.07	+3.68
5000+	0.33	1.25	+0.92	+340.00	0.85	0.38	-0.47	-50.00
Class VI	1.32	0.55	-0.77	-55.00	--	--	--	--
Class V	2.22	1.71	-0.50	-11.76	0.99	0.68	-0.31	--
Average	1.17	1.78	+0.61	+73.08	0.55	0.47	-0.08	-4.43

urban continuum, Mahendergarh has shown an increase in the proportion while Ludhiana has shown decline over the decade in the proportion. In Mahendergarh, the size-groups 2000-4999 and 5000+ have shown an increase in the proportion while the class VI and class V size-groups have shown decline in the proportion.

Taking an overview of growth rate, it has been higher and positive in Mahendergarh (+73.08) but low and negative in Ludhiana (-4,43). Inspite of showing an overall growth rate of 73.08, class VI and class V size-groups of Mahendergarh have shown negative growth rate. Highest growth rate has been reported in the size-group 5000+ (+340.00). In Ludhiana, on the other hand, the only size-group showing positive growth rate is 2000-4999 (+3.68).

It follows from the above analysis that the size of the settlements has nothing to do with the proportion of the work-force engaged in mining and quarrying. High growth rate of work-force in this category in the district of Mahendergarh is due to the exploration of new mineral resources especially after the formation of Haryana State.

5.2 Secondary sector & the Rural-Urban continuum.

Rurban units are marked by the presence and growth of certain significant urban functions. Manufacturing is one of the important functions in the urban settlements. Besides manufacturing, the presence of household industry and construction activity is also considered as a sign of the process of urbanisation. The secondary sector is made up of all these three activities. Let's look at the pattern of change in the work-force in this sector.

The proportion of workers in the secondary sector in different size-groups of settlements to total secondary sector

workers of the district has remained more or less unchanged except some minor adjustments in the size-groups of 5000+ and class V settlements of Ludhiana (refer table 5.1).

Taking the overall picture in the rural-urban continuum both the districts have shown decline in the proportion of workers engaged in secondary sector to total workers, the decline bing relatively sharp in case of Ludhiana (refer table 5.6). The decline in the labour force in the secondary

Table 5.6

Mahendergarh and Ludhiana District: proportion of workers engaged in the secondary sector to total workers

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
2000-4999	9.80	7.02	-2.78	-18.45	15.44	18.02	+1.58	-29.44
5000+	11.74	7.02	-4.72	-29,31	24.91	10.72	-14.18	-51.75
Class VI	15.13	11.25	-3.88	-19.65	-	-	-	-
Class V	19.15	14.43	-4.72	- 14.15	21.95	20.45	-1.50	+35.48
Average	11.12	7.97	-3.15	-18.56	17.42	10.78	-6.64	-30.44

sector is mainly due to the decline in the household activity in both districts. In both the districts, the increase in the size-groups is accompained by the increase in the proportion of workers in the secondary sector to total workers. The district of Mahendergarh which has shown lower participation rate in the secondary sector has shown higher growth rate of the work-force in this sector. Taking the overall growth rate of the work-force in the

secondary sector, it can be said that Mahenderg.rh is comparatively better placed.

Since the change in the percentage of the work-force in this sector has been due to change in a particular industrial category of the work-force within the secondary sector itself, it will be useful to take up each category of this sector.

5.2.1. Household Industry: In Ludhiana, the proportion of workers in household industry in different size-groups of settlements to total workers in the household industry of the district has remained more or less constant over the decade. In Mahendergarh, on the other hand, the proportion has increased over the decade in 2000-4999 size-group (from 76.53 in 1961 to 80.58 in 1971) but declined in class VI size-group (from 10.16 to 5.30). The rest of the size-groups have not shown significant changes (refer table 5.1).

So far as the proportion of workers engaged in household industry to total workers is concerned, it has been higher in the developed district as compared to the less developed district both at the 1961 and 1971 census. Both the districts have shown decline in the proportion of workers engaged in this category, the decline being sharp in the former than in the latter (refer table 5.7). The growth rate of the work-force has been more or less similar in both the districts (-40.59 in case of Mahendergarh and -42.17 in case of Ludhiana).

Table 5.7

Mahendergarh and Ludhiana District: Proportion of workers engaged in household industry to total workers

Size-group	Mahendergarh				Ludniana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
2000-4999	7.20	3.95	-3.25	-37.44	11.28	13.99	+2.71	-41.26
5000+	9.24	4.51	-4.73	-42.33	11.36	5.45	-5.91	-46.24
Class VI	12.16	3.48	-8.68	-69.02	-	-	-	-
Class I	4.54	2.80	-1.74	-29.80	13.03	3.94	-9.09	-55.97
Average	7.38	3.86	-3.52	-40.59	11.35	5.34	-5.51	-42.17

5.2.2. Non-household Industry:

The proportion of workers engaged in non-household industry in different size-groups of settlements to total workers in non-household industry of the district has changed in favour of large villages in Mahendergarh (refer table 5.1). In Ludhiana, it is class V size-group which has shown significant increase in the proportion.

At the 1971 census the overall proportion of the work-force engaged in non-household sector to total workers in the rural-urban continuum has been more or less similar in the two districts (3.17 in Mahendergarh and 3.38 in Ludhiana). In Mahendergarh, there has been increase over the decade in the proportion of workers in the non-household industry to total workers (the overall increase being from 2.26 in 1961 to 3.17 in

1971). Ludhiana on the other hand, has experienced decline in the proportion (from 4.61 to 3.38). In both the districts, the proportion of workers in manufacturing industry goes on increasing with the increase in the size-group (refer table 5.8).

Table 5.8

Mahendergarh and Ludhiana District: Proportion of workers engaged in non-household industry to total workers

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
2000-4999	1.19	2.22	+1.03	+111.73	3.87	2.73	-1.14	-14.29
5000+	0.80	1.77	+0.97	+158.33	10.94	2.40	-8.54	-75.39
Class VI	1.98	6.54	+4.56	+256.66	-	-	-	-
Class I	12.33	9.90	-2.43	-8.51	5.87	14.95	+9.08	+269.87
Average	2.26	3.17	+0.91	+59.39	4.61	3.38	-1.23	-17.70

So far as the growth rate of manufacturing sector is concerned, the less developed district is better placed. The aggregated picture of growth rate of manufacturing sector in Ludhiana was misleading in the sense that the growth rate in the manufacturing sector was solely due to the growth in the central city, Ludhiana[24]. The results obtained for the rural-urban continuum show that the settlements falling under this fringe

24. Infra pp. 118-19

are poorly developed in Ludhiana. The city of Ludhiana is acting like a cambal and it has not produced any multiplier effect in the regional economy.

5.2.3 Construction Activity: The proportion of workers engaged in construction activity in different size-groups of settlements to total workers in construction activity of the district has not shown any significant change in any of the district (refer table 5.1).

Taking the overall picture of the rural-urban continuum, the district of Mahendergarh has shown decline while Ludhiana has shown increase over the decade in the proportion of workers engaged in construction to total workers. Class VI size-groups is the only settlements in Mahendergarh which has shown increase in the proportion. But this has not affected the overall results for the rural-urban continuum. In Ludhiana class V size-group has shown increase in the proportion (refer table 5.9).

Table 5.9
Mahendergarh and Ludhiana District:
Proportion of workers engaged in
non-household industry to total workers

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
2000-4999	1.40	0.84	-0.56	-31.85	1.28	1.29	+0.01	+23.45
5000+	1.68	0.74	-0.94	-48.00	2.62	2.88	+0.26	+22.76
Class VI	0.99	1.22	+0.23	+33.33	-	-	-	-
Class V	2.27	1.72	-0.55	-13.46	3.04	1.55	-1.49	-25.58
Average	1.48	0.94	-0.54	-27.62	1.46	1.56	+0.10	+20.39

The growth rate of the work-force has been high and positive in Mahendergarh (+20.39) as compared to Ludhiana (-27.62). All the size-groups of settlements in Mahendergarh (except class VI) have experienced negative growth rate while all the size-groups of rural-urban continuum (except class V) have shown positive growth rate of the work-froce in this category.

5.3 Tertiary Sector & the Rural-Urban Continuum:

In the rurban centres, we find the growth of certain significant urban functions. In fact they are the foci of a number of market villages. Such centres often have significant retail and wholesale marketing facilities. Some times these centres are trade centres for the surrounding rural area, or administrative centres due to their being the head-quarters of the local administration. Due to their distinct commercial, cultural and administrative elements, such units are characterised by a greater number and variety of services, which are rarely present in a village. All these functions are of tertiary nature. Let's describe the pattern of change of the tertiary work-force in case of the two selected areal units.

Table 5.1 shows that in Mahendergarh, the proportion of workers engaged in tertiary sector in different size-groups of settlements to total workers in the tertiary sector of the district has declined over the decade in class VI (from 14.06 in 1961 to 11.02 in 1971) and class V (from 28.76 to 25.41) settlements

but increased in 2000-4999 size-group (from 53.66 to 59.22) and 5000+ size-group (from 3.52 to 4.35). In Ludhiana on the other hand, the proportion has declined over the decade in 2000-4999 size-group (from 81.19 in 1961 to 61.47 in 1971) but increased in 5000+ size-group (from 11.93 to 20.16) and class V size-group (from 6.88 to 18.37).

In both the districts, it has been observed that an increase in the size-group of settlement is followed by the increase in the proportion of workers in the tertiary sector to total workers, both at the 1961 and 1971 census. Mahendergarh district has shown increase in the proportion of workers in the tertiary sector to total workers while the district of Ludhiana has shown the reverse pattern. In the rural-urban continuum of Mahendergarh, the proportion has gone up from 21.17 in 1961 to 25.33 in 1971. The corresponding figures for Ludhiana are 25.04 and 11.64 (refer table 5.10).

Table 5.10

Mahendergarh and Ludhiana District: Proportion of workers in the tertiary sector to total workers.

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1917	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
2000-4999	14.47	19.10	+4.63	+50.14	23.22	7.54	-15.68	-60.41
5000+	12.34	17.53	+5.19	+67.75	31.25	24.66	-6.59	-11.74
Class VI	48.24	47.58	-0.66	+ 6.57	-	-	-	-
Class V	65.28	68.93	+3.65	+20.22	59.84	57.37	-2.47	+39.40
Average	21.17	25.33	+4.16	+36.04	25.05	11.64	-13.41	-47.77

Almost all the size-groups of rural-urban continuum of Mahendergarh districts have shown positive growth rate of the work-force in this sector, the overall positive growth rate being +36.04. Ludhiana, on the other hand, has shown negative growth rate of the work-force in this sector (-47.77). The negative growth rate has been experienced by the size-groups 2000-4999 (-60.41) and 5000+ (-11.74) while class V size-group has experienced positive growth rate of +39.40.

Let's have a look at the different industrial categories of the work-force within the tertiary sector itself.

5.3.1 Trade and Commerce: The proportion of workers engaged in trade and commerce in different size-groups of settlements to total workers in the trade and commerce of the district has not faced significant changes except in two size-groups (2000-4999 and class V size-groups) of both the districts. In both the districts, the proportion has declined in 2000-4999 size-group while the class V size-group has gained in the proportion (refer table 5.1).

Both the districts have shown an overall decline over the decade proportion of workers engaged in trade and commerce to total workers (refer table 5.11). The decline in the proportion figure is mainly due to the decline of the percentage in 2000-4999 and 5000+ size-groups. The rest of size-groups in the rural-urban continuum have shown increase over the decade in

Table 5.11

Mahendergarh and Ludhiana District: Proportion of workers in trade and commerce to total workers

Size-group	Mahendergarh				Ludniana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
2000-4999	3.69	3.26	-0.43	+0.42	5.16	4.25	-0.91	+0.40
5000+	3.91	3.25	-0.66	-1.72	9.86	9.00	-0.86	+2.16
Class VI	20.75	22.93	+2.18	+19.42	-	-	-	-
Class V	29.77	31.83	+2.06	+21.73	19.40	28.20	+8.80	+111.31
Average	7.19	7.08	-0.11	+11.96	6.02	5.95	-0.07	+10.97

the proportion of workers in this sector to total workers. A glance at the table shows that an increase is the size-group of settlements in both the district is accompained by the consequent increase in the proportion figure both at the 1961 and 1971 census.

The table also reveals that inspite of showing decline in the proportion of workers in this sector to total workers both the districts have shown positive growth rate of the work-force in this sector. Incidentally, large size-groups in both the districts have shown positive growth rate of the work-force in trade and commerce.

5.3.2 Transport and Communication:

Proportion of workers engaged in transport and communication in different size-group of settlements to total workers

of the district has experienced significant changes in the district of Mahendergarh. Smaller size-groups have shown significant increase in the proportion. This may be largely due to the construction of approach roads to every village of the district. In Ludhiana too, there has been an increase in the size-groups 2000-4999 but the increase is comparatively very small (refer table 5.1).

So far as the proportion of workers in transport and communication to total workers is concerned, both the districts have shown marginal increase over the decade in the proportion figure. Infact the overall increase in the proportion is mainly due to the increase in the size-group 2000-4999. All the size-group (except 2000-4999) have shown decline over the decade in the communication to total workers (refer table 5.12).

Table 5.12

Mahendergarh and Ludhiana District: Proportion of workers in transport and communication to total workers

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
2000+4999	0.38	1.00	+0.62	+193.33	1.61	2.05	+0.44	+54.82
5000+	0.60	0.39	-0.21	-22.22	2.86	2.26	-0.58	-10.52
Class VI	5.81	3.66	-2.15	-31.81	-	-	-	-
Class V	5.11	5.06	-0.05	+24.79	5.80	5.50	-0.30	+37.80
Average	1.18	1.55	+0.37	+49.83	1.86	2.27	+0.41	+37.14

Both the districts have shown positive growth rate of the work-force in the rural-urban continuum, the growth rate being higher in Mahendergarh (+49.83) as compared to Ludhiana (+37.14). It is only the two extreme size-groups (2000-4999 and class V) in both the districts which have experienced positive growth rate. The middle size-groups of settlements have shown negative growth rate of the work-force.

5.3.3 Other Services:

The proportion of workers engaged in other services in different size-groups of settlements to total workers in other services of the two districts has remained more or less constant over the decade (refer table 5.1).

In the participation rate (proportion of workers engaged in other services to total workers) however, significant changes have been observed. The district of Mahendergarh has shown increase over the decade in the proportion of workers in other services to total workers in almost all size-groups of rural-urban continuum (except class VI size-group). In Ludhiana on the other hand, all the size-groups have shown decline over the decade in the proportion of workers in other services to total workers (refer table 5.13).

The growth rate of the work-force has been higher and positive in Mahendergarh (+48.30) as compared to Ludhiana

Table 5.13
Mahendergarh and Ludhiana District
Proportion of workers in other
services to total workers

Size-group	Mahendergarh				Ludhiana			
	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.	P.C. 1961	P.C. 1971	P.C. Diff.	G.R.
2000-4999	10.39	14.83	+4.44	+62.45	16.44	1.22	-15.22	-90.92
5000+	7.82	13.87	+6.05	+109.48	18.57	13.33	-5.24	-19.31
Class VI	21.67	20.97	-0.70	+4.57	-	-	-	-
Class V	30.38	31.49	+1.11	+17.98	34.63	23.67	-10.96	-0.61
Average	12.80	16.69	+3.89	+48.30	17.17	3.32	-13.85	-78.28

(-78.28). The highest positive growth rate in Mahendergarh has been reported is 5000+ size-group followed by 2000-4999 size-group (+62.45) and class V in Ludhiana has been reported is 2000-4999 size-group (-90.92) followed by 5000+ size-group (-19.31) and class V size-group (-0.61).

The foregoing analysis suggests that the sectoral changes in the rural-urban continuum have been more development oriented in case of Mahendergarh than in that of Ludhiana. But if we see the aggregated picture of sectoral changes of work-force, Ludhiana seems to be better placed. This aggregated picture can, however, be misleading in drawing inferences for the district as a whole since the growth rate in secondary and tertiary sectors are solely due to their growth rate in the central city, Ludhiana. The results obtained for the rural urban continuum

and for the district as a whole suggest that high growth of urban based sectors in Ludhiana, as compared with Mahendergarh, is due mainly to the weight of the Ludhiana city.

So far as the participation rate and the growth rate in household industry, non-household industry, trade and commerce and other services is concerned, the rural-urban continum of Mahendergarh district has an edge over its counterpart in Ludhiana.

CHAPTER - VI

SUMMARY OF FINDINGS

6.1 The smaller size settlements i.e. size-class less than 500 have grown marginally in Ludhiana but declined considerably in Mahendergarh. But the overall higher growth rate of population in the rural settlements of Mahendergarh district suggest that while adjustment in the rural base in the less developed district during the sixties has resulted in a more efficient system of settlements, this process has been relatively weaker in a developed district.

6.2 Ludhiana district has experienced a very high growth rate of urban population which is largely due to the growth of its lone urban industrial centre, Ludhiana, the other towns growing at a much slower rate even in comparison with those in Mahendergarh.

6.3 The analysis of sectoral shifts in the work-force in the two district suggests that it has been relatively more development oriented in the case of Ludhiana than in that of Mahendergarh. This can be inferred from the fact that both of the 1961 and 1971 census, the participation rate in almost all the size-groups of rural and urban settlements has been found higher in Ludhiana district as compared to Mahendergarh district. But the high growth rate of urban work-force in

Ludhiana district is mainly the result of the growth rate of the work-force in Ludhiana city which is not producing any multiplier effect in the regional economy of the district as is obvious from the absence of corresponding growth in the rural settlements and smaller towns of the district.

6.4 High growth rate of agricultural labourers in Ludhiana is not the result of the developing capitalistic relations based on hired labour but is primarily due to the movement of people from the category of cultivators and household industry to this category and also because of the non-absorption of labour-force in other sectors of the economy.

6.5 It has been found that the growth of manufacturing activity in Ludhiana city does not have any significant impact on the district economy as such. In Mahendergarh district, on the other hand, although the sectoral changes have been of a lower order, they are spread more uniformly resulting in a relatively better spatial hierarchy.

6.6. A higher proportion of the total labour-force engaged in agriculture and associated form of employment in almost all the size-groups of settlements has been found in an economically less developed district. But the Clarkian argument that in an economically developed region there is almost invariably through time a tendency for this ratio to fall has not been found to be true. In the case of the developed district, there

has been an increase in the proportion of workers engaged in the primary sector to total workers and the growth rate of the work-force in this sector has also been positive and very high due to certain inter-sectoral shifts in the work-force resulting from the non-absorption of labour-force in other sectors of the economy primarily the household industry. In Mahendergarh district, on the other hand, there has been decline in the proportion of workers in the primary sector to total workers and the growth rate of the work-force in this sector has been found to be equating with the growth rate of the total work-force of the district. Inter-sectoral shifts in the work-force mainly from agricultural activities to tertiary activities is also responsible for this trend in the district. The analysis shows that the capitalist model of sectoral distribution and shifts in the work-force does not apply in case of the selected spatial units.

6.7 Within the primary sector, the proportion of cultivators to total workers has declined sharply in all the size-groups of settlements of Mahendergarh district where the growth rate of agricultural labourers has been comparatively very high and positive. In Ludhiana, the proportion of cultivators to total workers in declining only marginally and the growth rate of agricultural labourers is not as high and positive as in case of Mahendergarh where the proportion of cultivators has fallen down considerably. The proportion of workers in mining,

quarrying, livestock, fishing, forestry and the growth rate of workers in this category has been higher in Mahendergarh district where some mineral exploratory work although of minor importance has started especially after the formation of Haryana State.

6.8 Proportion of primary sector workers in dirferent size-groups of urban settlements to total urban workers in the primary sector of the district has remained more or less constant over the decade in case of Mahendergarh district. But class I and class III size-groups of Ludhiana have gained considerably in the proportion while class IV size-group has lost considerably in the proportion. This is due to the fact that the displacement of labour from household industry has been mainly in the large order settlements and the displaced workers had no alternative but to turn themselves towards the pool of disguised agricultural labourers.

6.9 All the size-groups of rural and urban settlements of the developed district have shown higner participiation rate in the secondary sector as compared to the less developed district both at the 1961 and 1971 census. The proportion of workers in the secondary sector in different size-groups of settlements to total workers was expected to increase over the decade in the district of Ludhiana. But class I urban settlement is the only size-group where there has been increase

over the decade in the proportion figure. There has been considerable decline over the decade in the work-force engaged in household industry. In fact it is the decline of the work-force in the household industry which has affetted the overall results of the work-force in the secondary sector. Excepting Ludhiana city, all other size-groups of settlements in both the districts have shown decline over decade in the proportion of workers engaged in household industry to total workers. ~~The overall decade in the proportion of workers engaged in household industry to total workers~~. The overall percentage change of the work-force in manufacturing and household industry in the two districts suggest that it has been relatively more development oriented in the case of Ludhiana than in that of Mahendergarh.

6.10 Shadow effect exerted by Ludhiana city becomes obvious when one notices that the manufacturing base is very weak in the different size-groups of rural settlements and the smaller order urban settlements of Ludhiana district. Rural settlements of Mahendergarh district are better placed than their counterparts in Ludhiana so far as the growth rate of work-force in the manufacturing activity is concerned. It seems as if Ludhiana city is behaving like a canibal in the region. The growth rate of manufacturing sector for the district of Ludhiana as a whole is solely because of the growth rate in the central city,

Ludhiana. So, the aggregated picture in misleading in drawing inferences for the district of Ludhiana as a whole.

6.11 The less developed district of Mahendergarh has shown an increase over the decade in the participation rate in the tertiary sector in the different size-groups of rural and urban settlements while Ludhiana has shown decline. The growth rate of work-force in the tertiary sector has also been higher in Mahendergarh than in Ludhiana. The very low growth rate and even negative growth rate of work-force in some of the size-groups of Ludhiana is due to the fact that the tertiary sector of the district has reached upto a saturation point.

6.12 The proportion of workers engaged in trade and commerce, and transport and communication to total workers of the district in different size-groups of settlements has been higher in the developed district as compared to a less developed district. ~~as compared to a less developed district~~. At the 1971 census, however, the proportion of workers in other services to total workers in most of the size-groups of rural and urban settlements was found higher in Mahendergarh district. In fact, it was the proportion of "other services" which was reflected in the overall proportion for the tertiary sector. At the 1961 census, however, the proportion of workers engaged in other services to total workers in all the size-groups of settlements was higher in Ludhiana than in Mahendergarh. Sectoral

shifts in the work-force directly from primary to tertiary sector is a sign of underdevelopment. In Mahendergarh district too, the work-force displaced from the category of cultivators and agricultural labourers gets reinstated directly in the tertiary sector.

6.13 It has also been found that the sectoral changes in the rural-urban continuum have been more development oriented in case of Mahendergarh than in that of Ludhiana. If one looks at the aggregate picture of sectoral changes of the work-force, Ludhiana seems to be better placed. The results obtained for the rural urban continuum and for the district as a whole suggest that high growth of urban based sectors in Ludhiana as compared with Mahendergarh, is due mainly to the weight of Ludhiana city. So far as the participation rate and the growth rate in household industry, manufacturing activity, trade and commerce and other services is concerned, the rural-urban continuum of Mahendergarh district has an edge over its counterpart in Ludhiana.

APPENDIX - I

Mahendergarh and Ludhiana District: Proportion of workers engaged as cultivators to total agricultural workers in different size-groups of rural settlements

Size-group	Mahendergarh			Ludhiana		
	P.C. 1961	P.C. 1971	P.C. Diff.	P.C. 1961	P.C. 1971	P.C. Diff.
0-199	92.72	82.15	-10.57	91.11	75.11	-16.00
200-499	97.39	85.90	-11.49	83.77	64.72	-19.05
500-999	97.73	86.74	-10.99	79.83	63.28	-16.55
1000-1999	97.07	85.80	-11.27	81.39	65.32	-16.07
2000-4999	95.08	80.68	-14.40	82.33	67.23	-15.10
5000+	96.43	75.13	-21.30	81.15	60.77	-20.38
Average	97.04	85.29	-11.75	81.80	65.45	-16.35

APPENDIX - II

Mahendergarh and Ludhiana District: Proportion of workers engaged as cultivators to total agricultural workers in different size-groups of urban settlements

Size-group	Mahendergarh			Ludhiana		
	P.C. 1961	P.C. 1971	P.C. Diff.	P.C. 1961	P.C. 1971	P.C. Diff.
VI	99.81	84.19	-15.62	-	-	-
V	88.20	72.16	-16.04	74.49	48.98	-25.51
IV	97.65	77.65	-20.00	78.87	59.93	-18.94
III	98.07	68.77	-29.30	72.90	39.70	-33.20
II	-	-	-	-	-	-
I	-	-	-	71.08	38.09	-32.99
Average	97.20	74.16	-23.04	74.40	43.40	-31.01

APPENDIX - III

Mahendergarh and Ludhiana District: Proportion of workers engaged as agricultural labourers to total agricultural workers in different size-groups of rural settlements

Size-group	Mahendergarh			Ludhiana		
	P.C. 1961	P.C. 1971	P.C. Diff.	P.C. 1961	P.C. 1971	P.C. Diff.
0-199	7.28	17.85	+10.57	8.89	24.89	+16.00
200-499	2.61	14.10	+11.49	16.23	35.28	+19.05
500-999	2.27	13.26	+10.99	20.17	36.72	+16.55
1000-1999	2.93	14.20	+11.27	18.61	34.68	+16.07
2000-4999	4.92	19.32	+14.40	17.67	32.77	+15.10
5000+	3.57	24.87	+21.30	18.85	39.23	+20.38
Average	2.96	14.71	+11.75	18.20	34.55	+16.35

APPENDIX - IV

Mahendergarh and Ludhiana District: Proportion of workers engaged as agricultural labourers to total agricultural workers in different size-groups of urban settlements

Size-group	Mahendergarh			Ludhiana		
	P.C. 1961	P.C. 1971	P.C. Diff.	P.C. 1961	P.C. 1971	P.C. Diff.
VI	0.19	15.81	+15.62	-	-	-
V	11.80	27.84	+16.04	25.51	51.02	+25.51
IV	2.35	22.35	+20.00	21.13	40.07	+18.94
III	1.93	31.23	+29.30	27.10	60.30	+33.20
II	-	-	-	-	-	-
I	-	-	-	28.92	61.91	+32.99
Average	2.80	25.83	+23.03	25.60	56.60	+31.00

APPENDIX - V

Mahendergarh and Ludhiana District: Proportion of workers engaged in houeehold industry to total workers engaged in household and non-household industry in different size-groups of rural settlements

Size-groups	Mahendergarh			Ludhiana		
	P.C. 1961	P.C. 1971	P.C. Diff.	P.C. 1961	P.C. 1971	P.C. Diff.
0-199	92.86	33.33	-59.53	82.48	22.59	-59.69
200-499	90.69	81.80	- 8.85	77.02	50.48	-26.54
500-999	92.73	78.28	-14.45	78.38	50.22	-28.16
1000-1999	91.74	81.16	-10.58	65.43	45.16	-20.27
2000-4999	85.77	64.03	-21.74	74.42	66.63	- 7.79
5000+	91.95	71.82	-20.13	50.96	69.42	+18.46
Average	91.16	76.58	-14.58	71.28	59.80	-11.49

APPENDIX - VI

Mahendergarh and Ludhiana District: Proportion of workers engaged in household industry to total workers engaged in household and non-household industry in different size-groups of settlements

Size-Group	Mahendergarh			Ludhiana		
	P.C. 1961	P.C. 1971	P.C. Diff.	P.C. 1961	P.C. 1971	P.C. Diff.
VI	85.98	34.76	-51.22	-	-	-
V	26.94	22.05	- 4.89	68.91	20.88	-48.03
IV	28.94	2.40	-26.40	43.17	21.83	-21.34
III	40.92	28.49	-12.43	18.18	13.47	- 4.54
II	-	-	-	-	-	-
I	-	-	-	12.15	5.25	-6.90
Average	29.53	17.14	-12.39	13.71	6.05	- 7.66

APPENDIX - VII

Mahendergarh and Ludhiana District: Proportion of workers engaged in non-household industry to total workers engaged in household and non-household industry in different size-groups of rural settlements

Size-group	Mahendergarh			Ludhiana		
	P.C. 1961	P.C. 1971	P.C. Diff.	P.C. 1961	P.C. 1971	P.C. Diff.
0-199	7.14	66.67	+59.23	17.52	77.21	+59.69
200-499	9.31	18.20	+ 8.89	22.98	49.52	+26.22
500-999	7.27	21.72	+14.45	21.62	49.78	+28.16
1000-1999	8.26	18.84	+10.58	34.57	54.84	+20.27
2000-4999	14.23	35.57	+21.73	25.58	33.37	+ 7.79
5000+	8.05	28.18	+20.13	49.04	30.58	-18.46
Average	8.84	23.42	+14.58	28.71	40.20	+11.49

APPENDIX - VIII

Mahendergarh and Ludhiana District: Proportion of workers engaged in non-household industry to total workers engaged in household and non-household industry in different size-groups of urban settlements

Size-group	Mahendergarh			Ludhiana		
	P.C. 1961	P.C. 1971	P.C. Diff.	P.C. 1961	P.C. 1971	P.C. Diff.
VI	14.02	65.24	+51.22	-	-	-
V	73.06	77.95	+4.89	31.09	79.12	+48.03
IV	91.06	97.60	+6.54	56.83	78.17	+21.34
III	59.08	71.51	+12.43	81.82	86.53	+ 4.71
II	-	-	-	-	-	-
I	-	-	-	87.85	94.75	+6.90
Average	70.47	82.86	+12.39	86.29	93.45	+7.16

APPENDIX - IX

Mahendergarh and Ludhiana District: Proportion of workers in construction activity in different size-groups of rural settlements to total workers in construction activity of the district

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
0-199	0.43	0.08	0.39	0.56
200-499	6.99	8.65	6.00	9.71
5000999	28.98	41.13	26.77	28.15
1000-1999	42.09	33.72	40.40	35.30
2000-4999	19.66	15.32	21.59	21.48
5000+	1.82	1.08	4.82	4.77
Total	100.00	100.00	100.00	100.00

APPENDIX - X

Mahendergarh and Ludhiana District: Proportion of workers in construction activity in different size-groups of urban settlements to total workers in construction activity of the district.

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
VI	4.41	5.78	-	-
V	15.29	13.00	1.52	0.72
IV	38.23	39.01	1.91	2.74
III	42.05	42.19	12.85	11.67
II	-	-	-	-
I	-	-	83.72	84.86
Total	100.00	100.00	100.00	100.00

APPENDIX - XI

Mahendergarh and Ludhiana District: Proportion of workers engaged in trade and commerce in different size-groups of rural settlements to total workers in trade and commerce of the district

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
0-199	0.04	0.21	0.63	1.17
200-499	5.69	7.08	5.47	7.27
500-999	25.10	25.38	20.08	21.26
1000-1999	34.12	33.56	33.38	33.81
2000-4999	32.39	31.24	33.40	30.08
5000+	2.64	2.49	6.97	6.48
Total	100.00	100.00	100.00	100.00

APPENDIX - XII

Mahendergarh and Ludhiana District: Proportion of workers engaged in trade and commerce in different size-groups of urban settlements to total workers in trade and commerce of the district

Size-group	Mahendergarh		Ludniana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
VI	9.46	4.59	-	-
V	20.51	18.06	1.45	1.78
IV	25.36	28.80	3.21	2.59
III	40.65	44.95	20.59	17.39
II	-	-	-	-
I	-	-	74.74	78.18
Total	100.00	100.00	100.00	100.00

APPENDIX - XIII

Mahendergarh and Ludhiana District: Proportion of workers engaged in transport and communication in different size-groups of rural settlements to total workers in transport and communication of the district

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
0-199	0.32	0.23	0.25	0.78
200-499	15.48	11.99	6.51	9.57
500-999	16.45	18.77	21.45	24.64
1000-1999	40.96	41.77	36.45	36.58
2000-4999	24.19	36.37	29.59	25.57
5000+	2.90	0.83	5.66	2.82
Total	100.00	100.00	100.00	100.00

APPENDIX - XIV

Mahendergarh and Ludhiana District: Proportion of workere engaged in transport and communication in different size-groups of urban settlements to total workers in transport and communication of the district

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
VI	10.58	6.97	-	-
V	14.07	16.97	1.15	1.14
IV	37.66	32.55	2.35	1.86
III	37.66	43.48	11.66	10.88
II	-	-	-	-
I	-	-	84.84	86.11
Total	100.00	100.00	100.00	100.00

APPENDIX - XV

Mahendergarh and Ludhiana District: Proportion of workers engaged in other services in different size-groups of rural settlements to total workers in other services of the district

Size-group	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
0-199	0.36	0.27	1.66	1.46
200-499	7.17	8.65	7.79	11.04
500-999	33.13	34.74	24.76	22.13
1000-1999	36.72	37.72	36.37	37.27
2000-4999	21.35	17.32	26.08	30.85
5000+	1.23	1.29	3.21	4.22
Total	100.00	100.00	100.00	100.00

APPENDIX - XVI

Mahendergarh and Ludhiana District: Proportion of workers engaged in other services in different size-groups of urban settlements to total urban workers in other services of the district

Size-groups	Mahendergarh		Ludhiana	
	P.C. 1961	P.C. 1971	P.C. 1961	P.C. 1971
VI	8.83	7.39	-	-
V	18.71	17.68	2.40	1.91
IV	24.05	28.07	3.29	1.81
III	48.38	46.85	18.33	13.35
II	-	-	-	-
I	-	-	75.95	82.92
Total	100.00	100.00	100.00	100.00

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