

THE  
URBAN GEOGRAPHY OF  
KANPUR

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Of  
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Of  
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By

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ABSTRACT

The present study is concerned with geographical interpretation of the foundation, growth and character of Kanpur, illustrated with relevant maps and diagrams.

The study commences with the discussion of the site and situation of this centre against the background of the physical setting and local weather conditions.

In the II Chapter, the evolution and growth of the townscape have been discussed with special reference to the changes and developments after the Mutiny of 1857.

Chapter III deals with the process of growth and the demographic structure as influenced by the geographical, economic, political and social factors.

ae | A discussion on the expansion of principal services and social amenities forms the Chapter IV.

It is followed by the Chapter on the growth of industries in the city with special reference to the expansion and development of large scale industries.

Finally in Chapter VI, important land use features have been analysed and distinguished to indicate the present character of the functional structure and organization of the city.

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## INTRODUCTION

Kanpur is one of the eight big cities of India and the biggest in the state of Uttar Pradesh. The city which was merely a cantonment of the British East India Company about one hundred and fifty years ago, developed into a great commercial and industrial centre of the northern part of the country due to its favourable situation and central position in respect of the highly fertile, well irrigated and most populous region of the Upper Ganga Plain. It provides a very good subject of geographical research, especially as Kanpur today, is a fast growing city, characteristic of urban development in India.

This thesis on the urban geography of Kanpur indicates first of all, the geographical factors which were directly or indirectly favourable to the development of this urban concentration; then traces the evolution of the townscape and the changes on the site during the past. The internal geography of the city is then examined by the study of the demographic structure, the expansion of principle services and social amenities, growth of industries and the land use patterns.

The work has been based upon personal collection of data and information from the local sources in the city, supplimented by reference to records and statistics where these are available.

The writer is sincerely grateful and highly obliged to his supervisors, Prof. C.A. Fisher and Mr. R.W. Bradnock for their guidance, help and encouragement. He acknowledges with sincere thanks the assistance of several offices, institutions and establishments of Kanpur, particularly the Department of Town Planning, Uttar Pradesh, Upper India Chamber of Commerce and Kanpur City Corporation. He is thankful to Mr. A. Khan and Mr. A.F. DeSouza for their great assistance in drawing work. He is deeply indebted also by the help he received from his wife.

## CHAPTER I

GEOGRAPHICAL SETTINGLocation

Kanpur<sup>1</sup> is one of the most important urban centres of India. It is the biggest industrial town in the northern part of the country and the largest city of Uttar Pradesh.<sup>2</sup>

Kanpur lies in the Lower Doab<sup>3</sup> of Ganga<sup>4</sup> and Yamuna,<sup>5</sup> which forms the central fertile plain of the Upper Ganga Valley. It stands on the southern bank of the river Ganga at a height of about 412 feet above the mean Sea level, approximately in 26°-25' N Latitude and 80°-20' E Longitude, and thus it is outside the tropics, lying about 200 miles north of the Tropic of Cancer. Occupying a central location and midway position in the fertile Upper Ganga Valley, Kanpur is situated about 100 miles above the confluence of the Ganga and Yamuna near Allahabad, 270 miles to the south-east of Delhi, 626 miles to the north-east of Bombay, 633 miles to the north-west of Calcutta and 45 miles to the south-east of Lucknow. (Fig.IA)

The rectangular shaped city occupies an area of about 114 sq. miles in the northern part of the Kanpur district. The metropolitan city is bounded by the Ganga on the north and by a southern bank tributary of the Ganga, the Pandu river on the south. (Fig.IB)

- 
1. Formerly spelled Cawnpore.
  2. Formerly United Provinces.
  3. A long fillet between Ganga and Yamuna rivers.
  4. Formerly spelled Ganges.
  5. Formerly spelled Jamna.

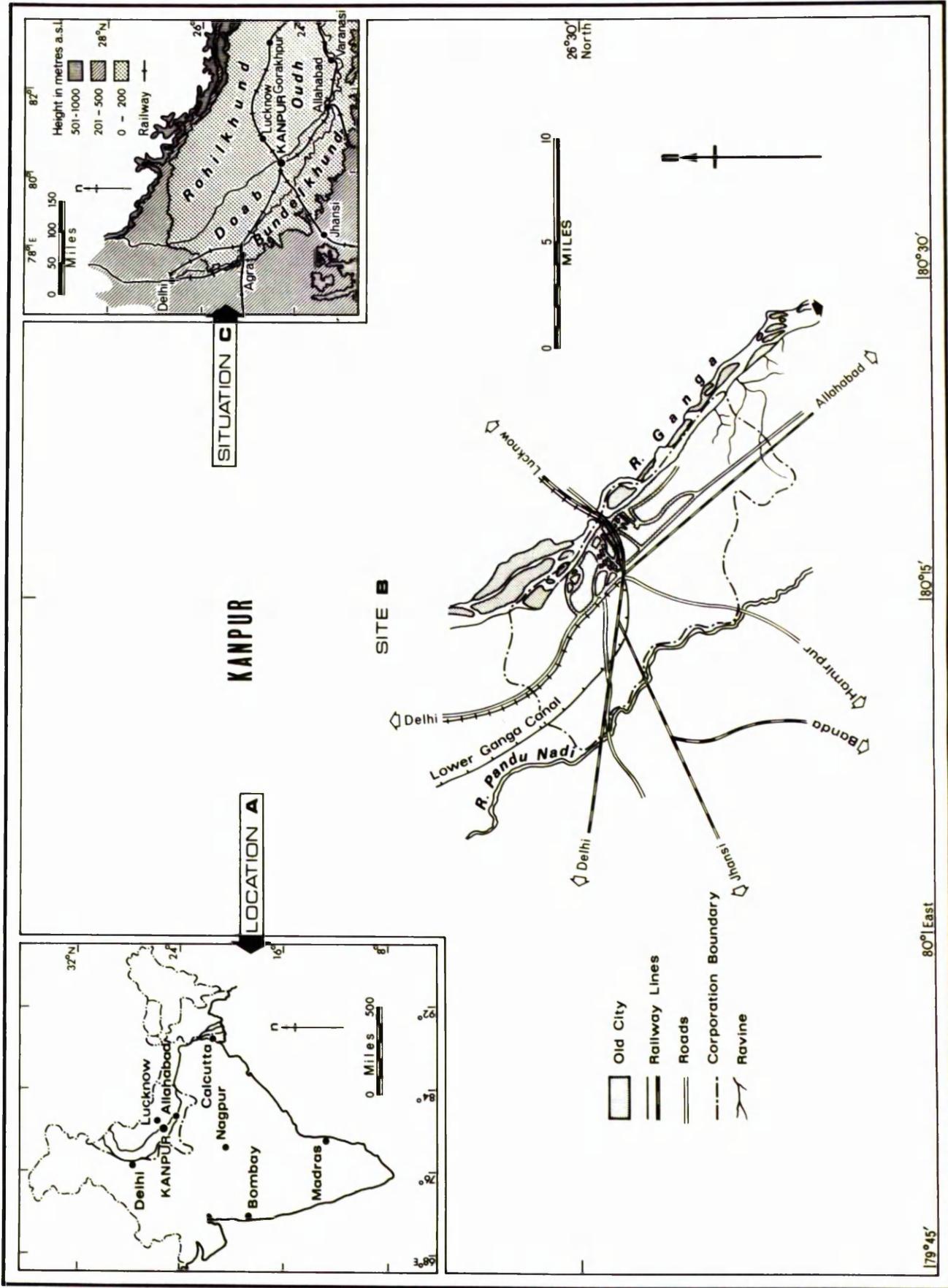


Fig. 1

The emergence of Kanpur as an important inland city is mostly due to its locational advantages, being centrally located on the Ganga and on the main rail-road routes in the most fertile and most populous State of India. In its location, Kanpur presents a significant example of an urban settlement produced mainly by modern development of transport, trade and industry in the heart of the vast and intensively settled land occupying the great alluvium plain of northern India.

### Site

Kanpur originated during the seventies of the 18th century and has grown on the Ganga and westwards between the unimportant village of Kanpur-Kohna (old Kanpur) and the historic village of Jajmau, some 8 miles down stream from the former. The riverside strip, almost unsettled ground was chosen in 1778 as the site of the East India Company's cantonment, the main function of which was to protect the Oudh territory. The choice was guided by the fact that Kanpur had already been selected as the site for a trading factory of the Company, and a military force was essential for the protection of the European traders<sup>6</sup>.

Above (north-west of) the city, there is a belt of Khadar<sup>7</sup> keeping the stream away from the high bank. South-east of Jajmau, the bank is intersected with ravines for many miles. The site of Kanpur, therefore, was one of those few places on the Ganga and on the border of Oudh territory which was near

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6. H.R. Nevill: Cawnpore Dist. Gazetteer, pp. 262-63, Allahabad, 1909.

7. Riverine land.

to Lucknow, the most important city of the area in those days; and where the steep high bank, close to the main channel afforded a site immediately above the stream. This fact was very important to the commercial prosperity of the town owing to the significance of river transport in the pre-rail days. Moreover the historic importance of Jajmau, now almost a part of the city, probably suggested to settlers the significance of the site; in 1765<sup>8</sup>, the king of Oudh lost a battle against the Company at Jajmau and the place lay on the old road from Kalpi to Lucknow.

The founder's choice of Kanpur represents a sound military and political judgement, because besides being a strategic place in the local sense, it occupied the key position on the border line dividing the then British territories from the kingdom of Oudh and the territory of the Mughal king of Delhi.

Thus the riverside strip of firm and flat ground on the steep high bank, close to the navigable channel of the Ganga was considered a favourable site for Kanpur. The firm and flat land, well protected from floods afforded an ideal situation for the construction of buildings and roads immediately above the stream for a distance of more than 8 miles. The fact that the river bank was high and close to the channel was advantageous in two ways, namely, it was convenient for the easy access through the main channel which skirted the city side and was usable at least for country

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8. H.R. Nevill: op. cit., p.206.

boats throughout the year; it made further easy contact between land routes and river traffic and later facilitated the task of bridging the river, a fact so important for the service and security of the town.

The river Ganga was the most notable advantage of the site. Besides offering adequate water supply and a good protection from hostile invasion at least from one side, it was the principal means of the transportation for thousands of years in the region and during the early British rule, there was a great volume of water borne traffic between lower and upper regions of the Ganga Valley. A large share of this traffic was eventually passing near Kanpur because of its midway position on the Ganga, and this helped very much to develop Kanpur as an important waterway junction, a factor of great importance for the economic prosperity of the town.

On account of the great facility of river transport, the site quickly developed into an important military station and also grew by trade. On the same account, Kanpur achieved<sup>a</sup> high level of commercial prosperity even before the Mutiny of 1857. After the Mutiny, although the old river-port of Kanpur tended to decline with the advent of railways, the new nodality as a whole seemed to have infused fresh vitality leading to its rapid growth as a great commercial centre in the Province. Aided by the railways and the improved road system, before the end of the last century Kanpur had emerged as the most important industrial city of northern India.

During the course of early industrial growth some of the

original advantages of Kanpur's site were extensively utilised; the distribution of mills and tanneries in Kanpur shows that due to transport and water supply facilities<sup>9</sup>, the old industrial areas were developed just above the stream. The early development owes much to the advantages of its site being on a large river. But in the present times modern development of railways, metalled roads, bridges rather than original advantages, played an important part in the development of Kanpur. The remarkable growth of railways and roadways allowed the commerce and industry to grow fast which increased the population tremendously and have brought great changes on the site.

### Situation

The situation of Kanpur has also been remarkably advantageous since the city lies in the heart of an intensively settled and highly productive vast region occupied by the alluvium plain of the Ganga. Fig.IC shows that Kanpur enjoys central position in the highly fertile and well irrigated region of Doab adjoining the neighbourhood of Oudh and Rohilkhund regions which are equally famous for their productivity and high density of population. Kanpur is also not far from the hilly tract of Bundelkhund which begin to appear 75 miles south of the city, where lies the important cotton producing area of the northern Deccan. Thus the city

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9. The city was not well connected by the railways till the end of the last century and had no waterworks until 1894; the development of mills and tanneries in Kanpur commenced from 1860.

enjoys the advantage of access to the wheat, rice, cotton, sugarcane, hides and timber producing areas of the Upper Ganga Plain as well as the forested hilly tracts of central Indian Plateau.

On account of the central position midway between the northern Indian Plain, Kanpur enjoyed the advantages which the waterways of Ganga and Yamuna yielded and also controlled the important road routes of northern India in the early stages of its development. The same basic factor of situation also afforded the city's growth by the later development of railways in the region. With the development of the most organized railway network in the Ganga Plain, Kanpur became one of the chief railway centres of northern India.

Kanpur also became a major road focus for a very large region; the Grand Trunk Road, a great national highway connecting Kanpur with almost all the important urban centres of northern India, skirts the main city. There are some important provincial highways radiating out of Kanpur in various directions such as, Kalpi Road connecting Kanpur to a national highway from Delhi to Bombay, Hameerpur-Sagar Road to central India and the Lucknow Road after crossing the Ganga bridge at Kanpur runs to the trans Ganga regions of Oudh and Rohilkhund.

The radiating roadways and railways from Kanpur reach out their influence far into a large region and the nodality of Kanpur enjoyed within its region, and as a result of its good situation, allowed the city to emerge as a major regional

commercial and industrial centre of northern India.

### Physical Setting

Since the foundation of the city, the physical landscape of Kanpur and its immediate environs have been much altered owing to the rapid development. In the course of its development, the higher portions of the land have been levelled down, natural tanks and ravines filled in and built over and the course of the Ganga gradually shifted away and thus the forested land on the bank in the north-western part of the city were cleared to give way to the city's expansion. Hence the detailed and accurate account of the early physical landscape of the site upon which the city of Kanpur was founded and grew cannot be ascertained. However with the help of such older maps as are available supplemented both by early reports and by personal observation, it is possible to place together the account of the local condition of topography, relief, drainage and soil of Kanpur, which follows:-

### Topography

The general nature of the surface and structure of the city area and its immediate environs are naturally determined by the fact that it forms a small geographical unit of the Doab within the physical framework of the Ganga Plain which consist of a great crescent of alluvium<sup>10</sup> representing infilling of a fore-deep between the stable Gondwana block and the advancing Himalayas.

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10. Exact thickness of alluvium deposit is not known, it varies from less than 1000 to over 2000 metres. (D.N.Wadia: Geology of India, p. 389)

Lying within the Ganga Plain, Kanpur and its neighbourhood are on generally flat land. The monotony of the area is only broken by the difference in elevation of the older and new alluvial deposits which are known as bhanger and khadar, the former occupying a higher ground and now inaccessible to rivers while the latter is the lowlying riverine land close to the course of the streams and normally affected by the floods. As the river Ganga and its tributary Pandu river dominate the physical scenery of the Kanpur area, the main topographical features are closely related to the local character and recent action of these streams. Similarly the marked topographical changes within historic times have also been very much associated with the shifts and diversions of the same streams.

The city is bounded by the Ganga on the north and by river Pandu on the south, and the area between these two streams forms a small Doab<sup>II</sup> which may be called Ganga-Pandu Doab. On the topographical map of Kanpur (Fig-2) an attempt has been made to show some of the physical features of the Ganga-Pandu Doab before they were built over. The main topographical features in the area are as follows:-

- (1) The Ganga high cliff or upland.
- (2) The riverine land or kachar.
- (3) The inner lowland.

Although in its general aspect of relief, the Ganga-Pandu Doab is monotonously flat, yet the level in Kanpur rises

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II. A narrow tract between the two streams.

# KANPUR (Ganga - Pandu Doab) TOPOGRAPHY

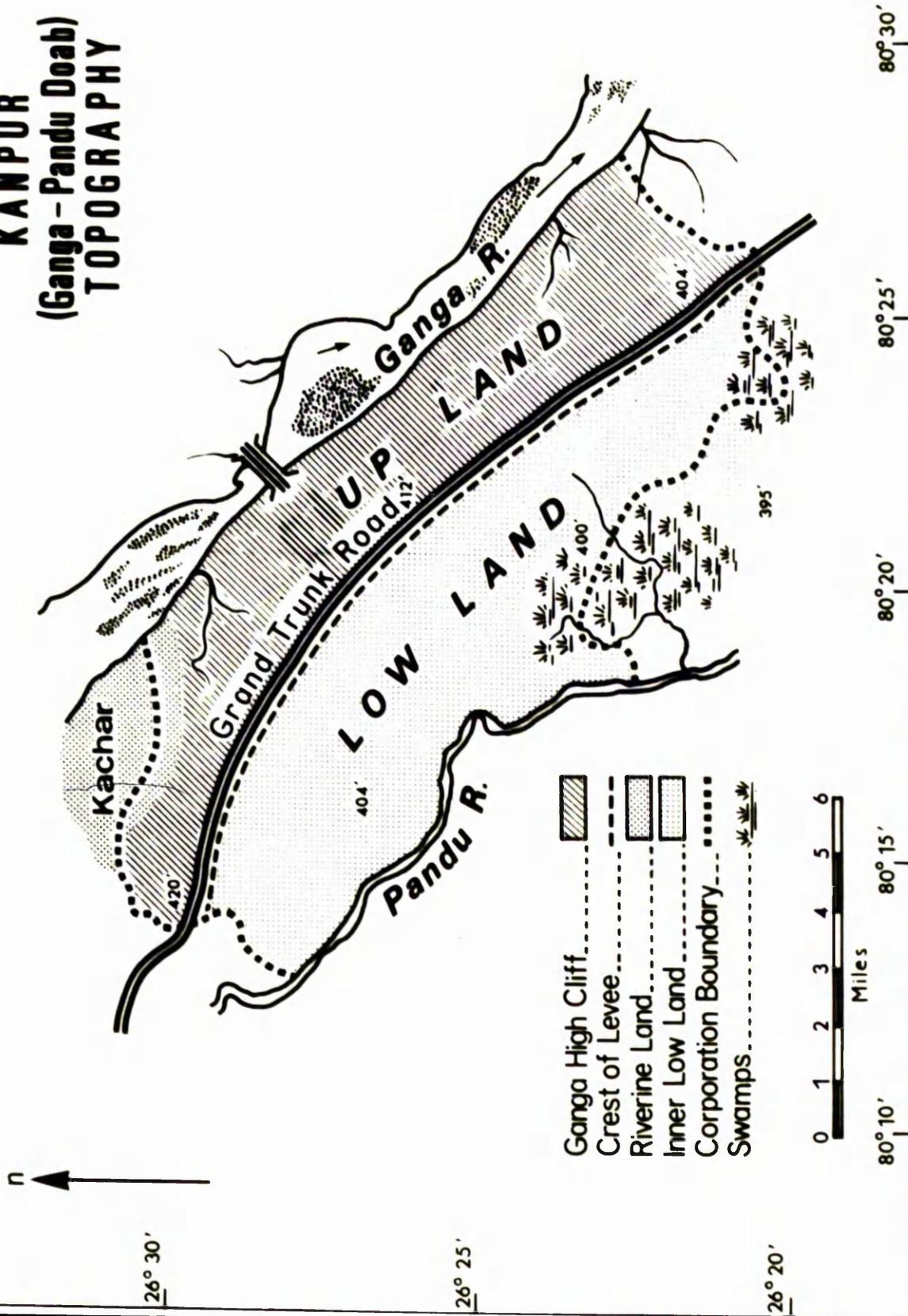


Fig. 2

sharply from river bed to the high cliff where the main city is found and then slopes gently towards the central part of the area. The level also drops gradually from 420 feet in the north-west to about 405 feet in the south-east while the city centre is about 415 feet above mean sea level. This drop in the level also determines the direction of the drainage in this area. In the extreme south the area gently ascends to a low ridge over-looking the narrow valley of Pandu.

As the older settlement of Kanpur has been developed on the upland of the high cliff and the new developments are now taking place on comparatively lower grounds of the central and south-eastern parts of the area and also selectively on raised portions of kachar in the north-west. Hence the difference in level which exist in different areas of the city may further be shown by studying the topographical map of Kanpur.(Fig.2) Thus the area occupied by the city may be divided into two broad topographical units, the Upland and Lowland.

The upland is a narrow strip of the high bank of the river Ganga where the main city and cantonment are found. It is spread 8 miles east to west from Jajmau to Nawabganj. The Grand Trunk Road can be held as the southern limit of the upland as from here the area starts descending very gradually first southwards and then south-eastwards. The average height of the upland area is approximately 412 feet above the mean sea level and about 50 feet above the river bed. The upland area is fully developed and so much modified by the building activity that the original physical conditions are now

untraceable. But the area as a whole from one end to the other is clearly recognizable as the bank of a mighty river, and it appears that the river was flowing by its side much more closer than it is now, as a regular stream. The continuing upland was intersected at a few places by ravines which carry the rain drainage down the river. The area occupied by the main settlement of the city and cantonment has no such ravines. On the whole upland area is remarkably flat with level and straight roads from one end to the other. Moreover the stable nature of the bank of the Ganga has provided a firm and strong foundation for the extensive building activity just above the stream.

The lowland area in Kanpur are two types. One is the riverine land locally called kachar which covers a small portion of the municipal area in the north-western part of the city. But it is extending many miles beyond the north-western limit of the city along the river. This area frequently being affected by the floods in the past and with the result the city could not be expanded beyond the locality of Nawabganj for a very long time. But a considerable portion of this lowlying coastal area has now naturally been raised beyond the reach of the normal flood in the Ganga owing to the continuous deposit of fresh silt, yet much part of this area is still liable to inundation during high rains. The raised area has recently been developed as the experimental farm for the Government Agriculture College and the National Sugar Institute these institutions are also located in this area. The surface features of kachar area as a whole leave little doubt in

assuming that once it formed the bed of the Ganga whose main current has been naturally directed towards the north throwing up a natural embankment joining the high bank on the southern side.

The other lowland area is the central and south-eastern parts of the Ganga-Pandu Doab, from south of the Grand Trunk Road extending many miles further south upto the ridge overlooking the narrow valley of Pandu river. The area as a whole slopes gradually towards centre and from centre eastwards. The area is partially developed and on selected grounds owing to the presence of small swamps and quite many shallow depressions which are filled with water during rains. The greater part of this lowland is either vacant or under agriculture.

By the examination of available maps and historical account together with personal observation some of the interesting changes in the local topography have been noticed. These are as follows:-

The tanks which were probably the focal points of early settlement in the city, continued to exist even upto recent times. They started disappearing owing to great demand for land in the city. A plan of the Kanpur branch of the Ganga Canal (which runs through the centre of the city) shows that several small tanks in Sadar Bazar and in the western part of the Cantonment were acquired to be filled in between the various bridges either for the road construction on the canal

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I2. R.T. Cautley: Ganges Canal Reports, App., p.243., Vol. III, London, 1860.

itself. In the western part of the city between Gwaltoli Road and Benajhabar Road there was a large shallow tank generally used by local washermen. When this tank became dry, it was partly filled in and built over and partly occupied by the public graveyard.<sup>I3</sup> Similarly the Generalganj market in the central city was a large shallow tank. It was filled in and built over by the Kanpur Improvement Trust in 1925 to provide more spacious place for wholesale vegetable market.<sup>I4</sup> Many other minor tanks which were scattered all over the municipal area disappeared and were used to meet the ever rising demand for land near the main city.

Similarly the seasonal ravines on the river bank either disappeared or have been considerably reduced in size mainly on account of the great developments on the river front. A number of ravines draining the southern city in the Pandu river have also been reduced mostly due to extensive industrial establishments in this area.

The river Ganga is the most influential physical factor in Kanpur and has been largely responsible for the condition of the physical landscape and nature of the soil in Kanpur area. Therefore remarks about the drainage and soil condition in consideration with the nature of the settlement becomes imparative.

### Drainage

The Indian rivers due to seasonal heavy rainfall are

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I3. L.K. Tripathi and N.P. Arora: Kanpur Ka Ittihas, p. 178, Vol. I, Kanpur, 1950.  
I4. Ibid., p. 182.

generally subjected to great floods. Kanpur being situated on the Ganga, a river of ever changing course, could face a serious situation. But the main settlement in Kanpur has always been well protected owing to the very high bank on the city side. In fact the floods in Ganga have rarely affected Kanpur and even the damage done by the most abnormal floods was less extensive. On a few occasions in the past, the extraordinary floods affected a small portion of the city in the north-west near Kachar. Despite the infrequency of flood, their effects deserve some comment. From the information available it is evident that the peak flood so far as is known occurred in 1890 when the water level reached about 380 feet, while the average flood level is nearly 360 feet above mean sea level.<sup>I5</sup> The flood in 1890 caused serious damage to the dwellings in the localities of Old Kanpur and Nawabganj<sup>I6</sup> which are near kachar area.

The above information shows that Kanpur has not suffered from a flood for a very long time and even the north-western part of the city which was affected in the past are beyond the reach of the Ganga because the front of this area has been considerably raised by natural deposit of soil, and at the same time the main river flow is gradually diverting towards the opposite side. The danger of floods has checked the city's growth on the river front in the north-western direction for a long time in the past, but as the area has now become safe,

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I5. Source: Public Works Department, Kanpur.

I6. H.R. Nevill: op. cit., p. 23.

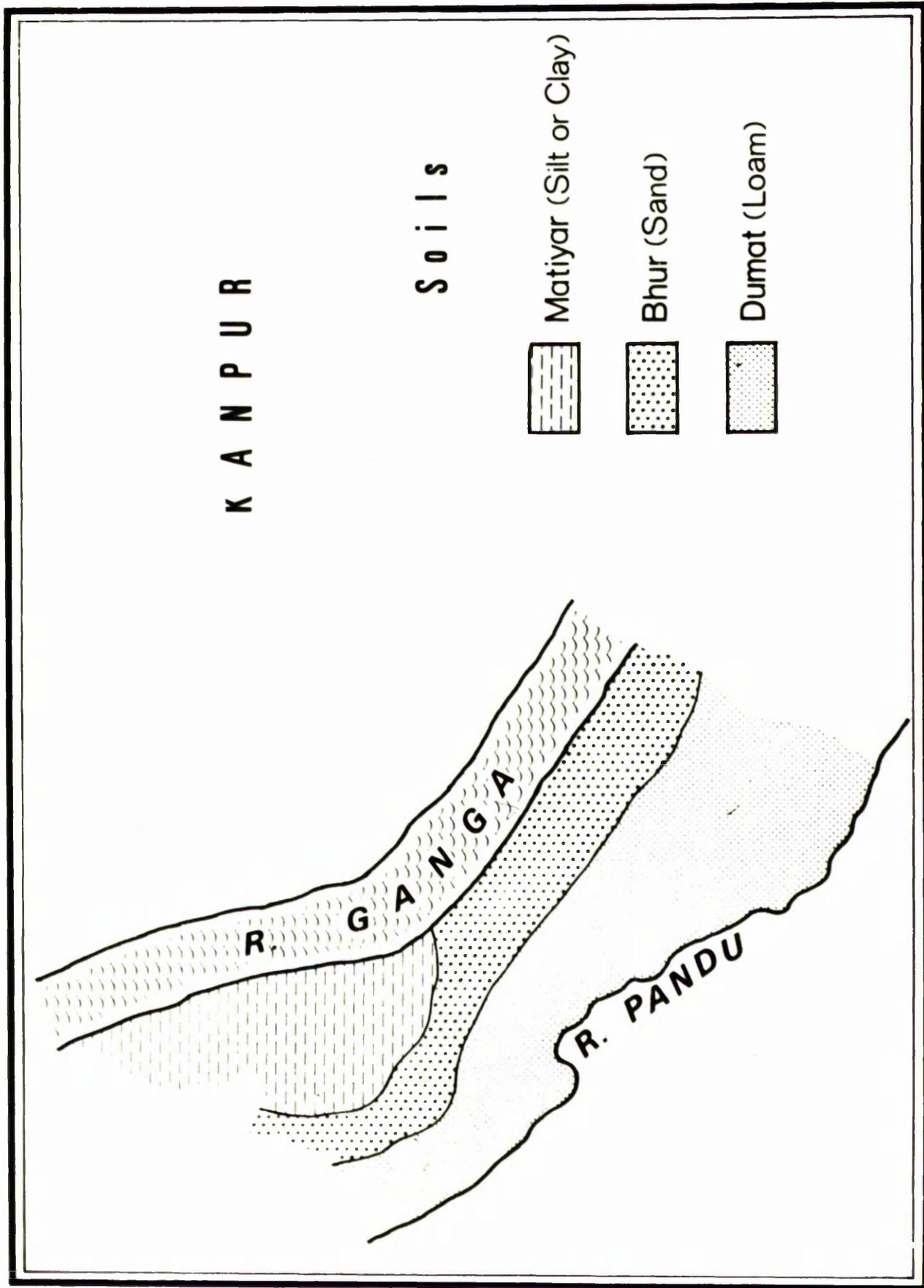
d/ the city is growing in this direction also. With the aided attraction of the Grand Trunk Road, it is developing fast. Flood affected area of the opposite bank demands serious study in view of the development of a few of Kanpur's industries on the opposite bank along the Kanpur-Lucknow Road.

The Ganga near Kanpur flows in a wide channel of a sandy bed. It commonly rises about 20 to 30 feet above the normal level <sup>in flood season; but in the dry</sup> when the average depth near Kanpur varies <sup>↑</sup> approximately 5 to 10 feet. Its 18 miles course along the city is more or less straight. The narrowest point between the two banks is the rail-road bridges over the river for crossing to Lucknow. During rains, the river becomes a vast span of water, more than a mile in width, but in the dry season it shrinks to an unimpressive dimension and the normal <sup>depth</sup> level of the water drops to an average of 8 feet from 25 feet approximately. The dry portions of the river bed, locally called Ganga Katri appears as a vast stretch of sand which is generally used for watermelon cultivation. On account of the very low level of the water during a longer period of dry season, the Ganga is not suitable as a means of modern navigation near Kanpur, yet it is the main source of water supply for the city.

and/ River Pandu, a southern bank tributary of the Ganga traverses along the southern boundary of the city/ could be exploited for the water supply to the southern part of the city. At present it is a good source of fish supply to Kanpur.

### Soils

The soils of Kanpur area are generally similar to those



**Fig. 3**

which are found in the middle region of Doab. Nevertheless they differ from Doab's common soils in composition and appearance and known locally by their popular names which may be described as below:- (Fig-3<sup>I7</sup>).

- (1) Bhur or sand on the upland.
- (2) Matiyar or clay in the lowland of kachar.
- (3) Domat or loam on the level.

The bhur is a fine sandy soil commonly found on the surface of the Ganga high cliff. The lowlying coastal area of kachar in the north-western part of the city contains matiyar which is pure alluvium clay or fresh silt. This soil is highly fertile and being close to the river produces large quantity of certain vegetables and fruits without irrigation. Domat is the main soil type of the Kanpur area. Domat area is generally level, fertile and well drained except on a few places, there are small swamps and fields of dry saltish soil. A greater part of the domat area is still under cultivation but the new city development is gradually invading this area; domat soil is very suitable for making bricks.

Mineral products in Kanpur area and in the neighbourhood are limited to those which occur throughout the alluvium plain. The nearest approach to the stone, however, in Kanpur is the conglomerated limestone, locally called kankar, an incomplete formation of nodular calcareous rock. Though its value as a building material is very small, it is very useful for road construction and largely comes in Kanpur from the immediate

neighbourhood. A natural salt called reh is a saline efflorescence which is found as a constituent of dry soil in the area is generally used as a substitute for soap and is also of some commercial value for the manufacturing of rough glass. From reh some of the important chemicals can also be extracted such as sulphate and carbonate of soda and saltpetre which were extensively utilised in the past by small scale soap and chemical industries of Kanpur. The brick-earth is in great abundance, almost everywhere in Kanpur for making kachcha bricks and sand moulded pukka bricks.

### Summary

The site of Kanpur on the stable high bank of the navigable river Ganga, having a key position on the border of Oudh was originated as a military cantonment. Due to great facility of river transport and having a central position in a vast fertile region Kanpur grew by trade. After the advent of railways on account of good situation Kanpur steadily developed first into a collecting and distributing centre and later emerged as a great industrial city of the northern part of the country. The availability of a large extent of vacant land with plentiful water supply and easy access to neighbouring fertile regions are some of the advantages which are still influencing the town's growth. Changes are being noticed in the topography due to city development. The general physical condition has been so favourable that the city is expanding rapidly and freely on almost all sides. The soils are mostly fertile and well drained and on a few places it contains

certain salts and stones which are of some commercial value.

### Weather<sup>I8</sup>

According to the Kendrew-Stamp classification of the climate of the subcontinent, Kanpur belongs to continental India, lying in the region of moderate rainfall, very hot and dry summers with 55 to 65° F. in January. But the local behaviour of weather elements is different from the broad generalization mentioned above; these are set out below.

### Temperature

Fig-4A represents the changes in temperature during the period of a year. It is noticed that January is the coldest month with an average daily mean 11.5°C, followed by the months of gradually rising temperature from 14.8°C in February to 32.7°C in June. From June onwards a gradual fall is marked and the thermometer records from 29.3°C in July to 12.2°C in December.

The mean daily maximum and minimum temperature is also shown in Fig-4B, to have a clearer picture of the temperature situation. This figure also indicates the fluctuation in the day and night temperature of January and June or in other words it shows that the nights in the summer are much warmer than the days in winter.

The mean daily range of temperature also differs from month to month and season to season, specially during the

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I8. All figures quoted in the text and drawings: courtesy of the Director Meteorological Centre Delhi and Deputy Director General of Observatories Poona (letters dated 10th & 18th May, 31st August and 18th September 1967), unless otherwise stated.

# KANPUR Mean Monthly Temperature (Degree C) & Relative Humidity (Percent)

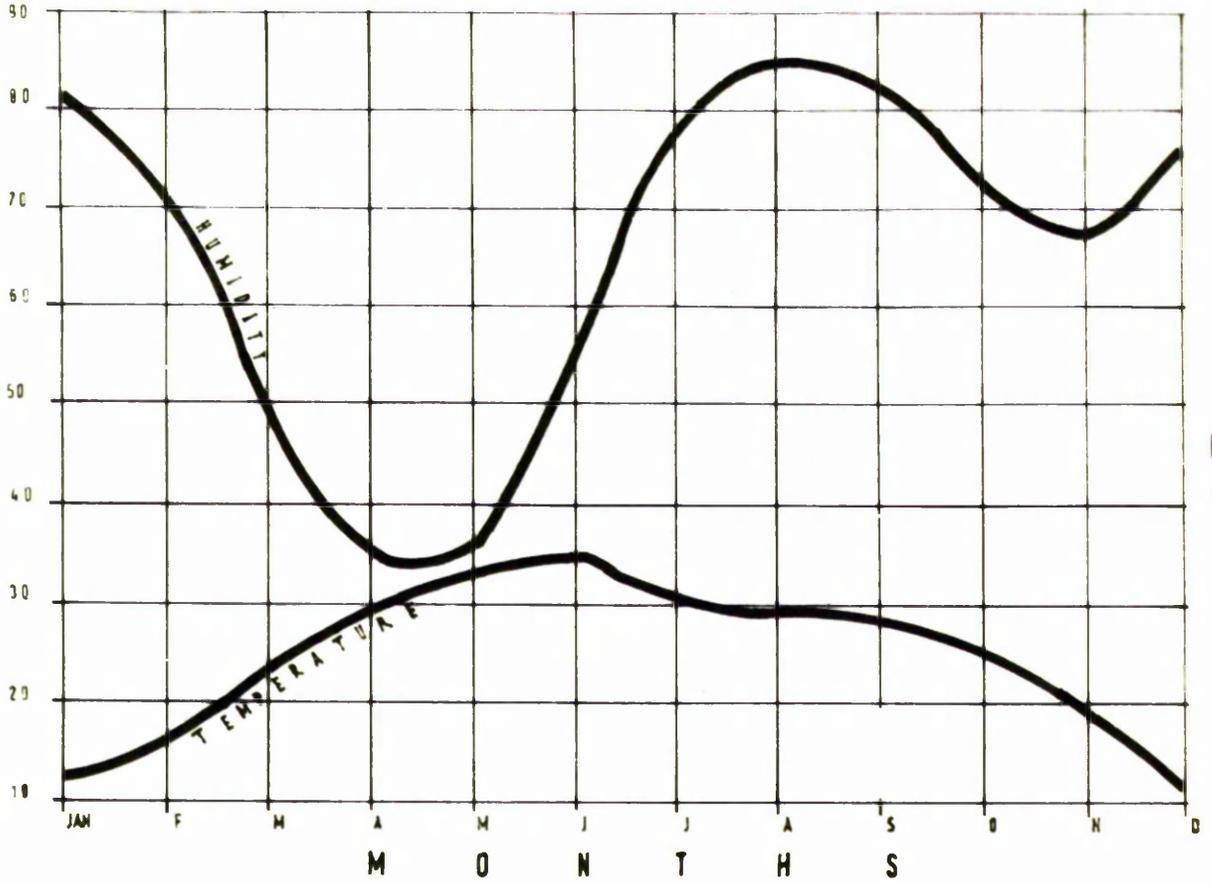


FIG 4A

## DAILY MAXIMUM AND MINIMUM TEMPERATURE (Degree C.)

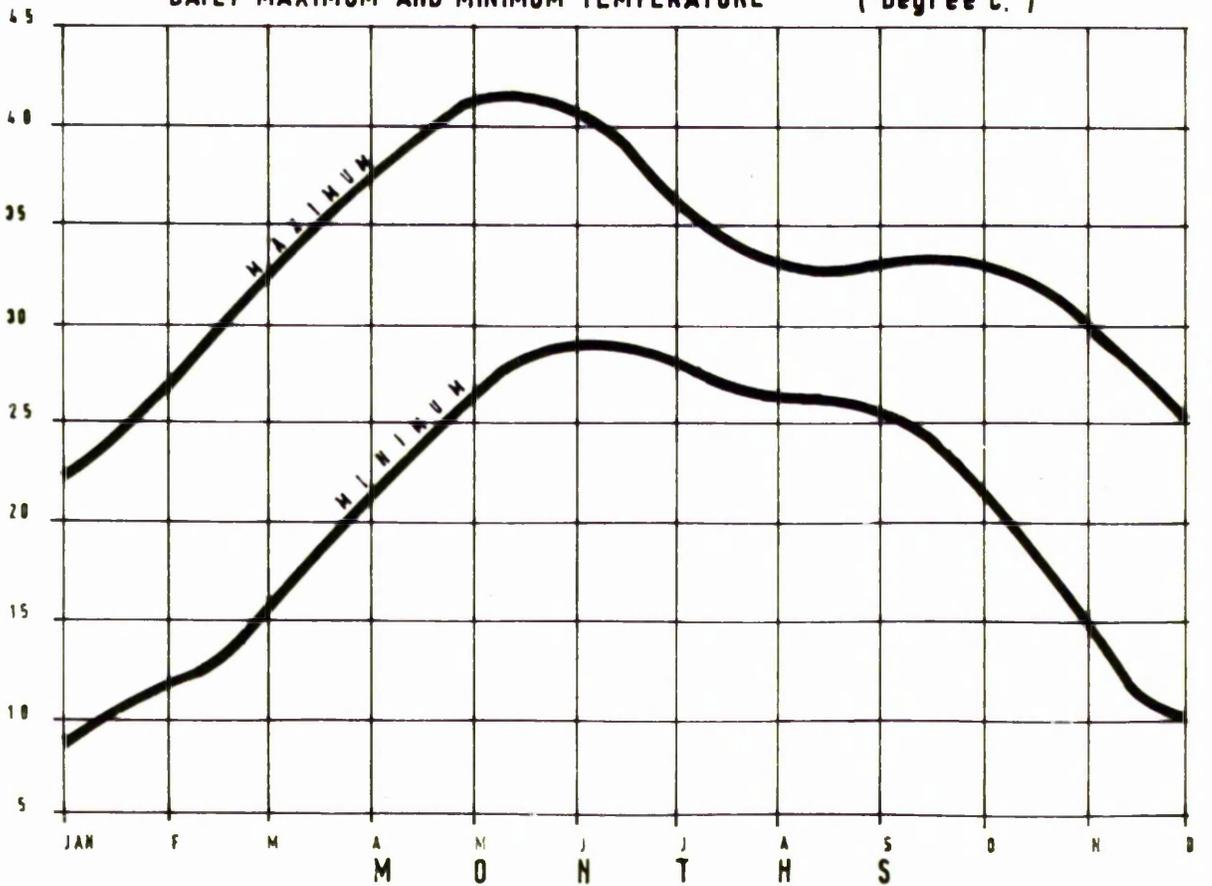


FIG 4B

Monsoon period, as the amount of rainfall is the most effective influence, hence the heavier the rainfall the lower the diurnal range of temperature. In July and August heavy rains bring down the diurnal range from  $7.1^{\circ}\text{C}$ . to  $6.3^{\circ}\text{C}$ . while in June and September with less rain the corresponding figures go upto  $11.2^{\circ}\text{C}$ . and  $7.8^{\circ}\text{C}$ . respectively. October, a relatively dry month generally has a high daily range, that is  $13.1^{\circ}\text{C}$ . During rainless winters daily range is high and more or less constant ranging from  $15.0^{\circ}\text{C}$ . to  $16.6^{\circ}\text{C}$ . Similarly in the summer with the rise of temperature the diurnal range becomes more prominent and rises from  $14.5^{\circ}\text{C}$ . to  $16.4^{\circ}\text{C}$ . in May.

Kanpur in summer is one of the hottest places of the country. The following table<sup>19</sup> compares the extreme temperature of these places

<u>Place</u>	<u>Highest Recorded Temperature in <math>^{\circ}\text{F}</math>.</u>	<u>Date &amp; Year</u>
Amritsar	119	June 8, 1929
Ludhiana	118	June 13, 1932
Delhi	115	June 11, 1931
Kanpur	117	June 11, 1931

But the winter in Kanpur is generally milder than that of the other places mentioned above. And the temperature always stays above freezing point; although the thermometer has recorded nearly freezing point at Kanpur. The following table<sup>20</sup> compares the lowest recorded temperature of the same places.

19. The climatic Tables (1891-1940), Observatories of India Publication, Delhi, 1953.

20. Ibid.

<u>Place</u>	<u>Lowest Recorded Temperature in F.<sup>o</sup></u>	<u>Date &amp; Year</u>
Amritsar	28	January 19, 1935
Ludhiana	29	January 16, 1935
Delhi	31	January 16, 1935
Kanpur	33	February 2, 1905

### Pressure

The pressure system over the city follows a seasonal rhythm. The highest on average 1003.1 mbs., occurs in December, after which it falls first gradually until February and then relatively sharply till the minimum of 994.8 mbs. recorded in July. In August pressure begins to rise again and continues to do so with a little variation upto the end of the year.

5/ Yet there is one further oscillation of the barometer which is remarkably regular during the dry seasons of winter and summer due to high range in diurnal temperature, "every day with the utmost regularity, it rises from about 4 in the morning till half past nine. Falls until 4 or 5 p.m. and then falls till 3 or 4 in the morning"<sup>21</sup>.

### Winds

The following table summarises the percentage of days on which wind blow over Kanpur.

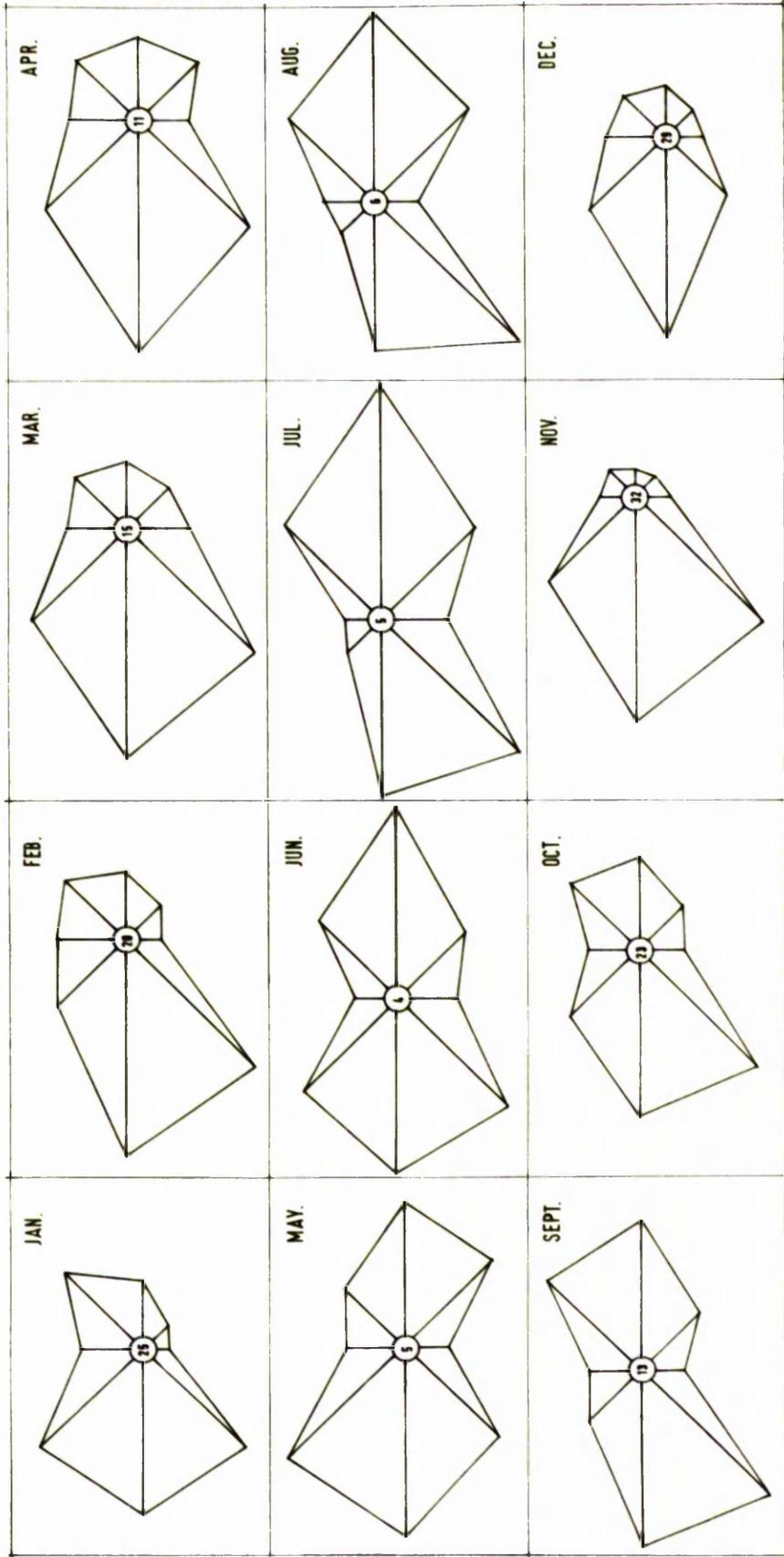
Direction	<u>Wind Directions</u>								
	N	NE	E	SE	S	SW	W	NW	Calm
Annual mean	6	8	14	7	5	14	22	8	16

It will be seen (Fig-5) that all the year round most prevalent winds are either easterly or westerly, the latter

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21. H.F. Blanford: Climate and Weather of India, p. 19., London, 1889.

K A N P U R  
MONTHLY WINDROSES.



(1) PERCENTAGE NUMBER OF DAYS WIND FROM

(2) FIGURE WITHIN THE CIRCLE INDICATE CALM DAYS %

FIG - 5

is more dominant, blowing 44 per cent of the total number of days. These winds are generally hot and dry, blowing from the western desert. The cold dry northerly and north-easterly winds blow only 14 per cent of the total days of wind movement over Kanpur. Percentage of calm days is comparatively low but their frequency varies from season to season because there are greater percentage of calm days in winter than those in summer and monsoon season. Normally the velocity of the wind in Kanpur is relatively low and strong winds are only occasionally felt. The greater part of the year, the wind blows with a velocity of not more than 20 km. per hour.

In the summer and early monsoon season the normal daily weather conditions are frequently disturbed by the tornado like violent duststorm, called Andhi, moving west to east with a high velocity. Rains which are normally associated with these duststorms greatly relieve the scorching summer heat. The frequency of these duststorms is highest in May and June.

During pre-monsoon season, from the end of March till the middle of June, the most peculiar phenomenon in Kanpur is hot dust/rising winds, popularly known as Loo. Caused by the steep pressure gradient over Eastern Punjab and Western Uttar Pradesh, these extremely hot and dry winds blow almost regularly about mid-morning until sunset. They bring<sup>in</sup> their wake a great deal of discomfort, hardship and suffering by raising the day and night temperature, appreciably above normal. The following table<sup>22</sup> will give an idea of the blazing

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22. Notes and News, p. 65., The Indian Journal of Meteorology and Geophysics Vol. I, No. I, Jan., 1950.

heat at Kanpur in June 1949.

Date	21st		22nd		23rd		24th		25th	
	Max.	Min.								
Actual temp. in F. <sup>o</sup>	110	89	112	42	114	94	111	90	109	85
Departure from normal	+10	+8	+15	+11	+17	+13	+14	+9	+12	+4

The Loo is extremely uncomfortable because it often causes loo-fever but also has a beneficial effect of killing the germs and reducing the swarm of mosquitoes and other disease carrying insects. It is therefore often said that if in any year the loo is absent or of reduced intensity then various types of epidemics follows.

### Humidity

The average annual relative humidity is 76 percent. It fluctuates however, between 66 percent <sup>in</sup> November and 86 percent in August. High humidity in monsoon months with relatively high temperature tend to create muggy and sticky weather conditions, tiring for work. For the variation in relative humidity in the different months of the year. (See Fig-4A) But the monthly relative humidity figures vary greatly in different periods of the day and night mainly on account of the variation in the diurnal range of temperature.

### Rainfall

The rainfall in Kanpur is generally from south-west monsoon. The average annual rainfall is 91 cm., with 45 rainy days of 0.1 or over. About  $\frac{5}{4}$  of the total annual rainfall and of the rainy days occur in the 3 monsoon months, July, August and September. The winter months from November to February

# RAINFALL AT KANPUR ( IN MM )

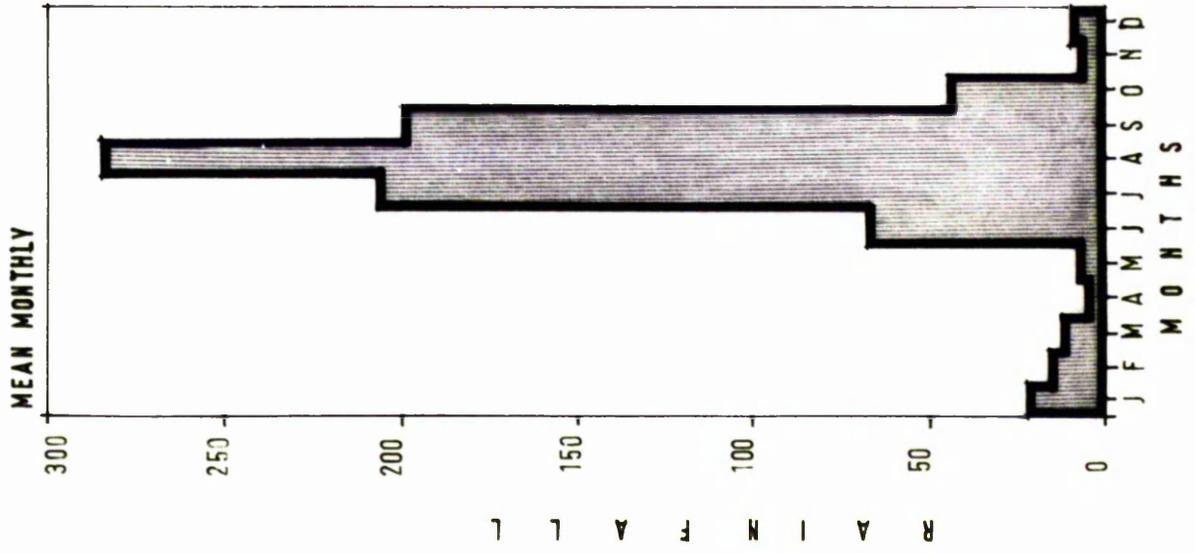


FIG 6A

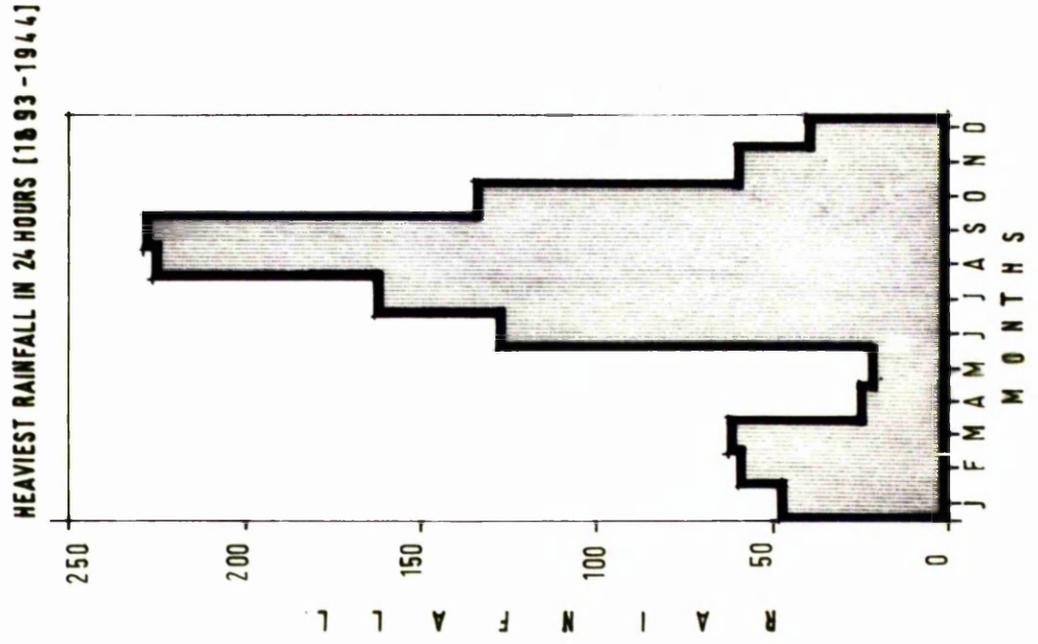


FIG 6B

have about 11% of the total, ranging from 7.5 mm. in November to 23.1 mm. in January. The summer monsoon generally sets in over the city in the mid-June, and continues upto September with occasional breaks and is of variable intensity. The average monthly precipitation increases with the advance of South-West monsoon winds, <sup>varying</sup> from 67.6 mm. in June to 285 mm. in August, which is the wettest month. October is a relatively dry month.

About 75% of rain falls in only 3 monsoon months, July August and September and the remainder falls in the end of June, the beginning of October and in January and February and the remaining part of the year stays more or less dry, which means in other words the rainfall in Kanpur can be characterised as seasonal in nature and unevenly distributed throughout the year. (See Fig.6A)

The variability of rainfall from year to year in certain months is remarkably high. For example, June, with an average 67.6 mm. of rain may in some years receive as much as 378 mm. of rain and remains completely dry in another. In June 1916, the rain at Kanpur was recorded as 378.7 mm. while in June 1957 the total rain was as low as 11.2 mm.. Similarly July with 704 mm. in 1924 received only 56.1 mm. in 1951 and August too received only 121.9 mm. in 1946 as against 664.2 mm. in 1921. The highest recorded rainfall for September was 527.6 mm. in 1915 while the lowest amount recorded was 17.0 mm. in 1959. This variability of rainfall in winter months is no less marked as in February 1928, 97.5 mm. of rain, more than

# DAILY PROGRESS OF MONSOON IN KANPUR 1965

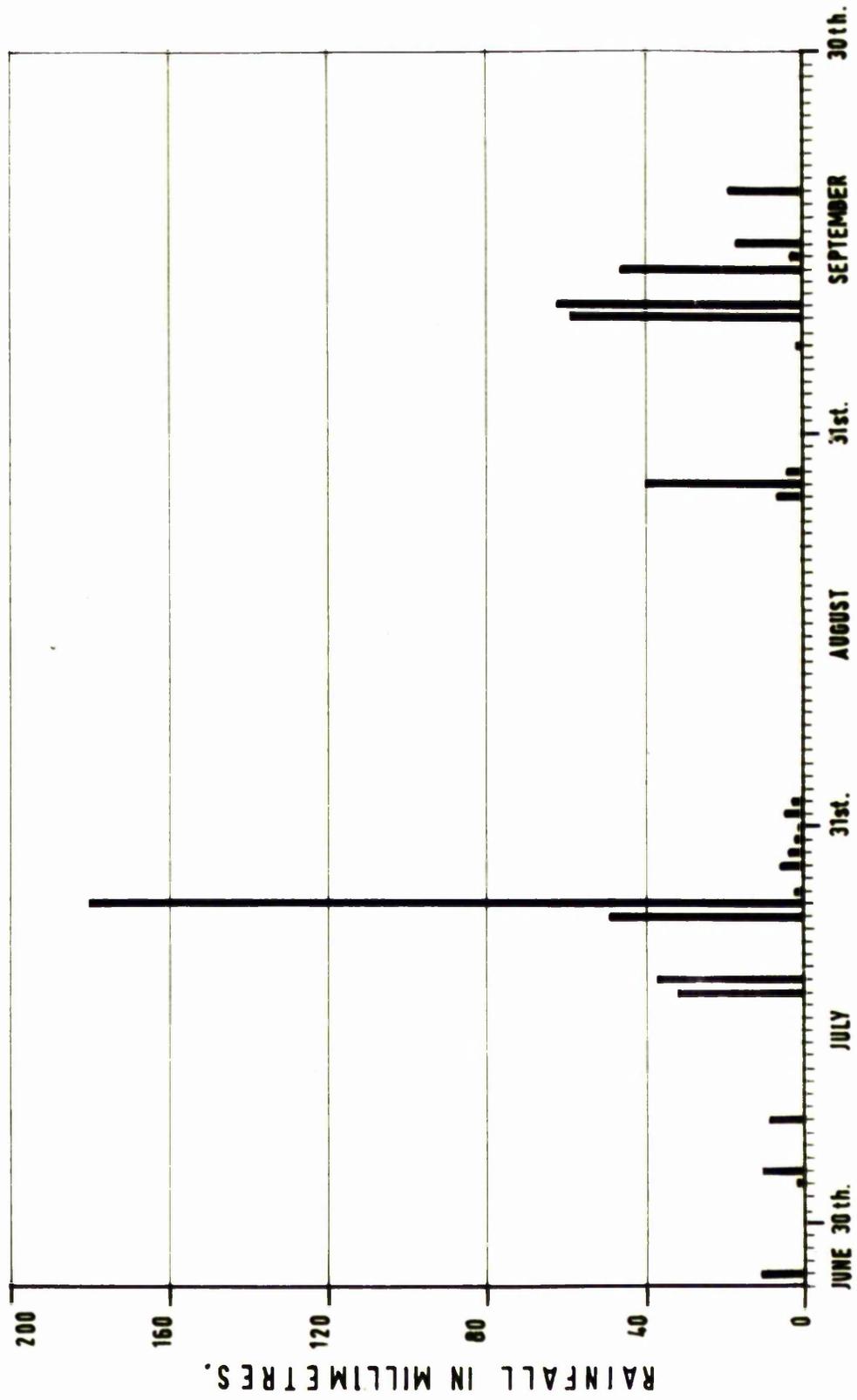


FIG-6C

6 times the monthly average was being recorded.

Intensity of rainfall also differs very much in summer and winter months from year to year. Sometimes more than 233.9 mm. of rain may fall within 24 hours, as occurred on the first of September 1915. Similarly the heaviest rainfall recorded in 24 hours in July 1924 and August 1915 are 167.6 mm. and 233.2 mm. respectively, only little less than the average monthly rainfall these months normally receive. In winter month also the same variable intensity is noticed as on February 1942, 59.2 mm. of rain fell within 24 hours, more than three times of the monthly average. (See Fig-6B)

The rainfall at Kanpur can also be characterised by its intermittent character or long intervals between the periods of rain in a month. For example in August 1965, the weather remained almost dry during the period of first 22 days after which it rained almost every day. Similarly July had 4 days interval between the two rainy periods. (See Fig-6C)

The amount of rainfall in Kanpur fluctuates greatly from year to year. Fig-6D shows the variation of rainfall in Kanpur from 1945 to 1965. During this period of 20 years the city received as little as 444.0 mm. in 1951 against 1208.2 mm. in 1961 in which the annual average is 910 mm.

The variation and fluctuation in rainfall from year to year and month to month in the region indirectly affect the agro-based industries of Kanpur. Shortage or excess of rain also causes famine in the surrounding rural area affecting the normal life in the city.

# RAINFALL AT KANPUR IN MM

TOTAL OF EVERY YEAR 1945 TO 1965

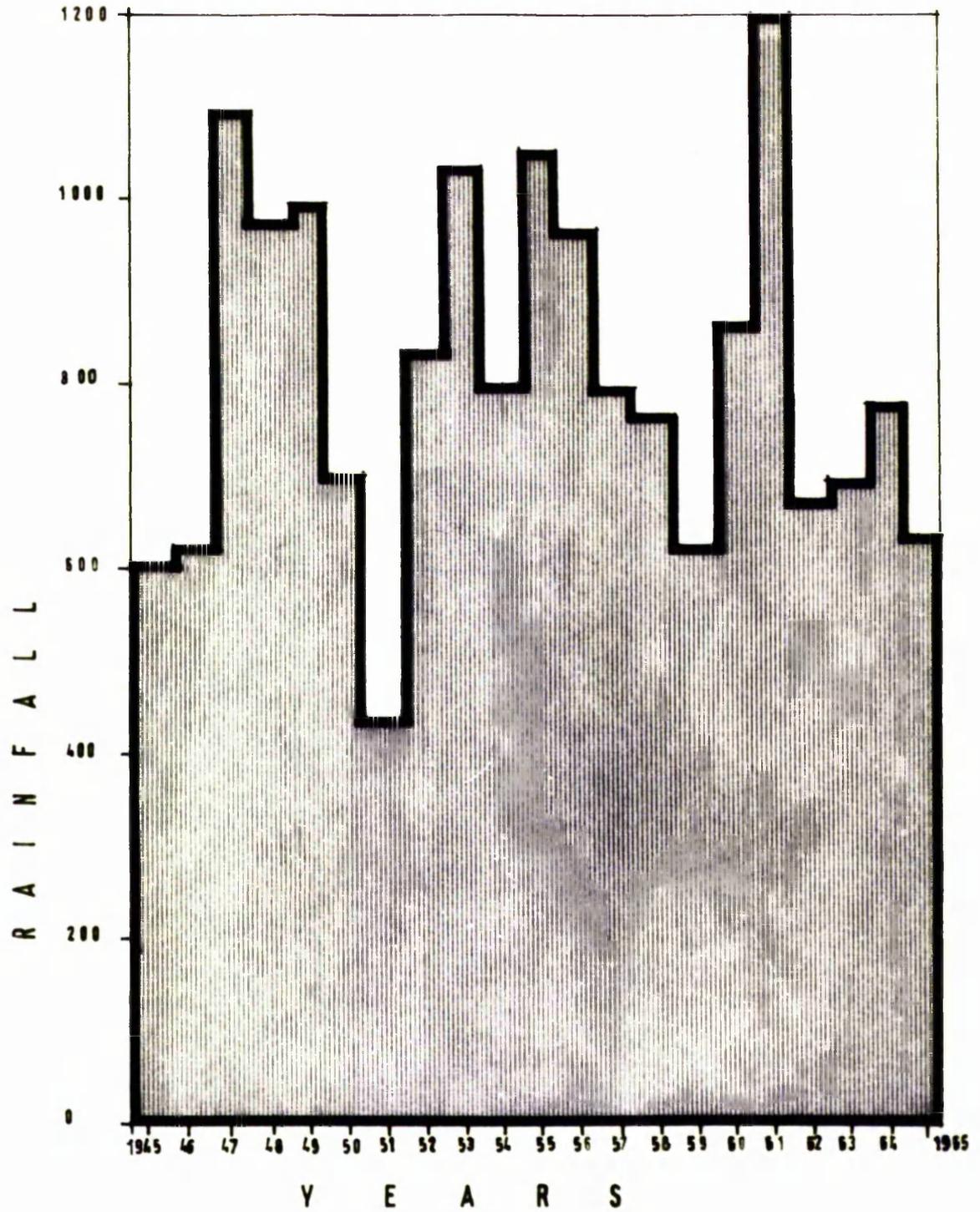


FIG. 6D

### Seasonal Weather Conditions

Lying within the middle part of the vast Ganga Plain and being far away from the moderating influence of the Indian Seas, Kanpur enjoys a delightfully cold and dry winter, a long hot summer and a short rainy season. The seasonal weather conditions here reflect its transitional position between the dryness of Punjab and dampness of Bengal. The weather conditions of Kanpur like those of the subcontinent could be divided into the following four seasons:-

- (1) The Winter Season (December to February)
- (2) The Pre-Monsoon or Hot Season (March to May)
- (3) The Monsoon Season (June to September)
- (4) The Post-Monsoon Season (October to November)

#### (I) The Winter Season

In winter the city is under the North Indian High and is over-run by a dry continental airmass. The minimum temperature normally ranges from about 8 to 11°C. which occasionally falls to nearly freezing point by the wave of extremely cold winds sweeping down the Himalayas. The days are mostly clear and bright but occasionally under the influence of western disturbances sky becomes cloudy causing light winter rain that pleasantly settle the dust. In winters, the days are generally warm but the nights are distinctly cold, and the cold morning quite often appears with a slight frost and sometimes fog is also noticed, which disappears with the early rays of the sun. This is the most pleasant and healthy season, but for the poor, the winter night and early morning

of is unpleasently cold and their daily life activities generally do not start until the sun has warmed the air. On the whole winter is the most active season for the citizens. The trade intensifies in the city and the local markets are found generally crowded and busy. Winter is also noticeable for out-door sports, fairs and exhibitions in the city.

### (2) The Pre-Monsoon Season

March is the month of transition from winter to summer. In this season with the northward movement of the sun temperature rises rapidly and strong hot winds set in Ganga Valley from the west. These intensely dry winds causing extremely low humidity in the atmosphere. As the season progresses towards stability more scorching heat is the result. Days and nights are getting hot, and heat continues through April, May and early June. Occasionally this heat is temporarily relieved by a duststorm terminating in rain. Heat is greatest in June with maximum temperature ranging from 39 to 42° C. The effect of temperature greater than blood-heat <sup>is such that</sup> and normally people rest during the heat of the midday. The business is generally dull during the day and shopping streets are commonly found quiet between 12 a.m to 4 p.m.

### (3) The Monsoon Season

The south-west Monsoon generally sets in over Kanpur in the 3rd week of June. After the first shower, the hot dry weather is broken and temperature drops from 40 to 32° C. The intensity of rain increases through July and August. The bulk of the rainfall occurs in this season. Low clouds

with continuous heavy showers are associated with monsoon depression in the Bay of Bengal, moving NW or WSW passing close to Kanpur. During the breaks of the rain clouds break up and fairly bright weather prevails resulting in uncomfortable days with high afternoon temperature and nights often hot and sticky. The air remains constantly humid. The most unpleasant feature of this season is extremely high humidity when nothing will dry despite the temperature over  $28^{\circ}\text{C}$ . Normally monsoon withdraws by the end of September. During rains, the economic activities in the city are hampered and trade suffer from the decrease in the flow of goods. The incidence of deaths and disease increases because of the mosquitoes and flies which multiply in this season.

#### (4) The Post-Monsoon Season

Soon the monsoon withdraws, the sky remains clear and the days again get hotter in October until the winter circulation is stabilise in November. Very light northerly or north-westerly winds prevail. By the second week of November days and nights get progressively cooler and conditions gradually change to welcome the winter.

## CHAPTER II

EVOLUTION AND GROWTH OF KANPUR

df The geographical survey of the site and situation of Kanpur has shown the factors responsible for its foundation and development. Such factors have been rapidly change<sup>d</sup> by new conditions and new needs and with the result that the city has been transformed to a very great extent during the course of its evolution and growth. Perhaps no other city in Uttar Pradesh so distinctly shows the great impact of Western Industrial culture upon traditionally agrarian society brought about by the influence of British rule in India. According to Spate, "Of the five great cities of U.P..... Kanpur typifies the Indo-British civilization."<sup>I</sup>

Hence the growth of Kanpur presents a significant example of an urban settlement developed under conditions of changing cultural patterns leading to an economic revolution in the midst of the rural Ganga Plain. The development of the city has influenced the townscape in such a way that each major part of Kanpur represents a particular phase of its growth.

Origin Of Kanpur

The present city of Kanpur was a small village during the seventies of the 18th century, known as Kanhpur, situated on the southern bank of the Ganga. Very little is known definitely about Kanpur before its first connection with the British. Although it is mentioned casually during the 16th

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I. O.H.K. Spate: India and Pakistan, p. 559, London, 1967.

century<sup>2</sup>, it contains no buildings or remains of any antiquity and never rose to any prominence till it became a British military cantonment in 1778<sup>3</sup>. However, it is interesting to note a local tradition which states that, Kanpur was the place where the piercing ceremony of Lord Krishna was performed and whence it derived its name Kanhpur<sup>4</sup>, a compound of the word Kanh (an abbreviation of the word Kanḥaiya) one of the many names of Lord Krishna, and the usual postfix, pur, a village. But the Britishers spelt it as Cawnpore which was amended to Kanpur after 1947.

The territory constituting the present Kanpur district had been subjected to varying fortune of Kora, Kalpi and Kanauj principalities during the middle ages. It finally came under Oudh rule when the whole territory of Lower Doab was taken over by British and was then sold to Nawab of Oudh for a consideration of 50 lakh rupees under the Treaty of 1773<sup>5</sup>. Soon after the treaty, the territories of Kora and Kanauj came under one unit of administration roughly constituting the present Kanpur district. This whole area was entrusted to Almas Ali Khan whose rule over this area lasted from 1773 to 1801. Almas Ali's rule over Kora and Kanauj gives the first

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2. M.A. Khan: Twarikh-e-Shershah-i-Hindi, pp. 23-24 (1805); (MSS. Urdu-India Office Library London).
  3. H.R. Nevill: Cawnpore Dist. Gazetteer, p. 262., Allahabad, 1909.
  4. L.K. Tripathi & N.P. Arora: Kanpur Ka Ittihas, p. 160., Vol. I., Kanpur, 1950.
  5. The Treaties and Engagements between the Hon. East India Company and the Native Powers of Asia (compiled), p. 66., Calcutta, 1845.

authentic notice of Kanpur city which at that time was but a conglomeration of a few insignificant villages. These villages were Old Kanpur, Patkapur, Kursuan and Sisamau<sup>6</sup> (See Fig-7).

*e/* During his rule, Almas Ali took an appreciable interest in this infant town. He added some structures and also set up some local markets?<sup>7</sup>

*Other L* Owing to its favourable site on the river Ganga and being on a strategic position in the region of Lower Doab, Kanpur was suddenly chosen by the East India Company as the site of a trading factory and at the same time it was also made the headquarters of the British command/local army of Oudh which had been stationed under the treaty of 1773 at Bilgram upto that time was moved to Kanpur in 1778<sup>8</sup>.

In 1778 a military cantonment was founded in Kanpur by Britishers, occupying an area of about 12 villages given by the Nawab of Oudh.<sup>9</sup> Thus the entire river side strip between Old Kanpur and Jajmau came under the military jurisdiction where in scattered form a settlement of barracks and bungalows along with their local shopping centres gradually came to be developed. The city was slowly growing along the southern boundary of the cantonment at some distance from the river. Trade in Kanpur began to gather momentum in those days aided as much by the natural advantage of the place as by the

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6. L.K. Tripathi & N.P. Arora: op.cit., p. 164.

7. Ibid., p. 165.

8. R. Montgomery: Statistical Report of the Dist. of Cawnpore (1848), p. I., Calcutta, 1849.

9. Ibid., p. I.

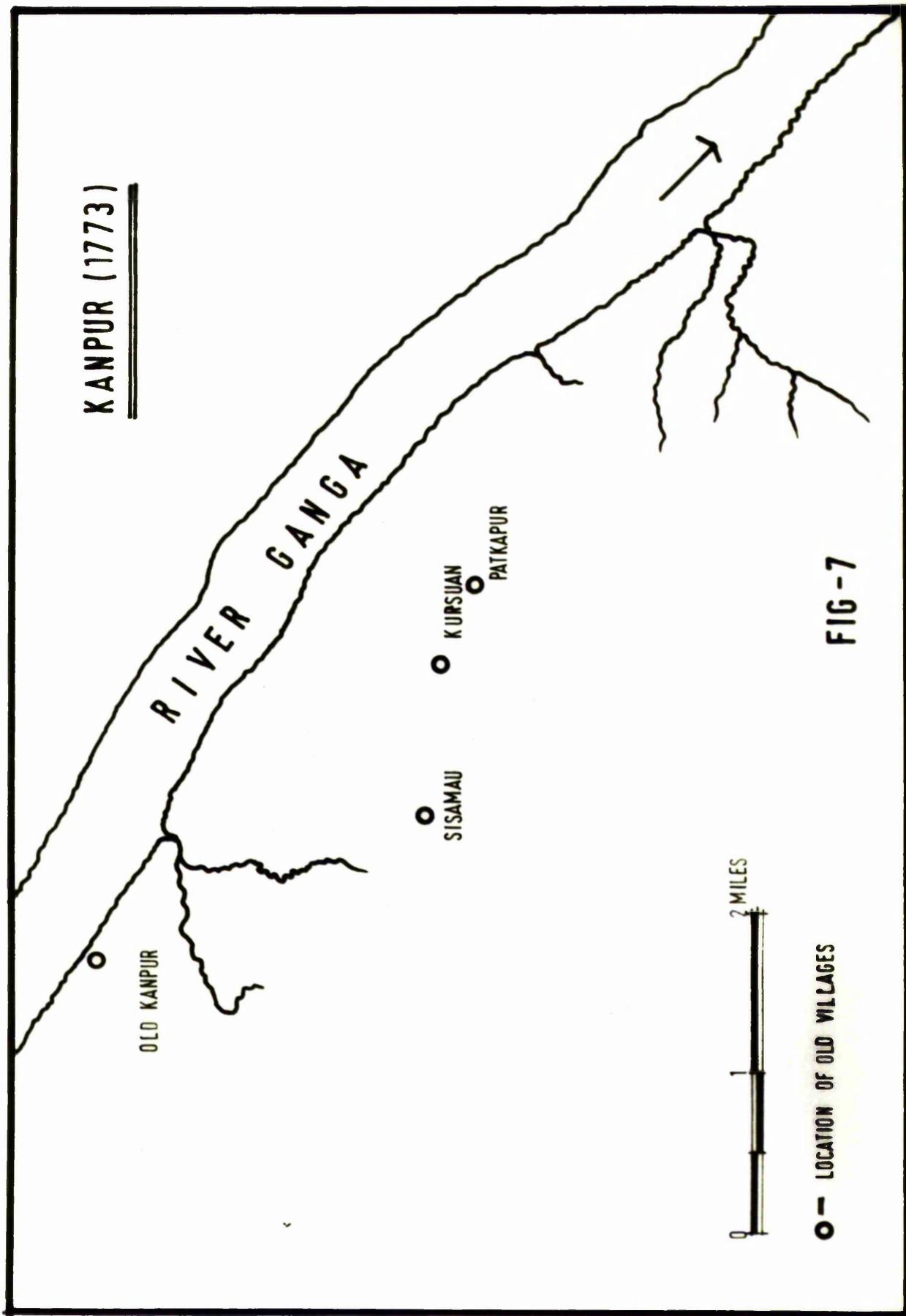


FIG - 7

presence of a large army. Merchants poured in from several directions to establish business in cloth, oil and general provisions. Thus came into existence the urban embryo of what at present is the largest city of Uttar Pradesh.

From 1778 to 1801 Kanpur grew mainly as a military centre and before the Cession of 1801, the place had become one of the most important British military cantonments in the Doab. The growth of a large army at Kanpur gave a further stimulus to a demand for a variety of goods particularly food stuffs, cloth and leather articles. The army needs were mostly met by the private contractors who usually secured their supplies from the local markets. There was soon a quick growth of trade and several types of small scale industries; work in leather having a lead over the rest.<sup>10</sup> Thus the employment opportunities in the army, trade and industry gradually attracted more people from outside and naturally the built-up area slowly expanded.

#### Kanpur Under British East India Company: 1801-1857

The first year of the 19th century saw the transfer of Kanpur from the Nawab of Oudh to the British. The Oudh army under the British command cost Oudh a great deal. The expenses of their maintenance regularly debited by the British to the account of Oudh piled into a large debt which could be cleared only by the cession of some territories. The Lower Doab including Kanpur thus passed under the British East India Company rule in 1801. Kanpur was then made civil headquarters

of a large district.<sup>II</sup> This certainly added a new element to the general growth of the town. The city now became the main focus of a very large area of a district which has always had the reputation of being one of the most fertile and densely populated in the Ganga-Yamuna Doab.

Soon after the Cession of 1801, the civil headquarters with its courts and revenue offices were set up in the western part of the cantonment. Owing to the constant differences between the civil and military authorities, the civil headquarters were moved to Bithur, a near-by town, in 1811 but they were brought back to Kanpur in 1819. And since then until the Mutiny of 1857 they were fixed in the village of Nawabganj immediately outside the western limit of the cantonment.<sup>I2</sup> Thus in Nawabganj several buildings for courts, offices, treasury, jail, hospital and school were erected. By 1823 it had come to be developed as a small modern locality.

On the other hand, the cantonment at Kanpur was actively progressing by the number of troops and also by addition of the new buildings. Dean, who visited Kanpur in 1814 says, "Cawnpore is the largest military station and depot in the Upper Provinces, or indeed on this side of India. It is six miles in extent and contains excellent accomodation for ten thousand troops".<sup>I3</sup>

From the beginning of the 19th century till the Mutiny

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II. R. Montgomery: op.cit., p. I.

I2. Ibid., p. 31.

I3. A. Dean: A Tour through the Upper Provinces of Hindoostan, P. 284., London, 1823.

of 1857, about half a century of the early British rule, the city, civil station and cantonment grew by the gradual process of development. The town as a whole experienced a number of changes and improvements especially in the matter of trade and communication.

under the protective shelter of the British forces since 1778, the commercial interests of the British East India Company had already taken root in Kanpur alongside the local industry that grew in response to the army needs. The Company offered the first major impetus to the growth of Kanpur by developing trade in cotton and indigo. It also built small factories for the manufacture of indigo and for cotton ginning. The trade of these commodities in Kanpur touched off a boom between 1812 - 1819.<sup>I4</sup> The presence of a Government arsenal and ordnance depot created a large demand for leather goods, required for the British forces throughout India. Thus the city became famous for tanning and currying leather and also for the production of leather goods, mostly saddlery and boots.<sup>I5</sup> According to Capt. Thompson, saddlery from Kanpur was, "especially popular throughout India for its excellence and cheapness".<sup>I6</sup>

Because of the developments in civil and military establishments and the growth of trade and industry during the first quarter of the 19th century, the town expanded on one hand and necessitated the improved means of communication on

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I4. R. Montgomery: op. cit., pp. 9-16.

I5. H.R. Nevill: op. cit., p. 77.

I6. M. Thompson: The Story of Cawnpore, p. 22., London 1859.

the other. In spite of the considerable growth of the settlement there were practically no proper roads. Apart from the proper internal roads which were required for an easy traffic between the scattered parts of the town, there was an urgent need for improved roads to cope with the increasing external traffic of all kind. Under the existing conditions original kachcha pathways were used by internal traffic. For the external transport and long distance travelling to and from Kanpur, the main source was the river Ganga which was extensively utilized for the transportation by the employment of improved country boats.<sup>I7</sup>

Nothing was done in respect of the improvement of roads until 1832 when the work on the Grand Trunk Road, connecting Allahabad and Kanpur was started. The metalled road joining Lucknow and Kalpi with Kanpur was completed in 1846. About the same time, the Kanpur branch of the Lower Ganga canal was also opened for commercial traffic.<sup>I8</sup> The bridge of boats on the Ganga in place since 1825 was improved and enlarged after the completion of the Lucknow-Kanpur Road to cope with ceaseless traffic of all kinds between Kanpur and Oudh. In 1844 the general post office was established in Kanpur and subsequently in 1855 just before the Mutiny, the telegraphic service was also started.<sup>I9</sup>

Consequent upon the above developments, the nodality of the town much improved and the commercial importance of Kanpur

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I7. R. Montgomery: op. cit., p. 24.

I8. H.R. Nevill: op. cit., pp. 87-93.

I9. Ibid., pp. 175-76.

also considerably increased. A few years before the Mutiny, Kanpur remained a centre of centripetal forces, pulling people of different talents and skills required by the army, trade and industry.<sup>20</sup> The town as a whole in the decade preceding the Mutiny had developed into a fairly large settlement enjoying greater economic prestige than any other town of this size in the area. In 1847 the volume of trade passing through Kanpur was very great. The estimated imports of the city in that year were 684,580 maunds of grain, 85,000 of other food stuffs, 14,775 of spices, 22,500 of salt, 20,000 of cotton, 50,000 of timber, 18,400 of metal and 33,000 maunds of dyes; and piecegoods to the value of 19 lakh rupees and unknown quantity of leather and other articles, the total value being about 60 lakh rupees. The exports consisted principally of cotton, food stuffs, dyes, spices, leather and a variety of English goods to a total value of 35 lakh rupees per annum. In the same year, there were more than ten big European concerns in Kanpur engaged in cotton and indigo trade and about fifty native firms busy in banking and trading activities.<sup>21</sup> The population of Kanpur in 1847 was 108,796 which grew to 118,000 in 1853.<sup>22</sup> Kanpur at this stage was made up of three major parts, the city, civil station and cantonment. Fig-8<sup>23</sup> will give an idea of the extent and morphology of the pre- Mutiny

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20. L.K. Tripathi and N.P. Arora: op. cit., pp. 191-92.

21. R. Montgomery: op. cit., pp. 113-15.

22. H.R. Nevill: op. cit., p. 261.

23. Source: The Statistical Report of the Dist. of Cawnpore (1848), by R. Montgomery, Calcutta, 1849.

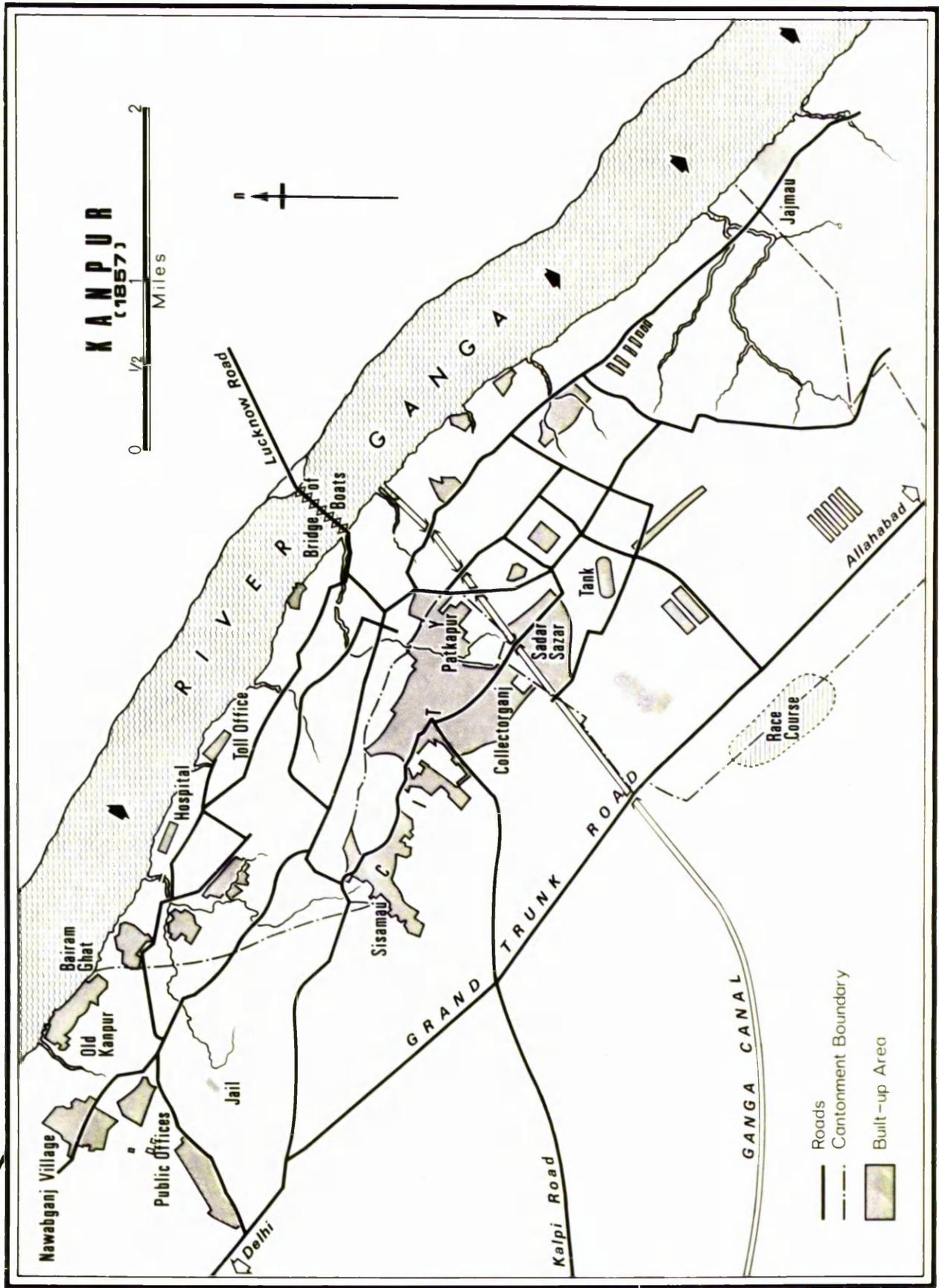


Fig. 8

Kanpur.

As shown in Fig-8, the cantonment stretched all along the river front from the eastern boundary of Old Kanpur to the western limit of Jajmau village. It contained the buildings of the magazine, European general hospital, customs house, race course and various army lines. Beyond the cantonment on the west was the civil station in Nawabganj containing important civil offices, courts, treasury, jail and bungalows of the civil officials. The city was a small compact settlement in the middle of the area enclosed by the cantonment on three sides. It was a shapeless agglomeration of houses separated by narrow lanes.

According to the District Statistical Report of 1848 in the city, except for a few handsome dwellings of wealthy citizens and a few places of Hindu and Muslims worship, there was no building worthy of note. However, there were 1850 brick and 8909 mud houses in the city when the city had an area of 690 acres. There were 400 wells including both public and private for the water supply in the city. The city had about 42 streets but none was broad. Among better ones were the shopping streets, about 24 feet wide, provided with masonry drains and generally inhabited by merchants and bankers; these were supposed to be the better ones than those usually found in the native parts of other towns.<sup>24</sup>

According to the same report, the cantonment contained 216 brick and 7492 mud houses and 332 bungalows. It had a

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24. R. Montgomery: op. cit., pp. 112-13.

large area, about ten sq. miles.<sup>25</sup> The actual built-up land was little as compared to the total area it occupied. Fig-8 clearly shows that the cantonment area looks like an empty enclosure dotted here and there with barracks and bungalows. These barracks and bugalows were so widely scattered over a very large area that one had to make a very long walk through the dusty roads to reach the places in the cantonment. Miss. Roberts, when she visited Kanpur, complained about the unnecessarily scattered state of the buildings in the cantonment. She says, "One objection made is its want of concentration; the lines of the various regiments straggle to the distance of 5 miles ..... and it is deemed a hardship to travel so far to visit a friend".<sup>26</sup>

There was a contrast in the built-up character and types the buildings in the city and cantonment. The city was a crowded and congested place mostly packed with old mud houses. The crowd and congestion in the city was mainly due to two factors. Firstly, it was surrounded by the cantonment boundary on three sides, this left any scope for expansion of the city on one direction only. Secondly, building activity was entirely left to the mercy of the settlers who ignorantly under the influence of rural customs of close living for security, caste and family feelings allowed continual unsystematic growth by organic enlargements within the limited space. On the other hand the cantonment was a more open,

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25. R. Montgomery: op. cit., p. II5.

26. Emma Roberts: Scenes and Characteristics of Hindostan, p. 37., Vol. I., London, 1837.

spaciously built and widely scattered area. The bungalows in the cantonment were large, commodious and usually surrounded by planted gardens. They were built in orderly rows along the maintained kachcha roads which were nicely planted on either side. The Europeans theatre, a church and the assembly hall were the only stone structures in Kanpur which lay in the cantonment.<sup>27</sup>

The above figures show that in Kanpur as a whole, the majority of houses were kachcha. And even many of the bungalows were mud-walled. The roofs of the houses and bungalows in most cases were thatched or tiled.<sup>28</sup>

The markets of Kanpur in the pre- Mutiny years were well supplied with all sorts of country and foreign goods. There was a great trade in leathergoods and cloth of every kind. The European shops were also numerous. Miss Roberts says, that Kanpur was, "well supplied with every article of European manufacture necessary for comfort or even luxury..... the bazaars are second to none in India ..... the jewellers are scarcely inferior to those of Delhi". She further says, "The environment in Cawnpore on the whole was city like",<sup>29</sup>

Heber, who visited the town a little earlier than Miss. Roberts remarked, "It is in many respects one of the most considerable towns which I have seen in northern India".<sup>30</sup>

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27. E. Thornton: Gazetteer of Territories Under Govt. of East India Co., p. 301, Vol. I., London, 1854.

28. Emma Roberts: op. cit., p. 38.

29. Ibid., pp. 38-54.

30. R. Herber: Narrative of a Journey through the Upper Provinces (1824-1825), pp. 366-67., London, 1828.

### Kanpur During The Mutiny Of 1857

Kanpur was one of the leading Mutiny storm centres in 1857. During the Mutiny disturbances practically every building in civil station and cantonment was either destroyed or seriously damaged. Surgeon Collins says in a letter, " In the immediate neighbourhood not a single house is left intact..... the whole of the European quarter is in such a condition that it is a city of desolation".<sup>31</sup> Thus on account of the serious disturbances, the town was almost deserted and the general progress of Kanpur was stopped for many months.

### Reconstruction And Expansion Of Kanpur After The Mutiny Of 1857

The striking changes in the city started a few years after the Mutiny and since then unprecedented developments have taken place in almost every field of the city's life, particularly in trade and industry due to growth of railways. These developments gradually contributed much to the internal structure and external influence of the city which will be the subject of discussion in the following pages.

After the Mutiny, the British Government assumed direct power and the Company's rule was ended. In Kanpur the first major task before the authorities was the reconstruction of the civil and military buildings. In the reconstruction that ensued the western bounds of the cantonment were shifted back leaving the whole portion between city and the river on the west side of the canal for the new civil station.<sup>32</sup>

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31. F. Collins: Letters dating from 1857 to 1858; (MSS. India Office Library, London).

32. H.R. Nevill: op. cit., p. 264.

All important offices including the civil courts, collectorate, the police lines and jail and also the residences of important civil and police officials sprang up here where they remain even today.

In addition to the visual changes in the general morphology, Kanpur experienced economic expansions after the Mutiny. The annexation of Oudh in 1856 had also brought added incentive to trade and enterprise in Kanpur. Many craftsmen and skilled workers of Lucknow and from other parts of Oudh migrated to Kanpur after the disintegration of Nawab's Court.<sup>33</sup> In addition many basic industries came to be founded in Kanpur, mainly through the initiative of various Englishmen. The railway line was soon to be extended upto Kanpur. During the same period there came the realization that at least all the essential army needs must be met from the local resources without the continued dependence on the supply of stores from England. Consequently, the Government established a large factory in 1860 at Kanpur for the manufacture of harness and saddlery required by the army throughout India.<sup>34</sup>

The East India Railway line had reached Kanpur in 1859. About the same time almost as a symbol of the interlinked growth of communication and industry in Kanpur, the Cawnpore Cotton Committee was formed by the active association of some European merchants. This committee was actually responsible

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33. Dargahilal: *Tarikh-e Kanpur*, p. 48, (1875); (MSS. Urdu - Gaya Prasad Library, Kanpur).

34. H.R. Nevill: *op. cit.*, p. 78.

for the development of large scale cotton and textile industry in Kanpur in its initial stages. During the same period the American Civil War created a sudden demand for Indian cotton. Kanpur had just been linked by rail to Calcutta and promptly became a boom town.<sup>35</sup>

The civil headquarters of Kanpur with its several new offices was fully established in 1860. In the following year the Municipality was constituted to administer the civil area. But the city as such continued to be administered as before under the District Board Act of 1856. The house tax collected from the inhabitants in the city, amounted to 45,000 rupees in 1861, and was expended on police, lighting, sanitation, roads and watering of the streets.<sup>36</sup> In the year 1866 the city also came under the Municipality. The Urban area of Kanpur was divided into two major parts in respect of civic administration. The cantonment under the Cantonment Board, the city and civil lines under the Municipality. Between 1861 and 1910, in a period of half a century, the municipal area was extended several times and a number of changes and developments were taken place under the municipality of Kanpur.

The municipality built the first main road, called Halsey Road in the heart of the city which not only facilitated greater traffic but opened up an area where congestion was already tending to grow to the point of suffocation. Realising the rapid commercial growth in the city, the municipality also

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35. Dargahilal: op. cit., pp. 57-58.

36. H.R. Nevill: op. cit., p. 177.

built a large market, known as Collectorganj, for the whole-sale business in grain. The sanitation in the city was appreciably improved by the reconstruction of old drains and also by providing a regular arrangement for the collection of refuse and dust. The erection of public latrines and the construction of the permanent slaughter houses were also important improvements in this connection. By the efforts of the municipality two large public gardens, the Memorial Garden and the Queens Park were opened to the public in 1863 and 1890 respectively. These parks were created by utilizing a vast portion of the old western part of the cantonment which was given to the civil area after Mutiny. One of the prime needs, the water supply was now engaging the attention of the civic authorities. Thus the waterworks was constructed in 1894. A few more throughfares were also constructed in the central city during the first decade of the present century under the municipality.<sup>37</sup>

The last quarter of the 19th century saw a few more landmarks in the history of Kanpur. The direct rail connection between Kanpur and Calcutta had already been established in 1861. Between 1867 and 1888 more railway lines were laid affording Kanpur a closer link with almost all the regions of northern and central India. A rail-road bridge was also constructed over the Ganga in 1875.<sup>38</sup>

Consequent upon the above developments, Kanpur experien-

37. H.R. Nevill: op. cit., pp. 265-74

38. Ibid., pp. 87-89

ced a period of rapid commercial and industrial growth before the end of the last century. Besides several large-scale textile mills many other types of factories were developed, especially for tanning leather and also for the manufacture of leathergoods. A branch of the Bank of Bengal had been working in Kanpur since 1865. The Alliance Bank of Simla and the Allahabad Bank were also opened in 1887 and 1888 respectively. Thus Kanpur was supposed to be the greatest manufacturing centre in India, outside the presidency town by the end of the last century.<sup>39</sup>

In fact the history of this city since the end of the Mutiny was one of remarkable growth of trade and industry accompanied by a rapid growth of population. The population of Kanpur was 113,601 in 1865 which increased to 1,97,170 in 1901. Due to the great facility of railway transport, the volume of trade passing through Kanpur, very great in 1877, increased rapidly in the coming years. The estimated imports in 1877 by rail and road borne traffic was 8,300,000 maunds and the exports in the same year was 7,750,000 maunds, while the corresponding figures for 1909 by rail borne traffic only were 10,346,494 and 8,819,177 maunds respectively.<sup>40</sup>

Because of the growth of trade, industry and population, the municipal area of Kanpur had to be expanded in 1888 by transferring the areas of Harrisganj, Faithfulganj and Sadar Bazar from cantonment to the city. On the same account

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39. H.R. Nevill: op. cit., pp. 73-77.

40. Ibid., pp. 75-76

a further extension in the municipal limit was made in 1901 by annexing a large area on the west including the villages of Nawabganj, Ghusramau, Gutaiya and on the south including the greater part of Juhi.<sup>41</sup>

With the extension to the city limit and the rapid development of commercial, industrial and railway establishments along with the growth of population between 1861 and 1911, the built-up area of the town as a whole was also very much expanded. Consequently, the urban problems started to grow, for the problems of a city growing by leaps and bounds could not be simple. No sooner had the city and civil amenities grown than they were outgrown by the needs of a growing population. The often conflicting interests of cantonment and city under separate authorities added not a little to the civic problems of Kanpur in the early stages of development. As an inevitable result, the city went through an irregular and haphazard growth, the marks of which remain patent even today and which are not easy to wipe out. The extent and location of Kanpur at the beginning of the present century has been shown in Fig. 9,<sup>42</sup> at which time Kanpur was made up of the following major areas:-

(I) The cantonment comprised a large stretch of ground between the river on the north and the Grand Trunk Road on the south. The eastern boundary marching with Jajmau as before while on the west it roughly follows the line of Oudh and

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41. H.R. Nevill: op. cit., p. 178.

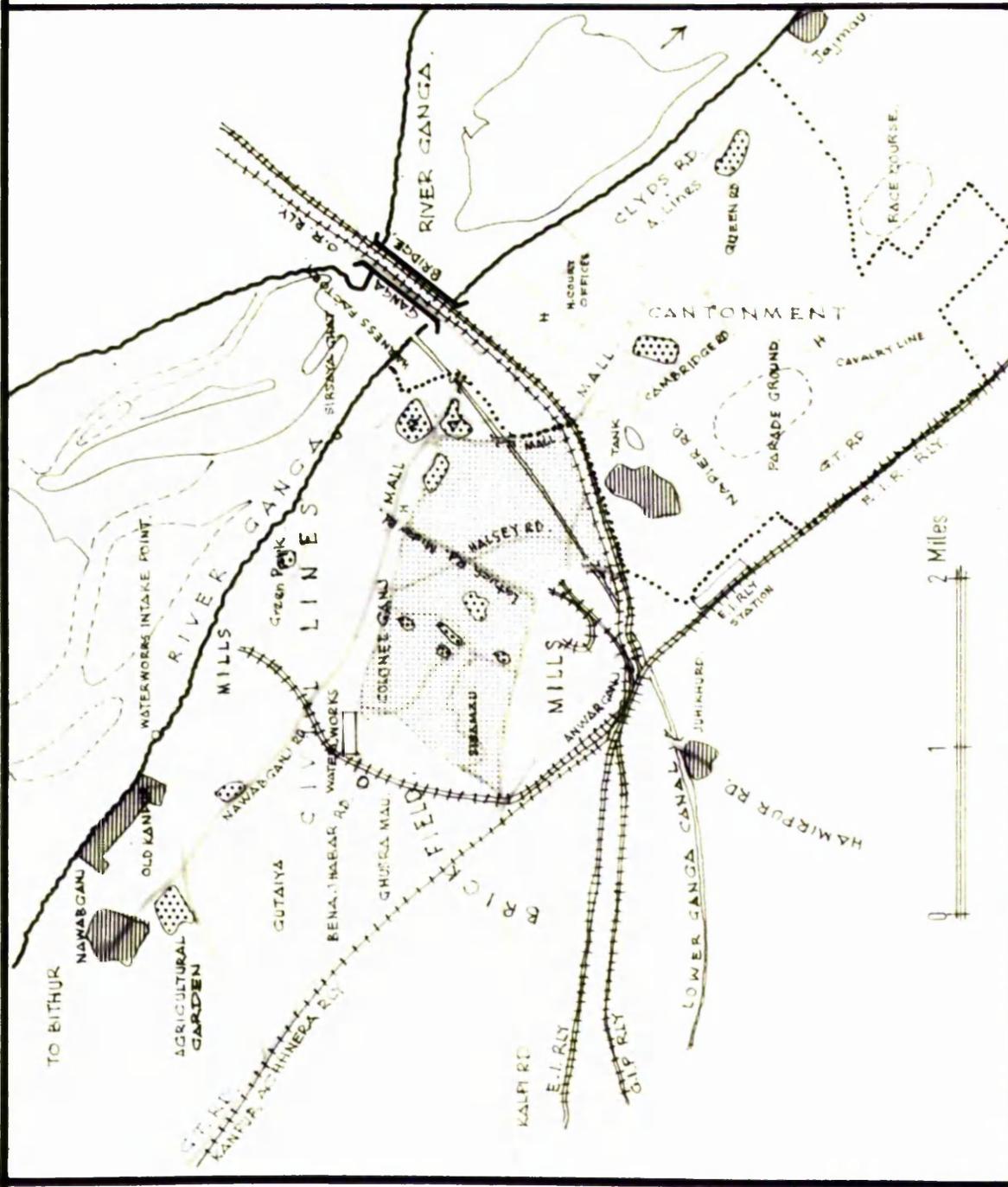
42. Source: Kanpur City Corporation Office.

# KANPUR 1909

## GENERAL PLAN

-  CITY PROPER
-  OLDER SETTLEMENTS
-  PARKS & GARDENS  
MEMORIAL GARDENS M  
QUEEN'S PARK Q
-  WATER BODIES
-  ROADS
-  RAILWAY - Metre gauge
-  RAILWAY - Broad gauge

FIG-9



Rohilkhand railway. The blocks of land bounded by Clydes road on the north and the Cambridge road on the south was a fully developed area. It contained old and new military offices, residential bungalows, local shopping centre and various public buildings such as clubs, schools, churches and hospitals. The area between Cambridge road and Grand Trunk road in the east of Napier road came to be developed as the place of various army lines, many of them were in existence from the pre-Mutiny days and some were those which were shifted to this part from the old western cantonment after the Mutiny of 1857. In the middle of this area a large portion of land was occupied by a parade ground. North of Clydes road all along the river bank, there was a fully developed residential area containing mainly bungalows of the Europeans. The eastern part of the cantonment particularly the area east of the Queens road was still an uninhabited part of the cantonment. The area, west of the Napier road was mainly inhabited by non-military population of the cantonment. It was the most densely populated part of the cantonment due to close proximity of the main railway station. On the east immediately outside the eastern limit of the cantonment there was a race course.

(2) The civil lines area extended westwards from the western limit of the cantonment upto the locality of Nawabganj between the city and the river. The southern boundary was the main thoroughfare, being called with different names at various places of its length. It was known as the Mall in the eastern and central civil lines and the Nawabganj road from

western civil lines upto the locality of Nawabganj, where it finally becomes Bithur road. This thoroughfare gives off a net-work of branches to all parts of the town. In the east this main road was lined on both sides with shops till it reaches the Memorial Gardens beyond which on the right side of this road were banks, currency office, general post office and several other offices of the local European firms, while on the left side were buildings of schools, colleges, hospitals and shops. The blocks of land bounded by the Mall on the south and the river on the north contained district, civil and police offices in the eastern part while the western part developed as a residential area intermixed with numerous mills and factories. The municipal land between Nawabganj road on the north and the Grand Trunk road on the south was traversed by the Benajhabar road. It was a much more open area containing small residential localities in the northern part while southern part was taken up by the central waterworks establishments and also by brick works; some of which had been in existence for many years.

a/ (3) The city comprised an agglomeration of crowded brick built mohallas (precincts) separated by narrow lanes and a few wider thoroughfares. There were about sixty such mohallas in this part of the town. In the city, the areas on the east of the canal and between canal and Halsey road contained the most important business centres of the town being within easy reach of the railway and important roads. The area west of Halsey road was predominantly residential.

The municipal land south of the city was greatly intersected by roads and railways and within the sections of this land several cotton ginning factories, presses, tanneries and many minor mills came to be developed due to the close proximity of railway goods-shed and major roads. A large portion of the land south of the Grand Trunk road was also taken up by railway establishments. The only inhabited quarter south of the Grand Trunk road was Juhikhurd.

Outside the municipal limits, there were a few important villeges sheltering semi-urban elements directly or indirectly concerned with the city. These villeges were Kakadeo, Maswanpur and Rawatpur on the west, Juhikalan on the south and Jajmau on the east. From these villeges a stream of peasants issued every morning carrying basket-loads of vegetables, fruits, milk, poultry and other minor products to the city market.<sup>43</sup>

From 1861 to 1911, in a period of half a century, the built-up area of the town as a whole increased tremendously. It increased mainly by the large-scale reconstruction in the cantonment and by the development of a new civil area. It also increased by the extensive development of the railway and industrial establishments in the town. The former unnecessary scattered state of the buildings no longer existed in the cantonment as the large vacant portions of land were utilised for the construction of new buildings, bungalows, barracks and other military offices especially to accomodate those:

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43. H.K. Gracey: Cawnpore Dist. Settlement Report (1903-06), p. 7., Allahabad, 1907.

army lines which were shifted here from the old western part of the cantonment after the Mutiny of 1857. In the main city the increasing pressure of business activity and wholesaling led to the rapid development of shop-cum-dwelling structures which were built either on vacant spaces or in place of old mud structures. A new locality in the north of the city on the river front came to be built-up by the extensive development of district and civil headquarters which were transferred here from Nawabganj after the Mutiny. A large stretch of land on the river front on the west and south-west of the civil headquarters also came to be developed by the establishment of mills and factories. A large area south of the city, greatly intersected by roads and railways came to be built-up by the development of cotton mills, ginning factories and tanneries and also by various railway establishments such as railway colonies and loco-sheds etc.

A glance at Fig. 9 will show that the main settlement of Kanpur was mostly confined between the river and the Grand Trunk road. This main settlement at the beginning of the present century had majority of the buildings new and made of bricks. On comparing the Fig.8 and Fig.9, a series of striking changes could be seen which took place during the course of evolution of the townscape from the middle of the 19th century till the beginning of the present century. The comparison of the same figures also reveal a major reduction in the cantonment area while a great expansion of the municipal area alongside a considerable increase in the built-up area of the

town as a whole.

### Growth Of Kanpur During The Last Fifty Years

During the first quarter of the present century, the chief factor effecting Kanpur's growth was the First World War. Alongside the increase in number of factories, the population of Kanpur also rose high through the war years. The population of Kanpur in 1911 was 1,78,557 which became 2,16,436 in 1921. Despite the birth rate of 32 per thousand against a death rate of 53 per thousand during 1911-21, the increase in population of Kanpur at the 1921 census was 21%.<sup>44</sup> Hence it would be unmistakable to assume that a large number of people migrated into the city between 1911 and 1921, and no other factor could be responsible for this influx as the war boom. To meet the growing situation of crowd and congestion, the general improvement of the town, particularly housing and roads was undertaken through planned schemes after 1919, under the Town Improvement Act of the Government of India.<sup>45</sup>

The reform and development of the city in the twenties and thirties was yet not equal to the tremendous pace at which the population of the city increased in the same period. From 2,43,755 in 1931, the population figure doubled itself to reach 4,87,324 in 1941. Hence in spite of all that the civic authorities had done, the civic amenities were falling short of the needs of the residents.

The boom of the Second World War in the early forties

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44. P.P. Bhatnagar: Special Report on Kanpur City, pp. 6-14., part. x., Vol. xv., U.P., Census of India, 1961.

45. Ibid., p. 65.

found again the Kanpur factories working full blast to meet the sudden demand created by the war. Thus achieving a further state of industrial prosperity in the city. But the huge and sudden increase in the city's population had created many more urban problems. The mill workers in the city numbered 116,252 in 1945 as against 55,814 in 1939.<sup>46</sup> While the population was increasing such giant strides, the pace of the city's civic development actually slowed down after 1938 mainly due to the war conditions. And very little could be done towards further improvement and development of the city until after 1947, the year when the country became independent.

However, during the twenty five years before the Independence of the country whatever development took place, privately or by the civic authorities both were fairly planned. The majority of the new buildings built in the town were comparatively modern and decent. In the older parts of the town new houses were built to occupy the vacant spaces and a large number of mud-walled tenements were being gradually replaced by brick houses. Some model quarters were also developed by factory owners. Moreover the town also made appreciable improvement over its narrow streets. A glance on Fig. 10<sup>47</sup> will show the extent of the built-up area before the Independence of the country.

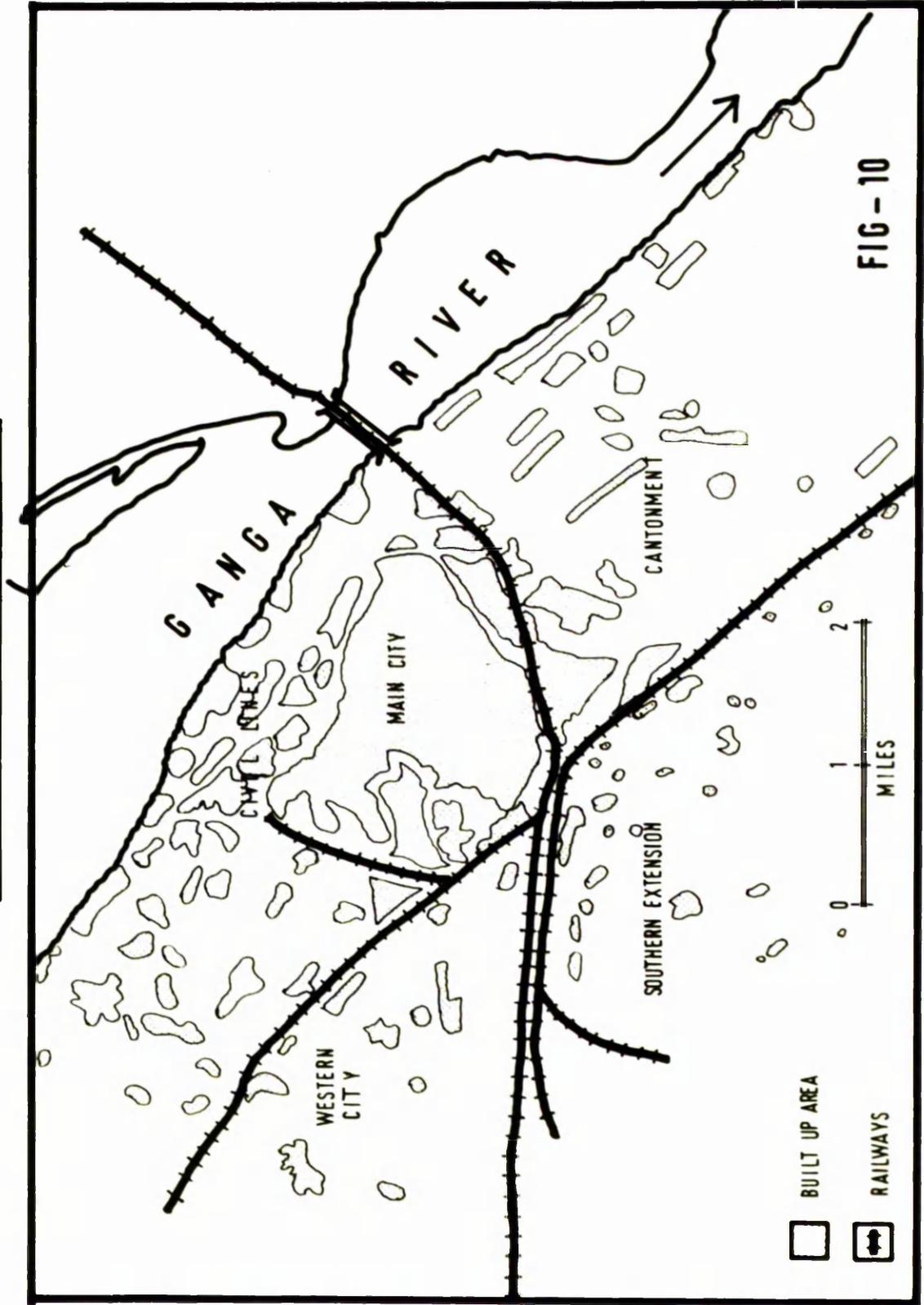
On the whole the record of the past ninety years, from after the Mutiny till the Independence of the country has been

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46. Source: Office Records, by the courtesy of the Chief Inspector of Factories, Uttar Pradesh, Kanpur.

47. Source: Kanpur City Corporation Office.

**KANPUR - BUILT-UP AREA 1944**



one of constant progress of commerce and industry and a rapid growth of population in Kanpur. With the result, the townscape greatly changed and Kanpur had become first city in the state and one of the most important industrial centres of the country.

#### Development Of Modern Transport And Communication

The first railway was extended to Kanpur from Allahabad in 1859, through traffic with Delhi and Calcutta was accomplished in 1866. The construction of the Ganga bridge at Kanpur in 1875 established direct connection with Lucknow. A direct link was effected with Bombay in 1888.<sup>48</sup> Thus long before the close of the last century Kanpur stood in direct communication by rail with other important urban centres of India. And Kanpur since then enjoyed the benefit of the best organized railway systems. Similar improvements took place in the road system. A good network of metalled roads converged on Kanpur and thus Kanpur enjoyed the great advantages of the road communication much more extensively after the advent of the railways. The postal system and the telegraphic communication were introduced in the city as early as 1847 and 1855 respectively which gradually developed in response to the demand of a fast growing city. The telephone service, started in 1891,<sup>49</sup> was rapidly developed with the development of commerce and industry in the town.

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48. H.R. Nevill: op. cit., pp. 87-89.

49. P. P. Bhatnagar: op. cit., p. 54.

## Development Of Modern Industry

The modern industrial development in Kanpur began first with the establishment of a Government leather factory and some textile mills during the sixties of the last century. The modern industrial development over a period of a century can be divided into three major periods of growth.

The first and the early period started from 1860 with the establishment of the East India railway. During this period the industrial growth owes entirely to European enterprises. The Government Harness and Saddlery factory was the first large manufacturing enterprise to be set up in 1860 followed by Elgin and Muir textile mills in 1864 and 1874 respectively. The Cawnpore Woollen Mills, the largest in India established in 1878. Cooper Allen & Co., for the manufacturing of boots and shoes in 1880, the Cawnpore Cotton Mills in 1882. The Cawnpore Sugar Works in 1894. The Cawnpore Brush Company in 1896 and the North-Western Tannery in 1900.<sup>50</sup>

The second period of industrial growth was mainly associated with the boom of the First and <sup>the</sup> Second World Wars. Besides two new Government ordnance factories, about twelve new textile mills and some leather factories sprang up in this period.<sup>51</sup> New lines in the existing industries were also adopted in response to the war needs. Thus a few jute and iron mills and chemical works were also opened. The special feature of this period of industrial growth was the active participa-

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50. H.R. Nevill: op. cit., pp. 77-83.

51. P.P. Bhatnagar: op. cit., pp. 39-40.

tion of the Indian businessmen.

The third or the post-Independence period witnessed a fairly rapid development of industry, but of small size factory industries. During the last two decades besides one major factory, the J.K. Rayons, a number of small factories for the manufacturing of leather-goods, paints, glasswares, chemicals and small machinery were established in the town.

#### Development Of Education In Kanpur

According to the earliest report available, there were only three schools at Kanpur in 1845, including two run by the Christian mission, and had on the roll 345 pupil<sup>52</sup>. Kanpur did not have any college until 1896, in which year the Christchurch school was raised to the status of a college. Great efforts have been made in this century to improve the level of education in the city. They have resulted in the creation of 205 infant and primary schools, 86 secondary schools and 14 degree colleges in the city.<sup>53</sup> The present colleges include two for teachers training and a college of law. There are a number of technical institutes in Kanpur for the professional degree, training and research. In 1965 a University was also opened at Kanpur.

#### Slum Clearance And Building Activity In Kanpur

After the advent of railways, with the rising tempo of commerce and industry Kanpur experienced a rapid growth of population and resultant congestion. The building activity in

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52. H.R. Nevill: op. cit., pp. 180-182.

53. P.P. Bhatnagar: op. cit., p. 4.

the town remained uncontrolled and unplanned for a very long time after the beginning, which could only lead to the city having haphazard structural growth. Little effort was being made to solve the problem of overcrowding and congestion during the later half of the last century. The density in the city was more than 37,000 persons per sq. mile in 1901.<sup>54</sup>

The housing in the main city particularly in the areas of labour concentration was in bad condition. These areas continued to be very much overcrowded and filthy even from the initial stage of industrial growth. The unbearable overcrowding and insanitation in the beginning of this century has been referred to in many official documents. Mr. Gracey made the following remarks in the report of 1907. According to him, "Cawnpore instead of expanding..... has been packing her increment of population tighter and tighter into the same space", mainly because of two reasons: firstly, it is blocked by the cantonment, civil lines and various railway establishments on three sides. Secondly, the municipal villages of Sisamau, Juhi, Ghusramau and Gutaiya which represent the only possible areas of city expansions have been allocated to the use of brick-works; this has resulted in unsightly excavation and pits. Further he says, "Cawnpore ..... cannot be expected to grow satisfactorily either from the point of view of sanitation or symmetry. If Cawnpore is to grow healthily, it must be on similar lines; what the private

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54. H.K. Gracey: Cawnpore Dist. Settlement Report (1903-06), p. 6., Allahabad, 1907.

sector does in England, either the state or municipality must step in to do in Cawnpore, that is to say, acquire the lands along which the city is to expand, mark them off into sites, construct roads, infact, prepare beforehand the whole outline. .... The architect and surveyer must precede the builder, not follow him at an interval of decade or so trying at enormous expense to correct his mistakes"<sup>55</sup> The Upper India Chamber of Commerce also expressed grave concern over the filthy and crowded conditions of the labour areas. But nothing was done to solve this perpetual problem until after the First World War.

The outbreak of epidemics like the plague and cholera that took a heavy toll of life during the early years of this century pressed the authorities to improve housing and sanitation in the city. In 1913 a Town Expansion Committee was appointed by the State Government with the objective of advising on the planned expansion of the city. This committee in their report of 1917 recommended that an Improvement Trust should be created to carry out the work. Thus the Kanpur Improvement Trust was created under the Towns Improvement Act of 1919,<sup>56</sup> with the main object of facilitating the expansion of the city on planned lines over suitable areas besides undertaking such other works as slum clearance and improvement of streets.

The Trust launched a number of schemes for slum

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55. H.K. Gracey: op. cit., pp. 6-7.

56. P.P. Bhatnagar: op. cit., p. 65.

clearance and succeeded in getting the open spaces even in the heart of the city by demolishing the old insanitary areas. It also successfully opened out some of the most crowded areas of the main city. Among other achievements of the Trust, the most important were the several housing schemes under which some of the old areas were renovated and new localities gradually came to be developed. New residential localities such as Nazirbagh, Chamanganj, Premnagar, Aryanagar and Swaroopnagar gradually came to be developed as the south-western extension of the city. A new factory area known as Fazalganj was also developed in southern part of the city between Grand Trunk Road and Kalpi Road. Faced with a sudden need of more labour housing during the Second World War, the Trust took up the construction of a large colony called Shastrinagar which came to be fully developed in 1944.<sup>57</sup> A glance on Fig.10 will show that the built-up area of Kanpur increased considerably between 1920 and 1944; it was mainly increased under the Trust housing schemes.

On account of continuous expansion of trade and industry throughout the period of the Second World War, the population of Kanpur went on growing fast, considerable population sprang up on the outskirts of the city towards the south and the west and therefore the municipal limit had to be extended in 1944. This has raised the city area from 8 sq. miles to 25 sq. miles; and the combined area of the city and cantonment

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57. Report of the Cawnpore Improvement Trust, pp. 12-33., 1945.

became 31 sq. miles.<sup>58</sup>

The Second World War created a number of other problems at Kanpur and in 1944 a committee was appointed by the State Government to enquire into the workings of civic authorities. On its recommendation the Improvement Trust was replaced by the Development Board under the Kanpur Urban Area Development Act of 1945.<sup>59</sup>

The Development Board instituted detailed byelaws for the control of old and crowded tenements which require their owners to make certain improvements. It took up the work of incomplete schemes of the Trust between 1945 and 1947. Soon after Independence, the Board prepared a master plan for the future development of Kanpur but it was not taken up until the city corporation came into existence in 1959 to replace the existing municipality. However, faced with the rehabilitation problem of displaced persons as a result of the partition of the country, the Board quickly undertook the construction of Govindnagar refugees colony on southern outskirts of the city which was completed by 1949. Between 1949 and 1951, the new localities of Narainpurwa and Dalelpurwa were also came to be developed by the Board in southern part of the town.<sup>60</sup> The slum clearance work was once again taken up by the Board during the early fifties but little success could be achieved as the Second World War had created many more slums in the

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58. P.P. Bhatnagar: op. cit., p. 9.

59. Ibid., p. 65.

60. Report of the Kanpur Development Board, pp. 17-21., Kanpur, 1957.

city. No further attempt was made until the visit of Prime Minister Nehru to the city in 1953, when he asked for the slums to be burnt down; this stimulated the authorities into hard thinking about the labour housing. Thus from the following year a period of rapid development of the well planned labour colonies in the town was started. The first big labour colony was constructed in Babupurwa followed by many more similar housing developments in the coming years.<sup>61</sup>

In 1959 when the municipality of Kanpur was raised to the status of corporation, the Development Board was merged therewith. Under the Corporation Act of 1959, the municipal area of Kanpur was vastly extended by the inclusion of about hundred villages. This has raised the city area from about 25 sq. miles to 101 sq. miles. And the combined area of all the units of the Kanpur Town-Group is 114.5 sq. miles.<sup>62</sup>

e/ Since 1960 a great many changes have taken place in the built-up areas. The slum clearance work was taken up, housing development has been revived and great efforts have been made to beautify the town as a whole. A number of new localities came to be developed by the corporation housing schemes and also by the State Housing Ministry under the subsidised industrial housing scheme of the State Government.

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61. Report of the Kanpur Development Board, op. cit., p. 23.

62. P.P. Bhatnagar: op. cit., p. 66.; Town-Group means, a group of contiguous independent local bodies or localities such as municipality, cantonment, notified area, town area etc..

The city area vastly extended in the present century especially since Independence of the country. The periodical growth of Kanpur has been shown in Fig.II.<sup>63</sup>

### Summary

Kanpur has grown into a great industrial city within a short period of a century from a very humble beginning. It was a small military town in the beginning of the last century, slowly grew into an urban concentration by the middle of the last century when commercial and industrial activity was developed particularly in response to the army needs. The Town rapidly developed as a modern industrial centre after the Mutiny, when the railways, improved roads and bridges facilitated the movement of men and material and the establishment of various industrial concerns in the city. The industrial activity alongside with the population and the built-up area increased tremendously during the present century, more especially after Independence. Kanpur now is the first city of the state and holds 8th position among the fifteen largest urban centres of India, and its population figure runs more or less parallel to Ahmadabad and Bungalow, other important inland industrial towns.

The gradual transformation of Kanpur over a period of about 150 years covered by this chapter is an interesting story of the growth of an inland city. During the course of evolution, the city underwent the impact of modern industrial development which has made a strong impression on different

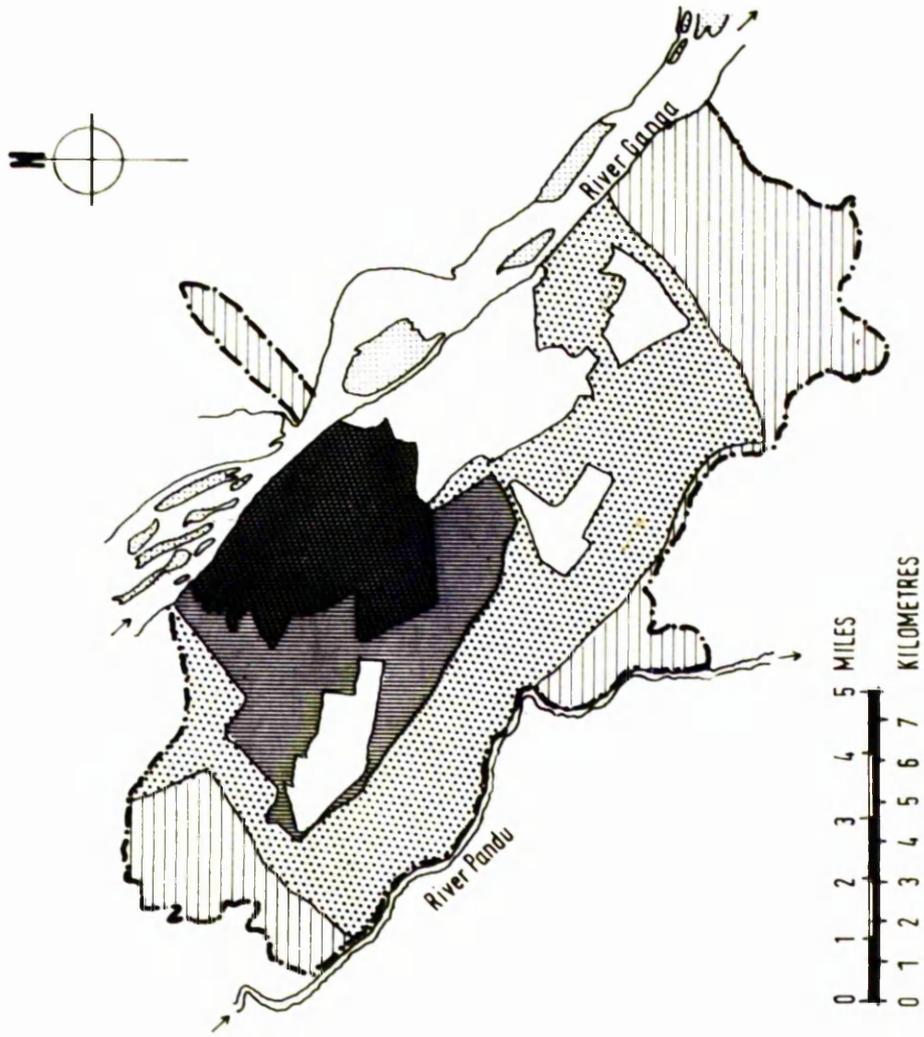
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63. Source: Kanpur City Corporation Office.

# GROWTH OF KANPUR

- RIVER
- BEFORE 1919
- 1919 TO 1944
- 1944 TO 1960
- AFTER 1960
- CENTRAL GOVT. STATES

FIG-11



elements of the townscape. How the city reacted to this great development; how it faced various urban problems and what changes it brought<sup>9</sup> about in its demographic, structural and functional character will be dealt within detail in the following chapters.

## CHAPTER III

DEMOGRAPHIC FEATURES OF KANPUR<sup>I</sup>

A study of townscape evolution of Kanpur reveals that the size and population of this urban concentration have greatly increased within the last hundred years. The population of Kanpur during the last sixty years has increased by 216%. In 1951 it had 705,383 inhabitants; its population had increased to one million in 1961. Kanpur has become the first city of the state and the eighth largest of the country. Its demographic structure has been greatly modified. Hence in this chapter an attempt has been made to analyse and distinguish some of the principal demographic features of the city.

Variation Of Population

These processes are responsible for the growth in population: annexation, natural increase and migration. Of these, the first one is the result of administrative measures and will be discussed later in this chapter, but the last two, which reveal the realities of population growth will be discussed as the main factors in the change of population.

Natural Increase

Natural increase of population is the excess of births over deaths. The birth and death rates of Kanpur for the last five decades have been shown in Fig.12. These rates of birth and death can hardly be trusted for determining the actual

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I. All figures quoted in the text and drawings of this chapter are from the Census of India 1961, Vol. xv., U.P., part. x. Special Report on Kanpur City, by P.P. Bhatnagar, Delhi, 1965; unless otherwise stated.

# BIRTH AND DEATH RATES OF KANPUR IN 1000 ( 1911 -1960 )

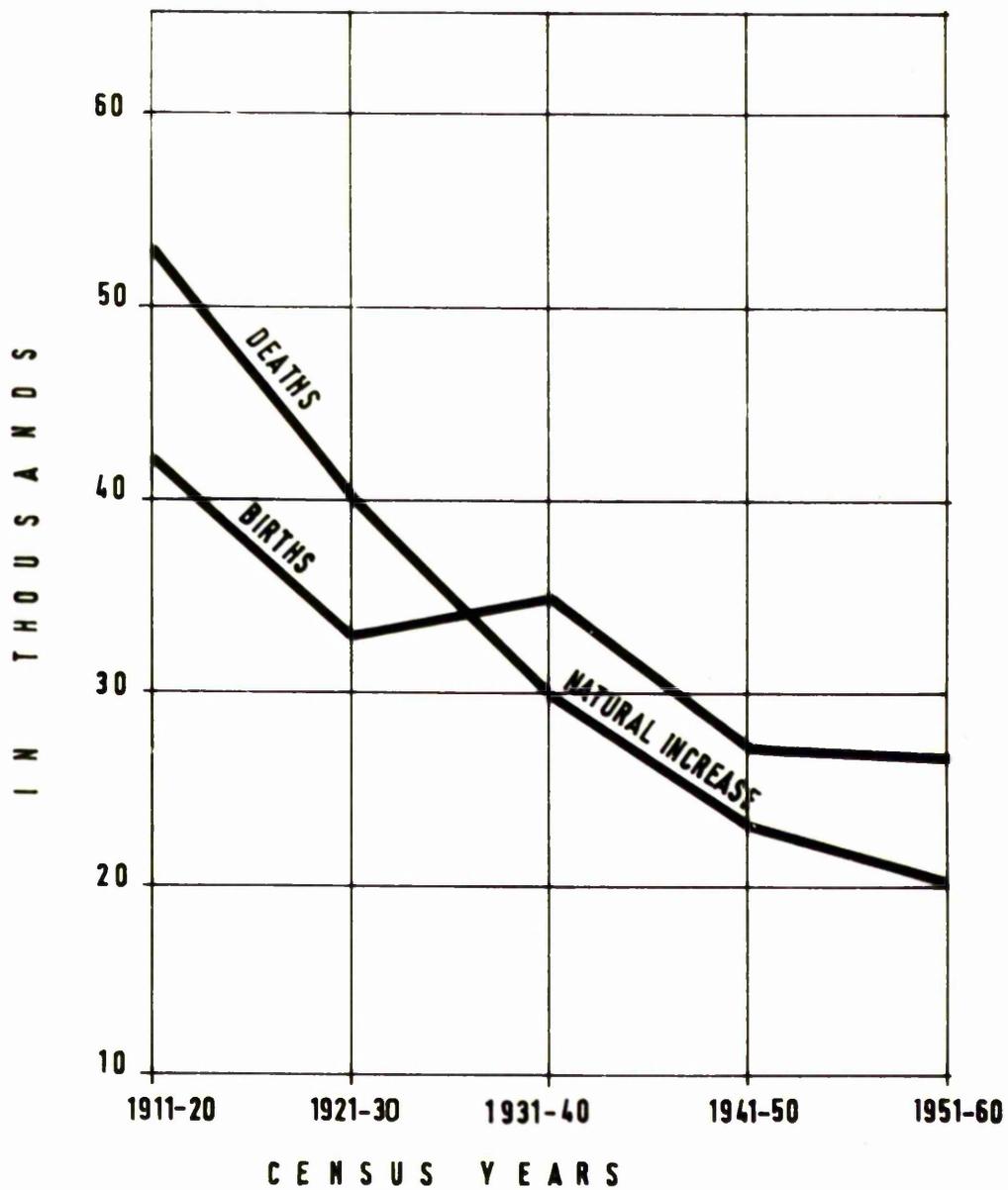


FIG-12

natural increase or decrease in the population, because there is under-registration in both births and deaths every where in India. Yet some broad and valid conclusions can be drawn from the available statistics together with other information, as there is far better registration of births and deaths in big cities than in rural areas and smaller towns.

Fig.I2 shows a fall in natural increase during 1911-20 and 1921-30. This was mainly due to severe cases of epidemics and inadequate medical and sanitary facilities. The great influenza epidemic of 1918-19 carried away a large population, especially women of reproductive age, and there were as many as 19,000 deaths from April 1918 to March 1919; next year's mortality was 11,000 - again quite large. There were serious cases of plague and cholera during 1921-30. This affected the natural growth of population in Kanpur during the early decades of this century. But the sanitary and medical improvements which have continued since 1931 have appreciably reduced the death rate, resulting in the city's fairly high rate of natural increase.

Fig.I2 also reveals that since 1931 there has been a definite downwards trend in the birth and death rates. The birth rate in the city has decreased from 35:1,000 in 1931-40 to 27:1,000 in 1951-60. The downwards trend in the birth rate is in confirmity with the general trend all over the state of Uttar Pradesh. But the present rate of birth in Kanpur is still higher than that of many European countries. The decline in birth rate of Kanpur is of a different nature from what

we find in the countries of the West. In India marriage is universal and there has been no perceptible change in its universality during the twenty years 1931-51. Although in the decade 1951-61 an attempt at family planning was made, the change is negligible. Therefore the reason for fall in birth rate must be sought elsewhere. Among several general causes which can be mentioned in this connection, one is the rise in the age of marriage of both males and females. The majority of the girls generally used to be married before they reached the age of sixteen. There has undoubtedly been an increase in the age of marriage due perhaps to an increase in the percentage of literate during recent years. A sample survey carried out throughout India by the Registrar General, found that the average age of girls at marriage was seventeen during the recent years. Though the difference is not remarkable and convincing, it nevertheless shows a definite trend as regards the marital condition of an urban area. The other factor affecting the birth rate of Kanpur seems to be the usual practice of a large section of the male population in the city residing either without their families or sending their pregnant wives back to their rural homes for the delivery and rest. This certainly influences the sex ratio and reduces the number of females of the reproductive age. During the decade 1931-41 when the fall in births was more marked, the sex ratio of the city also went down to the lowest recorded level, from 694 in 1931 to 644 in 1941.

Turning to the death rate, which has also fallen from

40:1,000 in 1921-30 to 20:1,000 in 1951-60, the causes of this fall are not difficult to find. The last three decades have been free from severe calamities. The growth of medical facilities has reduced infant mortality<sup>2</sup> on one hand and has increased the general longevity on the other.

### Migration

Migration of the population from rural areas to the city has become a regular feature in India since the First World War. This tendency grew very strongly during the Second World War. Davis has remarked that, "The glittering life of the city, the faster pace, the greater opportunities, the wider social horizon ..... all have meant little to the average Hindu or Muslim villager ..... He has generally come to the city for one reason only ..... to find remunerative work"<sup>3</sup>. There is a great amount of truth in this statement and perhaps it is more true in the case of Kanpur than in any other city of Uttar Pradesh. The extremely high density of agricultural workers on arable land with no provision for a secondary occupation compel the poor villagers, especially the landless labourers, to migrate to the city, temporarily or permanently, to earn their living. Kanpur being the largest commercial and industrial city of Uttar Pradesh has drawn a very large number of people from other parts to the state during the past decades. After the partition of the country, the city had to

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2. The infant death rate dropped from 297 in 1941 to 157 in 1961.

3. Kinsley Davis: Population of India and Pakistan, p. 136., Princeton University Press, 1951.

house a large number of refugees from West Pakistan.

During the decades 1911-21 and 1921-31, the population of Kanpur increased by 21.2% and 12.6% respectively, when the deaths in the city exceeded the births by 1.1% and 1.3% respectively. Similarly in the decade 1931-41, the total population of Kanpur grew by 100% when the births exceeded the deaths by only  $\frac{1}{2}$ %. Moreover the city limit of Kanpur did not change between 1902 and 1943. Thus it would be correct to say that the population of Kanpur has increased more by the influx of rural migrants than by any other cause during 1911 to 1941. During this period, the war demands, especially those of the last war gave an overwhelming industrial importance to Kanpur and better prospects for business and employment to migrants.

For the first time, the census of 1961 has estimated the proportion of migrants<sup>4</sup> in Kanpur city. This is shown in the table below:-

Migrants In Kanpur City By Place Of Birth In 1961

Total population	970,085 <sup>5</sup>	Per Cent
Born outside the city	479,667	49.44
Born in Kanpur district but outside city	78,995	8.14
Born in other districts of Uttar Pradesh	316,086	32.59
Born in other states of India	54,247	5.59
Born outside India	30,339	3.12

4. Migrants are determined solely by the place of birth in Indian census. A child born at another place becomes a migrant on coming home. There is no distinguishing of permanent migration from temporary or semi-permanent migration. These are great drawbacks, but broad and valid conclusion can still be drawn from available data.
5. Excluding 977 persons whose place of birth was not recorded

The above table reveals the striking fact that nearly half of the population of Kanpur city is migrant. Out of the total migrant population about 60% are males and 40% are females. Among the migrants born outside India (30339), the largest number are from West Pakistan; mostly displaced persons. Migrants born outside the state of Uttar Pradesh but in India, numbering 54,247, are chiefly from Punjab and Bihar, the border states. A great majority of migrants (395,081) are from various districts of Uttar Pradesh. Among the districts of Uttar Pradesh, Kanpur district has contributed the largest number of migrants to the city of Kanpur, numbering 78,995. Five other districts in order of importance are: Unnao (21,746), Fatehpur (20,887), Raibrielly (16,641), Farrukhabad (14,075) and Pratapgarh (14,985), all of the Central Ganga Plain, in which Kanpur itself is situated. Thus Kanpur city exerts the strongest pull on its own district and neighbouring districts.

The census of India has estimated the percentage of population of Kanpur born outside the district from 1901 to 1961 (excluding 1941) as shown in the table below:-

Percentage Of Population Of Kanpur Born Outside  
The District: 1901-1961

Year	Per Cent	Year	Per Cent
1901	38.1	1931	40.1
1911	42.8	1951	52.7
1921	42.5	1961	41.3

As figures for immigrants to the city itself are not known, figures for the district (shown in the table above) are

taken for the city, and the striking fact emerges that the proportion of immigrants rose very high during 1931-51 but fell thereafter. A marked decrease in the percentage of immigrant persons indicates that the migration to Kanpur has slowed down during the recent years. It is further supported by the sample study of migration to the city of Kanpur, which revealed that, "the tide of immigration which rose to the highest point in the second half of the forties ebbed down after 1950"<sup>6</sup>. The general improvements in the villages after Independence and the shortage of employment in the city may be some of the probable causes for the present downwards trend in the citywards migration.

#### General Growth And Variation Of Population

The earliest enumeration of the inhabitants of Kanpur was made in 1847, when the population was calculated on a rough estimate based on the number of houses. The census of 1853 was a regular house to house count of the people. The next census was scheduled for 1861, but it could not be taken, probably on account of the Mutiny disturbances which had occurred four years earlier. It was only in 1865 that a census took place. The next census was held in 1872, the first of the regular series. Subsequent censuses took place in 1881, 1891, 1901, 1911, 1921, 1931, 1941, 1951 and 1961. Some significant trends in growth since 1847 are revealed by Fig.13.

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6. D.N. Majumdar: Social Contours of an Industrial City, social survey of Kanpur (1954-56), p. 69., Bombay, 1960.

# POPULATION GROWTH OF KANPUR (1847 TO 1961.)

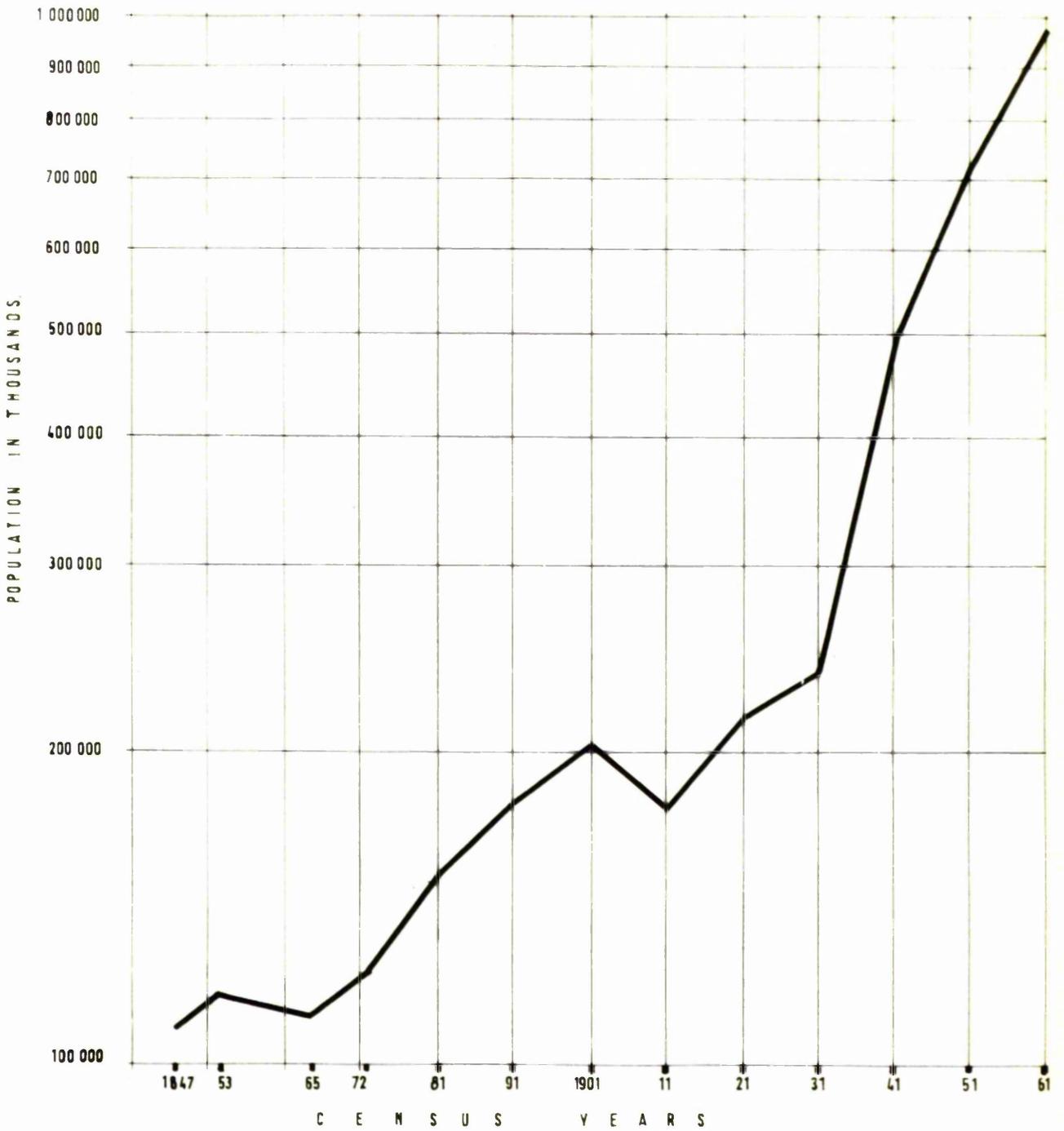


FIG-13.

Population Growth: 1847 - 1901

Fig.I3 shows a decline in population during 1853 and 1865. Prior to 1865, the records of vital statistics are not available but most probably, the Mutiny disturbances of 1857 and the subsequent famine of 1860<sup>7</sup> affected the population growth during 1853 to 1865. The opening of the railway system and consequent growth of trade and industry, however, led in subsequent years to continuous growth. Each census after 1865 witnessed a rapid increase. Through all this period the population of the city area continuously increased; the cantonment population progressively declined mainly on account of the periodical transfer of the area from cantonment to the municipality. In 1947 the population of the city was 58,861 and of the cantonment 49,975. In 1901, there were 1,72,674 persons in the city and only 24,496 in the cantonment.

Population Growth: 1901 - 1941

The population of Kanpur's municipal area in 1901 was 1,72,674 and of cantonment 24,496. Soon after the 1901 census the municipal limit was extended to include an area with 5,627 inhabitants. The recast population of the city therefore can be presented at 1,78,301 and the combined population of city and cantonment at 2,02,797. There was no further change in city's limit until 1944. As shown in Fig.I3, there was an actual decline in population during 1901-II. Extremely high mortality 61:1,000 due to severe cases of cholera and plague<sup>8</sup>

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7. H.R. Nevill: Cawnpore Dist. Gazetteer, p. 63., Allahabad, 1909.

8. Ibid., p. 25.

during the early years of the first decade of this century seems to be the chief cause of this decline. Thereafter, the population steadily increased and in spite of the large number of deaths resulting from the influenza epidemic of 1918-19, the growth was still greater during 1911-21. The rise in number of migrants, due to industrial demand of the First World War, seems to be largely responsible for this growth. The growth of population during 1921-31 was partly due to natural increase (births exceeded the deaths by 8:1,000) and partly because of immigration. The latter reason of growth is suggested by the fact that in seven years (1922-29) eight new large mills were brought into existence resulting in more employment opportunities for immigrants. In the next decade (1931-41), the increase in population of Kanpur was fantastic, about 100%. This phenomenal increase was mostly due to a great influx of rural labour into the city due to the boom of the Second World War.

#### Population Growth: 1941 - 1961

On account of continuous expansion in trade and industry throughout the period of Second World War, the population of Kanpur went on growing fast. A large population sprang up on the outskirts of the city towards the south and the west; and the municipal limit had to be extended in 1944 to include such habitations. The area of the localities so included was about 17 sq. miles. Their population in 1951 was 1,07,739. A new military area, Armapur covering 2.5 sq. miles and having a population of 11,123, and three railway colonies covering

3.16 sq. miles with a population of 12,659 were also included in the Kanpur Town-Group at the census of 1951. The total increase of population during 1941-51 was 218,059. Of this, 86,538 was due to actual increase within the old limits of the city and cantonment, and 131,521 on account of extension in city limits and recognition of Armapur defence estate and railway colonies as a part of the Kanpur Town-Group. The growth and per cent variation of the population of Kanpur during 1941-51 are given in the following table:

Kanpur - Population Growth And Per Cent Variation: 1941-51

	1941	1951	Per Cent Variation
Kanpur Town-Group	487,324	705,383	44.7
Kanpur city(as per 1941 area)	452,495	528,704	16.8
Area incorporated in 1944	-	107,739	-
Railway colonies	-	12,639	-
Kanpur Cantonment	34,829	45,158	29.7
Armapur Estate	-	11,123	-

The above table reveals that the increase in the old city area was only 17% but in the cantonment it was much higher, perhaps due to war days growth. In the Town-Group as a whole, the high increase was mainly on account of the extension in city limit and the inclusion of certain new areas in the Town-Group for the census purposes.

At the 1961 census, the population of the area incorporated in 1944 stood at 195,296 and of Armapur and railway colonies at 15,284 and 13,929 respectively. A large extension of the city limits again took place in 1959 accounting for

75.75sq. miles area. Their population in 1961 stood at 73,821, A new military area (Chakeri Aerodrome) occupying about 5 sq. miles with a population of 3,842 also became a part of the Kanpur Town-Group at the 1961 census. The total increase in the population of the Kanpur Town-Group at the 1961 census was 265,679. Out of this, the actual increase in the Town-Group limit of 1941 was only of 95,028 persons. An increase of 87,557 is accounted for by the population growth in area acquired in 1944 and of 1,270 and 4,161 respectively by population growth in the railway colonies and Armapur. And of 73,821 and 3,842 respectively by the extension in city limit in 1959 and the inclusion of Chakeri Aerodrome in the Kanpur Town-Group. The growth and per cent variation during 1951-61 are presented in the following table:-

Kanpur - Population Growth And Per Cent Variation: 1951-61

	1951	1961	Per Cent Variation
Kanpur Town-Group	705,383	971,062	37.7
Kanpur city(as per 1941 area)	528,704	612,060	15.8
Area incorporated in 1944	107,739	195,296	81.3
Area incorporated in 1959	-	73,821	-
Railway colonies	12,659	13,929	10.0
Kanpur cantonment	45,158	56,830	25.8
Armapur Estate	11,123	15,284	37.4
Chakeri Aerodrome	-	3,842	-

The above table reveals that the proportionate increase in the old city and cantonment areas during 1951-61 has been still lower, that is 15.8% and 25.8% respectively. These areas

# GROWTH OF POPULATION IN KABAL TOWNS OF U.P.

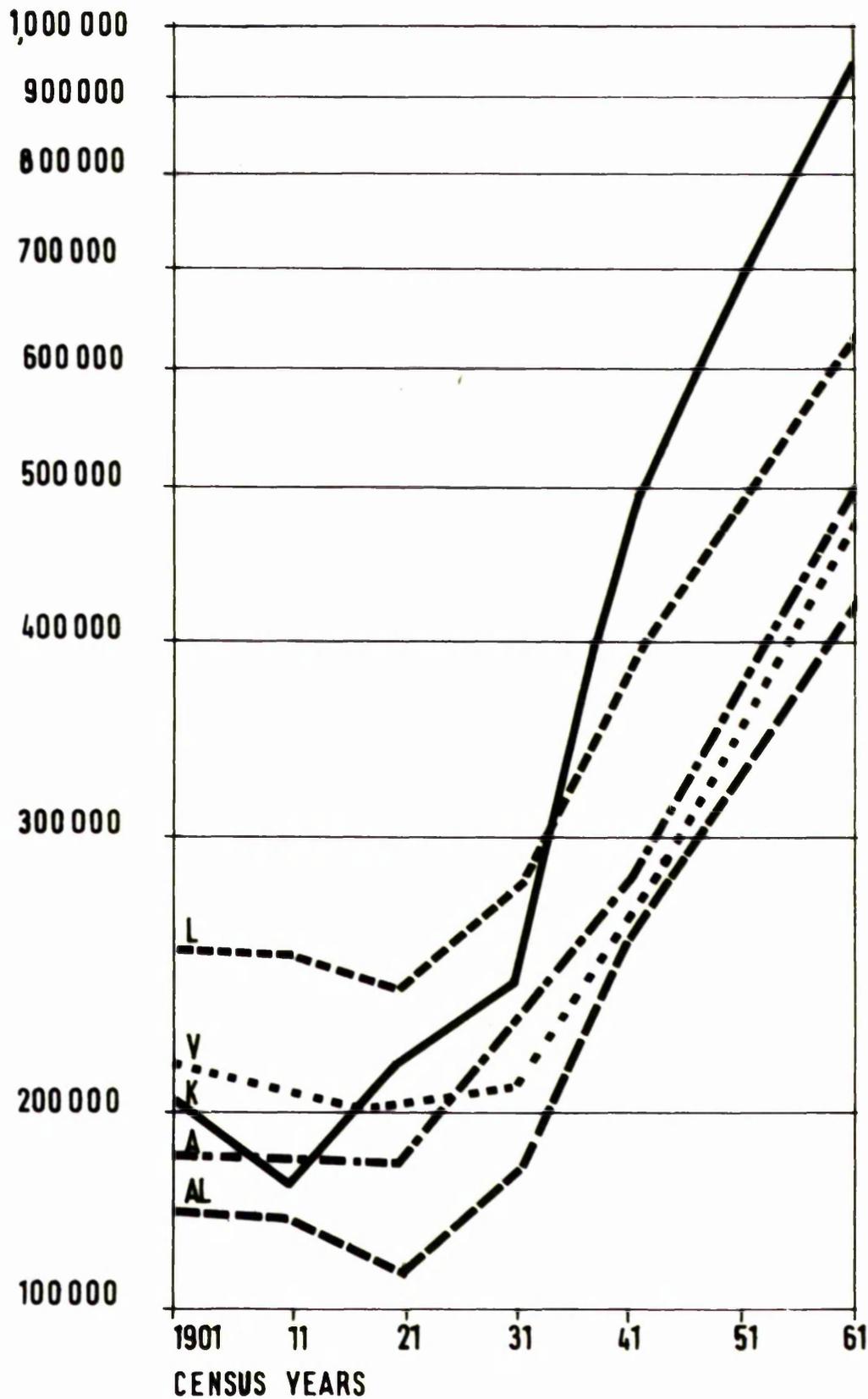


FIG -14

- A Agra
- AL Allahabad
- K Kanpur
- L Lucknow
- V Varanasi

now contain nearly 68% of Kanpur's total population. The remaining 32% live in newly added areas. Growth however, has been spectacular in the localities of the area incorporated in 1944. They are growing fast by attracting a large number of settlers, as is evident from the increase of their population, that is 81% during 1951-61.

#### Position Of Kanpur Among The Kabal Towns<sup>9</sup> Of Uttar Pradesh

Fig.14 shows the comparative growth of population of Kanpur with that of other large cities of Uttar Pradesh from 1901 to 1961. The figure reveals that the first decade of this century witnessed a general fall in the population of all these cities. While Kanpur showed a noticeable upward trend, that of Lucknow, Varanasi and Allahabad registered a further decline in the second decade; Agra remained almost constant. From 1921 onwards an era of uninterrupted growth commenced. At the beginning of the present century Kanpur occupied the third place in the state. The position deteriorated in the first decade; at the end of which it sank to the fourth place. In the next two decades it made a rapid gain occupying both in 1921 and 1931 a place second only to Lucknow. Lucknow retained the top place upto 1931, but from 1941 Kanpur became the largest city, and has continued to occupy the first place in subsequent years.

#### The Place Of Kanpur Among The Great Cities Of India

In 1901 Kanpur occupied the eighth place among the great cities of India. Its position declined to twelfth in 1911.

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9. Towns having Corporation instead of a Municipality.

# Place of Kanpur Among The Cities of India (1901-1961)

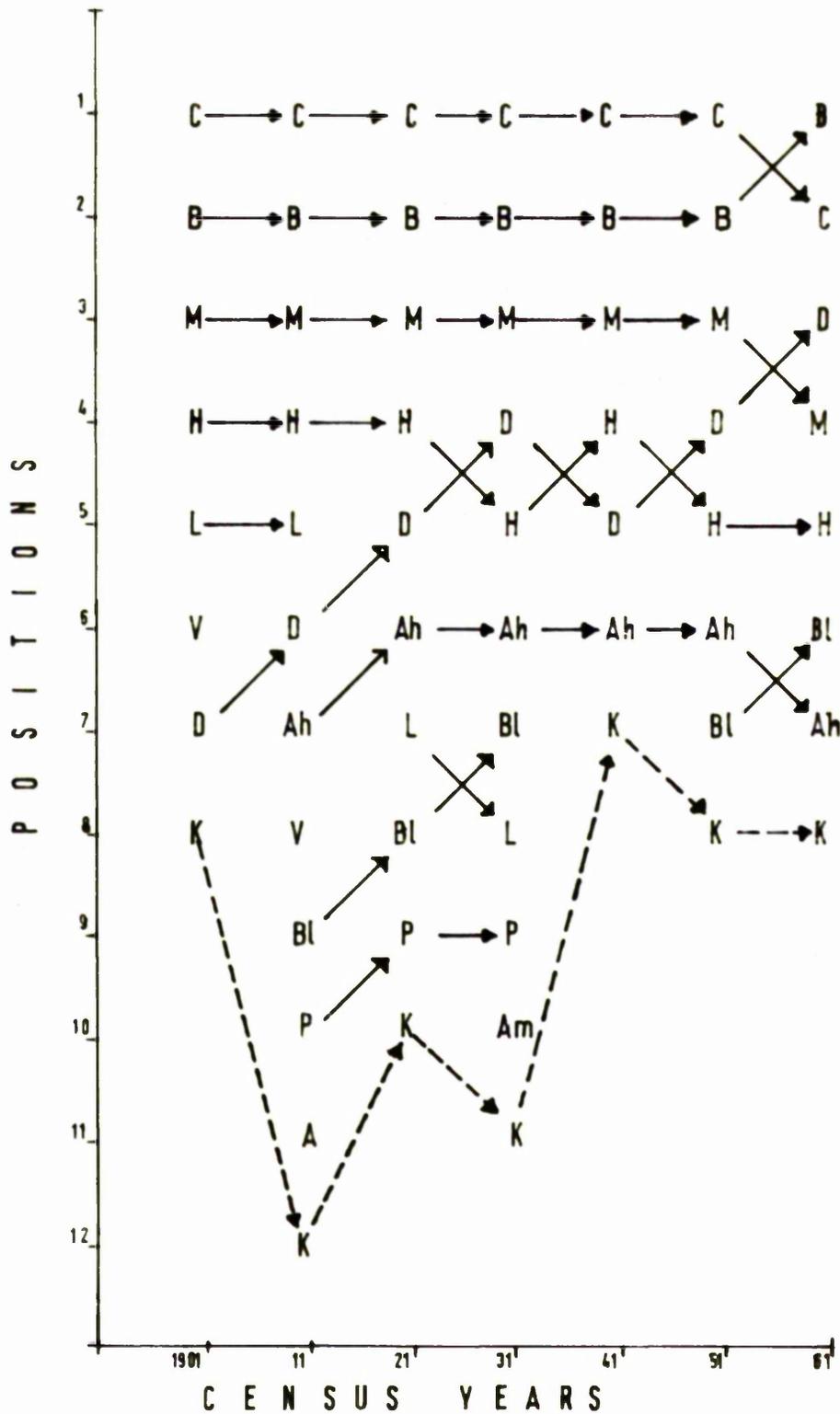


FIG. 15

- |    |           |   |          |   |          |
|----|-----------|---|----------|---|----------|
| A  | Agra      | C | Calcutta | L | Lucknow  |
| Ah | Ahmadabad | D | Delhi    | M | Madras   |
| Am | Amritsar  | H | Hydrabad | P | Poona    |
| B  | Bombay    | K | Kanpur   | V | Varanasi |
| Bl | Bangalore |   |          |   |          |

It had the tenth and eleventh place in 1921 and 1931 respectively. Its position rose to seventh in 1941, before coming down again to eighth in 1951, which place it has since retained (see Fig.15).

On comparing the respective position of the cities during 1901 and 1961 in Fig.15, it is clear that while Kanpur has gained over Lucknow and Varanasi, it has lost to Bangalore and Ahmadabad. Port towns of Bombay, Calcutta and Madras and inland towns like Delhi and Hyderabad have always held a place superior to Kanpur. This figure also reveals that Kanpur's rank fluctuated more markedly than any other city in India during 1901-61.

#### Population Distribution And Density In Kanpur

An examination of population distribution and density by wards will show the pattern of growth within the city. At present Kanpur contains 36 wards and a cantonment area.

#### Population Distribution

The general distribution of population ~~over the~~ Kanpur can best be judged by looking at Fig.16. The Grand Trunk Road running from east to west through the centre of the city serves remarkably clearly as the dividing line between the old settled north and the new settled south. The northern part<sup>is</sup> again subdivided by the western boundary of the cantonment into the most densely populated and congested main city on the west and sparsely populated and spaciouly built cantonment on the east. The concentration of population is obvious in the main city with the important commercial and industrial

POPULATION DISTRIBUTION BY WARDS ( 1961 )

R I V E R G A N G A

CANTONMENT

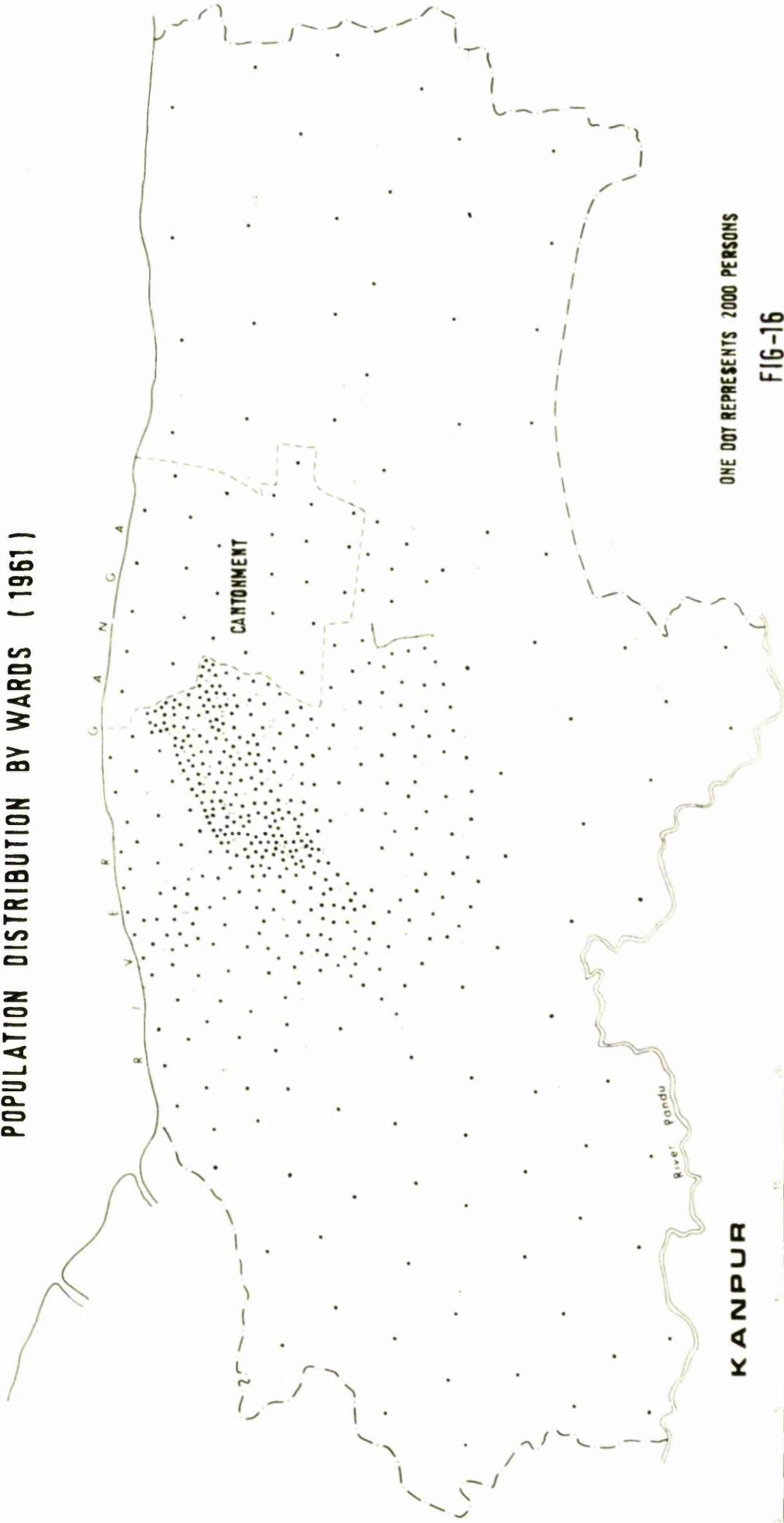
river pondu

KANPUR



ONE DOT REPRESENTS 2000 PERSONS

FIG-16



establishments and also the old crowded residential localities. The areas south of the Grand Trunk Road are comparatively less crowded, partly because here, the localities are of recent origin and have developed according to plan, and partly because a large portion which is occupied by the new factories is very spaciouly developed. Further south, east and west, the municipal land is either vacant or under cultivation. The population in the outer wards is therefore concentrated in small and scattered villages which in spite of the closeness of the settlement are not crowded.

### Population Density

In order to study the growth trends of population density in Kanpur city during the last twenty years (1941-61), it is necessary to consider not only the municipal area as a whole, but also in separate units such as (1) old town as existing before 1944, (2) area incorporated in 1944 and (3) area incorporated in 1959. Comparative density figures for these areas in regard to the census years 1941, 1951 and 1961 are given in the following table:-

#### Density Of Population In Kanpur Municipal Area: 1941 - 61

	<u>Density per sq. mile</u>		
	<u>1941</u>	<u>1951</u>	<u>1961</u>
Kanpur municipal area as a whole	54,649	25,106	8,725
Kanpur municipal area as per 1941 area (old town)	54,649	63,853	73,920
Area incorporated in 1944	-	6,300	11,441
Area incorporated in 1959	-	-	1,034

It is clear from the above table that the population density in Kanpur municipal area as a whole continued to fall,

owing to extensions of its limit, yet the density of the older town which at present forms the central city has shown a progressive rise and therefore in degree of compactness. The density of the area incorporated in 1944 which more or less forms the middle zone of the city is comparatively low, The area incorporated in 1959 forms the outer city; it is generally rural in character and therefore has a density comparable to that of heavily populated villages.

It is interesting to note that the density figures in the above table for the old town area, which also represents the present central city, reveals that as the central city grew through a twenty year time period, it experienced steady increase in density and therefore in degree of compactness, in spite of the fact that the urbanised area did expand during the same period. This tendency towards overcrowding with maintenance of a constant degree of compactness in the central city appears to be characteristically similar to not only with the rest of the Indian urban scene but also more generally with the non-western world; "the western cities as they grow through time experience a steady decrease in density and therefore in compactness in the centre"<sup>10</sup>.

The growth trend of population in Kanpur can further be studied by the distribution of the population density in the different wards. Density figures are apt to be misleading on account of the varying character of the area included in the

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10. B.J.L. Berry, J.W. Simmons and R.J. Tennant: Urban Population Densities, Structure and Change, pp. 400-01., The Geog. Rev., Vol. 53., 1963.

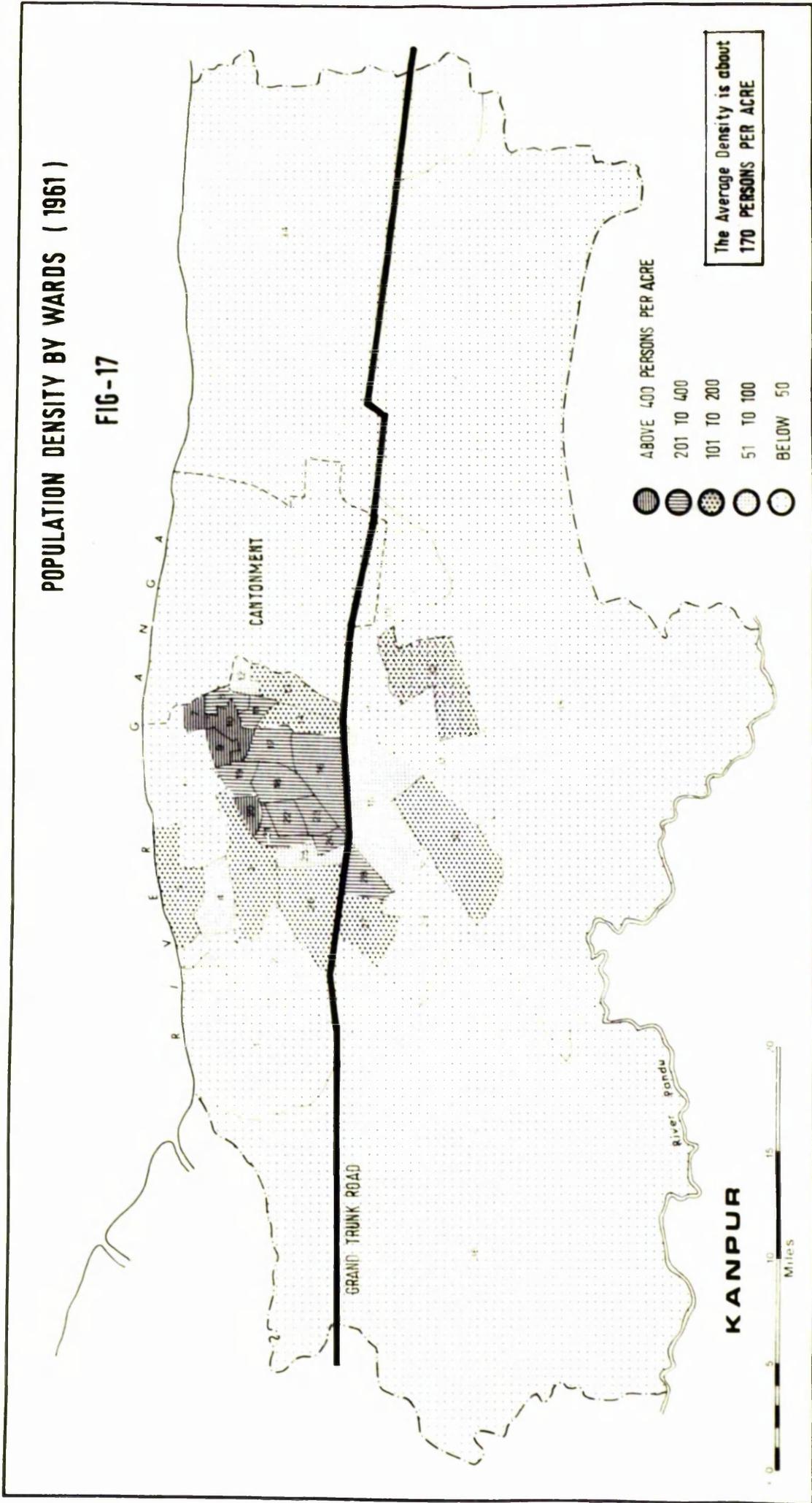
different wards. As certain outer wards have large areas of vacant land and are not densely populated, they tend to lower the density even within the municipal limit. Many of the inner wards with crowded and congested localities of small multistoried structures have more persons area for area than the less built-up outer wards or spaciouly developed cantonment. Thus it may be noted that the density figures fall with every extension in city limit and cannot be accurately compared. However, the density of population in the different wards of Kanpur have been shown in the Fig.I7.

Fig.I7 shows that, though distorted by the presence of the river in the north, there remains a concentric pattern of density distribution in the city, being highest in the inner part and gradually decreasing towards middle and outer and reaching the lowest figure in the outermost parts. Wards 7,9, 10 and 20, comprising a major area of the inner part, have a density about three times as high as the corresponding average figure for the city. Wards 8, 11, 17, 18, 19, 21, 22, 23 and 24, enclosing the inner wards from three sides, have densities more than double the average. The wards in outer parts such as 3, 5, 13, 14, 20, 27, 30 and 32, lying closer to the middle part have more or less equal density figure to city's average density. The greater area of the outermost part which was incorporated very recently, comprising the wards 34, 35 and 36, has a density much below the average, as the area is mostly undeveloped and unsettled.

Thus the distribution pattern of population density in

# POPULATION DENSITY BY WARDS ( 1961 )

## FIG-17



Kanpur shows that the density figures fall with the extension of the city limits. It also appears to be true in the general terms of Clark's<sup>II</sup> argument which says that, urban population densities decline in a negative exponential manner with increasing distance from the city centre.

### Sex And Age Composition Of The Population

One of the major characteristics of the population of Kanpur is its low sex ratio. Among the five big cities of Uttar Pradesh, none has so low a sex ratio as Kanpur. The sex ratio of Kanpur has always been much lower than the average urban figure for the state of Uttar Pradesh. The following table will illustrate this phenomenon.

#### Number Of Females Per 1,000 Males

Year	Kanpur	U.P. Urban	Year	Kanpur	U.P. Urban
1901	770	-	1941	644	805
1911	728	-	1951	699	820
1921	668	826	1961	739	812
1931	694	807			

The above table shows that the number of females per 1,000 males in Kanpur was on the decrease from 1901 to 1921. During the decades 1901-II and 1911-21 deaths, particularly those due to epidemics, were much greater among females than the males; further more, the higher rate of migration from rural areas during 1911-21 was predominantly male.<sup>I2</sup> This led

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II. Colin Clark: Urban Population Densities, pp. 490-96., Journ., Royal Statis Soc., Ser. A, Vol. II4., 1951; quoted in Urban Population Densities, Structure and Changes, p. 390., The Geog. Rev., Vol. 53, 1963.

I2. A common tendency of rural migrants in India is to leave their families behind in their rural homes.

to a reduction in sex ratio of the city. During 1921-31 there was slight improvement. But the decade 1931-41 had a very high rate of citywards migration due to the war boom, and the number of men workers arriving in the city far exceeded than that of women workers; this brought down the sex ratio to an all time recorded low level of 644:1,000. The sex ratio has been gradually improving since 1951. One reason for this improvement is the decrease in death rate among females. The other reason may be that there is a larger proportion of females among the immigrants than before due to post-war improvement in housing and other amenities alongwith some change in the former tendency of rural workers who used to leave behind their families in the village.

The low sex ratio of Kanpur has been largely related to the economic factor on the one hand and to the social attitude of the people towards the employment of women in any kind of work outside the house on the other. Under the circumstances, the average worker of the city with his low income finds it hard to keep his family with him in the city; he usually leaves his wife and children in his rural home where life is less expensive. The above factors apply in the case of almost all the major industrial cities of India. The sex composition of the major cities of India seems to be generally influenced by their occupational structure. An industrial city like Kanpur has fewer females as compared to the administrative towns like Hyderabad and Madras. According to 1961 census the sex ratio of Kanpur, Hyderabad and Madras was 739:1000,

929:1,000 and 901:1,000 respectively.

Fig.I8 A represents sex ratio of Kanpur in different age groups. It reveals that nature tries to equalise the sexes at birth, but several human factors disturb this ratio. The fall in the sex ratio between the age of 5-14 may be due to the fact that daughters receive less attention than sons. This is one of the reasons for a higher mortality rate for girls than for boys. The lower sex ratio in the age group 15-44 may be attributed to high femal mortality due to the perils of births and its after effects, and also to usual practice of the workers of leaving their families behind at their rural homes. The sex ratio again rises in the higher age group and the explanation lies in the fact that in the higher age group the causes of decline in the sex ratio of other age group do not operate.

On the other hand the sex ratios in European cities are much higher than that of Kanpur. Fig.I8 B shows the sex ratio of London in different age groups for 1961.<sup>13</sup> A higher percentage of unmarried women, a large number of widows as a result of last war, the great longevity of women in general and almost equal occupational opportunities for both men and women are some of the causes for the higher sex ratio in London and other west European cities.

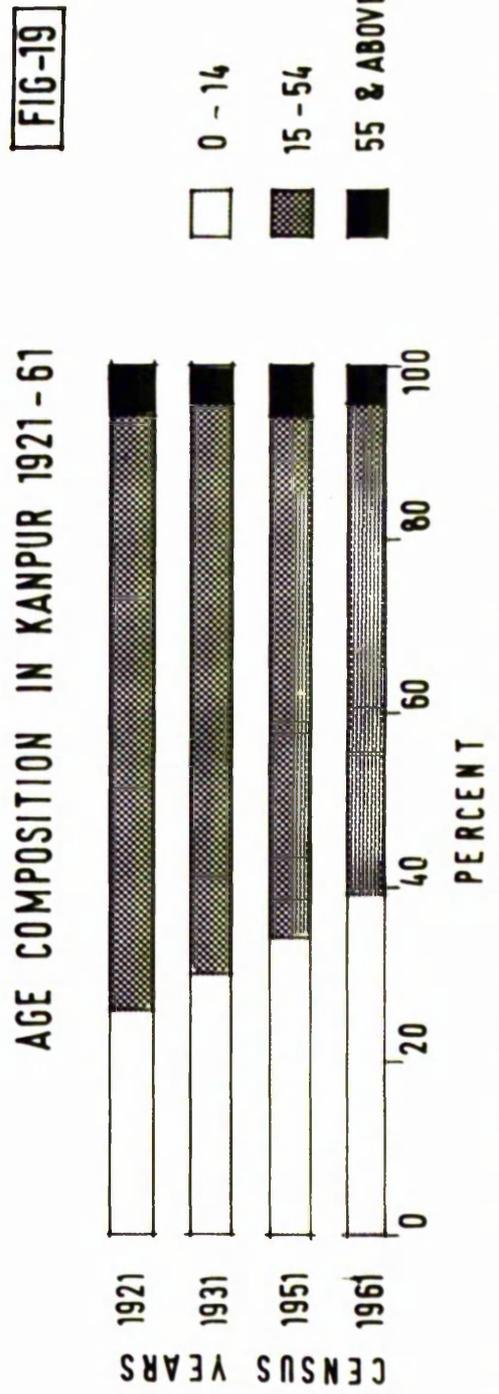
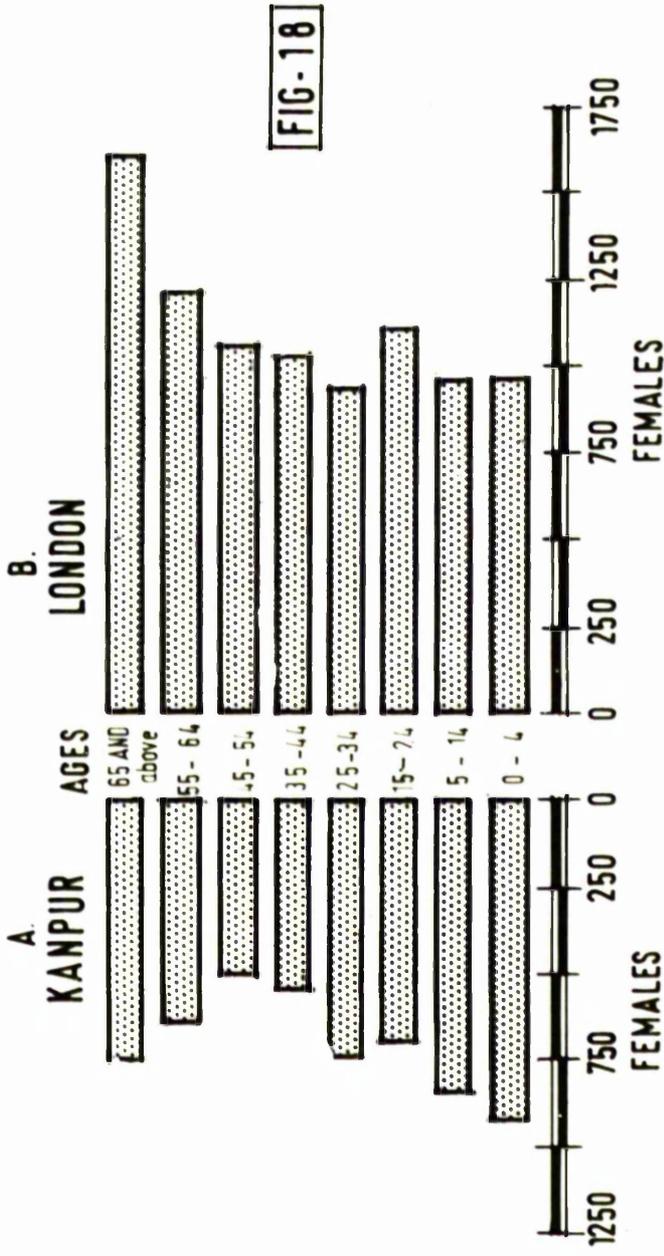
#### Age Composition In General Population

Fig.I9, based on the percentage composition of population by age groups from 1921 to 1961 (excluding 1941), shows that a large percentage of population is comparatively very young

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<sup>13</sup>. Census 1961, England and Wales., p. 9., London, 1963.

# SEX RATIO IN DIFFERENT AGE GROUPS ( 1961 )



and this trend has increased from 1921 to 1961; about 27% in 1921 and 39% in 1961 fall in the age group below 15. The increase in this age group is mainly associated with the decrease in infant deaths and improvement in the survival rate of the younger age group as a whole on account of improved medical facilities. The greater part of the population is below 55. There are two reasons for this. First, the retiring age from the service in India is 55 and therefore majority of the retired persons generally go back to their rural homes to spend the rest of their lives among their families. Secondly in the present urban environment only a few survive after 55 years of age. The situation in European countries is quite different from that in Kanpur. The following table compares the age structure of Kanpur with that of London.

Percentage Distribution Of Life Expectancy By Age Groups 1961

Kanpur		London <sup>I4</sup>	
Age Groups	Per Cent	Age Groups	Per Cent
0 - 14	38.8	0 - 14	19.4
15 - 54	55.6	15 - 54	57.2
55 and above	5.6	55 and above	23.4

The above figures are a sufficient indication of the differences in age composition between the two cities. The percentage of young people is much lower in London than in Kanpur and the life expectancy over 55 is much higher in London.

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I4. Census 1961, England and Wales, op. cit., (Commentary), p. xv.

### Religious Composition Of Population

Kanpur's population is composed of nine religious communities. Of the total population 75.9% are Hindus, who naturally predominate; 20.6% are Muslims and 2.5% are sikhs. The Jain and Christian statistically are very few, with a mere 0.2 and 0.8% respectively. Buddhist, Zoroastrian and Jews together have combined population of 7,230. All these communities are wide spread in different parts of the city. But the Muslim community has formed pockets in certain parts of the city. The majority of Harijans (the low caste Hindus) due to their low standard of living occupy the outskirt villages where cheap accomodation is available.

### Literacy Composition Of Population

Out of the total population (971,062), only 455,594 or 46% people were recorded as literate in Kanpur at the 1961 census. Of this 46% literates, about 60% are male and 40% female. The condition at Kanpur has not been satisfactory in the past, but the city has made much progress in education during the last two decades as is evidenced from the Fig.20 A.

Fig.20 B reveals certain interesting facts regarding the distribution of literacy between different age groups. The highest percentage of literacy, 64.7% is to be seen in the age group 15 - 24. Percentage of literacy in the age group 5 to 14 and 25 to 34 are also high being 54.3% and 53.1% respectively. But in the higher age group a regular fall is clearly marked. The reason for the marked difference in the literacy percentage between younger and higher age groups

# KANPUR

PERCENTAGE COMPOSITION OF LITERATES ( 1901-1961 Excluding 1941 )

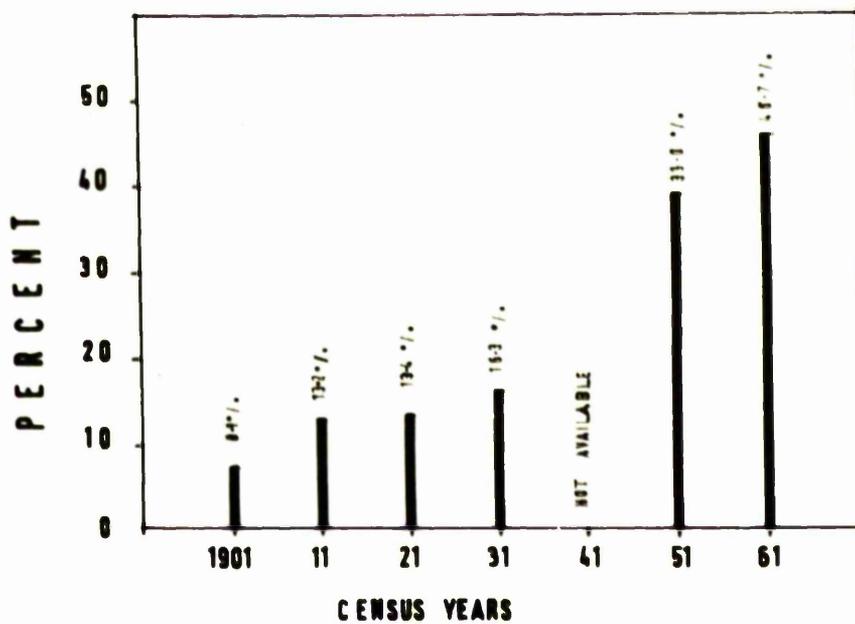
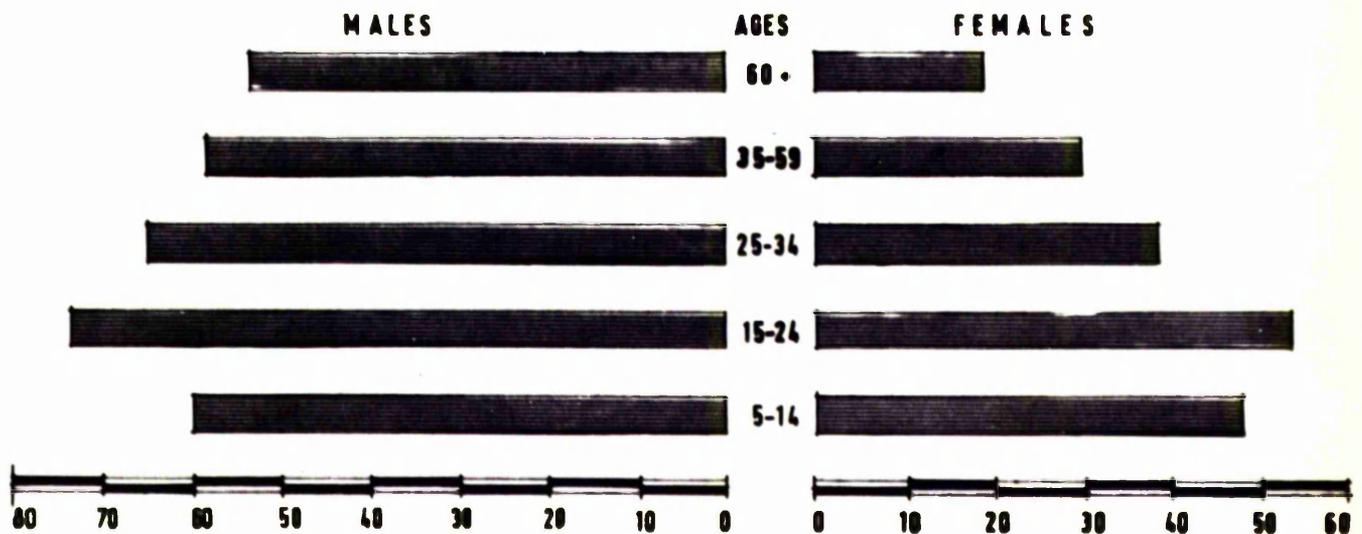


FIG-20 A

## KANPUR: PERCENTAGE OF POPULATION LITERATE. IN VARIOUS AGE GROUPS (1961)



LITERATE: PERCENTAGE OF POPULATION

FIG-20 B

lies in the fact that the expansion of primary education after Independence gave the younger age groups a chance to read and write. Further more, the male literacy in each age group is much higher than the female literacy as it is clearly shown by Fig.20 B. But the difference is greatly marked in the higher age groups. This means that female literacy tends to rise in the lower age groups.

### Summary

Trade and industry have had a strong impact on the growth character and composition of the population in Kanpur, which is evidenced by the high rate of immigration and also by the low sex ratio. Kanpur, which had about 200,000 of population in 1901, under the stimulus of the war industrial demand became the largest city in the state with a population nearly 500,000 in 1941. The census has recorded 700,000 in 1951 and about 1,000,000 in 1961, an increase of 5 times in 60 years. For an industrial city like Kanpur this rate of growth is not very high, but it is alarming in view of the city's general problems. The population distribution and density pattern by wards in Kanpur reveal that the city is much over crowded in the centre while outer parts are comparatively very much less inhabited. It reflects the fact that people like to live near the centre for maximum facilities which are generally not available in the outer parts.

## CHAPTER IV

SERVICES AND AMENITIES

al/ The principle services and social amenities required by a city are: water, electricity, sanitation, medical, education and recreation. The adequate provision of these is a necessary pre-requisite for the proper urban growth of a city. There has been a complete lack of these facilities in Kanpur during the past and still most of them are only partially developed. The growth of Kanpur demonstrates how partially developed facilities can create haphazard conditions, confusion and insanitation and consequently cannot allow a systematic and healthy urban growth. It is therefore necessary to examine the principle services and social amenities available to the citizens and to see how far these are adequate to meet the demand of an ever-expanding city. In each case a historical account of development has been given, so that it may be possible to assess their growth in response to the demand of the city.

Water Supply<sup>I</sup>

Of particular importance to the growth of a city is its water supply. The development of an adequate water supply is a growing problem in Kanpur due to the increase in industries and growth of population.

Before the establishment of a waterworks, wells were the

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I. All figures quoted and information used in the text, is by courtesy of the Waterworks Engineering Dept., Kanpur City Corporation and the Executive Engineer, Local Self-Government, Uttar Pradesh; unless otherwise stated.

only means of water supply in Kanpur. There were more than 3,000 wells<sup>2</sup> in the city. In the district, the depth of wells is generally 25 feet below the surface, but in the city it is considerably greater owing to the city's situation on the high river-bank. Thus the water supply was somewhat precarious. As early as 1867 the analysis of the water from the various wells of Kanpur showed that the well water was almost in every respect inferior to that of the Ganga. Thus in 1891 a scheme was prepared under which an intake station was set up at Bhaironghat on the Ganga and the central waterworks at Benajhabar<sup>3</sup>. The sites of both of these establishments were geographically suitable, with ample scope for future expansion.

The modern system of supplying filtered water came into operation in 1894 at a cost of  $1\frac{1}{2}$  million rupees, for a population of less than 200,000, with a capacity to supply 5 gallons per head per day<sup>4</sup>.

The capacity of the pumping station and the treatment plant was increased in subsequent years to meet the ever rising demand for filtered water. By 1928 the capacity of the system had been increased to 12 million gallons. The improvements that were carried out also ensured a 24 hour water supply and a zonal system of distribution. In 1950-51, the water supply was increased to an average of 22 million gallons per day. In 1960-61, the supply was increased to a minimum of

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2. R. Montgomery: Statistical Report of the Dist. of Cawnpore (1848), p. 113., Calcutta, 1849.

3. H.R. Nevill: Cawnpore Dist. Gazetteer, p. 273., Allahabad, 1909.

4. Ibid., p. 273.

32 million gallons per day<sup>5</sup>.

A comprehensive scheme for a 40 million gallons system at an estimated cost of 30 million rupees for a population of 1.5 million was prepared by the Development Board of Kanpur soon after the Second World War<sup>6</sup>. Under the scheme a new pumping station was also set up for the supply of 2 million gallons to the cantonment area which is the biggest bulk consumer of water. Since 1960 the Kanpur Corporation has not only completed the old scheme of the Board, but also paid special attention to an adequate supply of water to new areas. The ten old zonal pumping stations are unable to cope with the present demand of industrial and domestic users. It is therefore necessary to renovate the old pumping stations and to increase the capacity of reservoirs.

Apart from the Ganga, Kanpur's water supply is obtained from the Lower Ganga Canal. The average daily intake from the river is 18.8 million gallons and from the canal 13.3 million gallons. For pumping canal water, a pumping station has been set up within the central waterworks compound and the chemical feeding is conducted directly in the channels. An open waterworks channel brings water from the canal into the kachcha settling tank of 15 million gallons capacity. The settled water from these tanks flows by gravity to the canal pump-house which is provided with three electrically driven pumps

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5. P.P. Bhatnagar: Special Report on Kanpur City, p. 66., Delhi, 1965.

6. Annual Report of the Kanpur City Corporation (1960-61), p. 42., Kanpur, 1962.

of 5 million gallons capacity against a head of 26.5 feet. Water from Ganga is brought by two 32 inches diameter suction pipes carried on a jetty about 30 feet into the river. There are four electrically driven pumps of 5.5 million gallons capacity and working against a head of 104 feet with three rising mains, two of 12 inches diameter and one of 24 inches diameter.

From these main pump-houses of the central waterworks, water is supplied to the ten different zonal storage tanks, each of 300,000 gallons capacity and provided with three 700 gallons per minute pumping sets and one 350 gallons per minute, by three delivery mains 28, 24 and 20 inches diameter. The large sets are for duty during the day and the small set is for night use. At the present there are 4 reservoirs of a total size of 625 x 633 x 47½ feet with a total capacity of 7.3 million gallons of water. The clear water is distributed through 13 pumping sets with a total capacity of 37 million gallons per day.

In Kanpur much water is consumed by industrial establishments. Apart from water consumption in cantonment and other military areas, the two main consumers are industry and railways which consume about 3.5 million gallons per day and 3.2 million gallons per day respectively. The present per capita consumption of water at Kanpur is about 45 to 50 gallons per day. The following table gives a picture of average yearly consumption of water in Kanpur.

Kanpur - Water Consumption In Million Gallons

<u>Year</u>	<u>Industries</u>	<u>Domestic</u>	<u>Others</u>	<u>Total</u>
1955-56	571.56	5,785.83	2,817.44	9,174.83
1956-57	613.18	5,847.89	2,809.57	9,270.64
1957-58	566.18	6,110.41	2,963.31	9,639.90
1958-59	560.56	6,433.06	3,033.36	10,026.98
1959-60	581.52	6,811.82	3,180.23	10,573.27
1960-61	577.81	6,781.50	3,281.27	10,640.58
1961-62	583.38	7,275.44	3,397.13	11,255.58
1962-63	567.63	7,718.06	3,529.58	11,814.94
1963-64	557.96	7,973.06	3,656.22	12,287.24

The above table clearly shows that the water consumption has risen steadily since 1955-56. During the period of nine years, the total consumption has increased from about 9,000 million gallons to 12,000 million gallons. Domestic consumption has also been rising yearly. The total number of water connexions in March 1961 was 31,784, and the number of households in Kanpur at the 1961 census was 221,251 which meant there was an average of one connexion for approximately 7 households.

In 1961-62 the waterworks engineering department of the Kanpur City Corporation estimated a future daily requirement for a population of 12 lakh at 54 million gallons per day (based on an average consumption of 45 million gallons per day) in addition to 2.5 million gallons per day for railways and chakeri Aerodrome. Thus to meet the future requirement a scheme for the supply of 60 million gallons per day was

prepared by the State Local Self-Government Engineering Dept. in 1965. It provided for the construction of a masonry duct to take a discharge of 30 million gallons per day connecting the kachcha settling tanks to the canal pump-house and also the construction of a pump-house and provision of two 15 million gallons per day pumping sets against a head of 32 feet. These have been completed as per the reorganization scheme.

Further reorganization plan also provides for: conversion of the 5 million gallons per day pre-filters of the treatment plant into final filters, construction of new rapid gravity filter of the capacity of 36 million gallons per day and provision of a 30 million gallons clariflocculation plant in existing settling tanks. Construction of one 5 million gallons clear water reservoir has been completed. The plan also included the construction of a new pump-house with three 13 million gallons per day pumps and two 6.5 million gallons per day pumps against a head of 52 feet.

The entire reorganization plan will cost about 31 million rupees. Part of the work has already been executed, financed under a loan from the Government of India's National Water Supply and Sanitation programme. The rest of the schemes will be financed by the Ministry of Health, Government of India. By these schemes four new water supply zones will also be created in certain new localities.

In this scheme, the final filtration capacity will be 50 million gallons per day but the prefiltering capacity of

the chemical feeding plant is only 27 million gallons per day and without making additions to the prefiltering it will not be possible to utilize the final filtering plants economically. Hence it is most urgently required to add at least one unit of 25 million gallons per day prefiltering plant to the existing system.

Efforts are being made to investigate the possibility of locating another Ganga river intake near Jajmau to supply water to the areas developing on the east of the cantonment. According to the waterworks authorities, with the completion of this new project, Kanpur's water supply position will become quite satisfactory for the next 20 years.

#### Electricity Supply<sup>7</sup>

The Indian Electric Supply and Traction Company, the predecessor of the Kanpur Electric Supply Corporation, was set up by some European merchants in 1906 as a branch of the Indian Electric Supply and Traction Company Ltd. of London. This was the first public power supply company established in India outside the presidency towns. M/S Begg Sutherland Company were its managing agents.<sup>8</sup>

21 In 1912 the Cawnpore Woollen Mills contracted with the company and became its first big consumer. As the demand grew the original power station on the Mall near Woollen Mills

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7. All figures quoted and information used in the text, is by courtesy of the Executive Engineer Kanpur Electric Supply Administration (KESA) and the Executive Engineer (Hydel), Government of Uttar Pradesh, Kanpur; unless otherwise stated  
 8. H.R. Nevill: op. cit., pp. 82-83.

became inadequate and in 1921 the riverside power house was started. It was extended in 1924, 1930, 1932 and 1936. The average daily sale of electricity reached 226,273 units KWH in 1937 and 370,000 units KWH in 1942, compared with an average daily sale in 1913 of only 4,796 units KWH.

The private undertaking was taken over by the State Government in 1947 and the Kanpur Electric Supply Administration (KESA) came into existence. The number of consumers has rapidly increased from 13,500 in 1947 to 37,000 in 1956. In the year 1960-61 about 2,528 new connections were given raising the total number of consumers at 58,800 which was more than four times of the number of consumers in 1947. The total number of connections in the city jumped to 153,424 in 1963 and 189,047 in 1964. Out of these total connections KESA alone had 61,800 connections in 1963 and 62,214 in 1964, and the rest of the connections were with the State Hydel Board's mains.

The generating capacity of the riverside power house has been rising continuously since 1951. The generating capacity before 1951 is not known but it has almost doubled during the last 12 years from 55 million Watts in 1951 to 100 million Watts in 1963. Its present installed capacity is 106 million Watts.

The Kanpur Thermal Power Station at Panki is the new power station in the city to meet the growing demand. By the end of the Second Five Year Plan (1956-61), there was a registered but unsatisfied demand for power in Kanpur of the

order of 90,000 KW. This unsatisfied demand for power in Kanpur continued to increase even further due to the demand of various Defence establishments. It became imperative to augment the supply of electricity in Kanpur by establishing a new power station of substantial magnitude to meet the chronic shortage of power. This is being achieved by setting up the Panki Thermal Power Station in 1962, with a total generating capacity of 64 million Watts at a cost of about 100 million rupees. The site of this power house lies in the village of Panki by the side of the Ganga Canal. Its location is very convenient in many ways. Apart from plentiful water supply from the canal there is ample land available for its expansion. Its site being close to the mainline railway station of Panki has advantage for the supply of coal. However, the main advantage of locating this power house at the present site is its close proximity to the major industrial load.

The connected load of KESA has more than doubled between 1947 and 1961, being 65,000 KW and 134,000 KW respectively. In 1960-61 there was an additional increase of 2,050 KW in the total connected load of the system. The total load on 31st March 1964 was 150,857 KW which increased to 155,387 KW on 31st March 1965.

The present per capita consumption of electricity at Kanpur comes to about 260 units per annum. The total consumption of electricity has been continuously rising in Kanpur since 1950-51 as is shown by the following table.

Total Consumption Of Electricity (In Million KWh)

<u>Year</u>	
1950-51	157
1955-56	177
1960-61	266
1961-62	287
1962-63	314
1963-64	341
1964-65	360
1965-66	372

The table below will show the total consumption of electricity in Kanpur under various categories, namely domestic, commercial and industrial, for the years 1961-62, 1963-64 and 1965-66.

<u>Category Of Power Consumption</u>	<u>Power Consumption In KWh</u>		
	<u>1961-62</u>	<u>1963-64</u>	<u>1965-66</u>
Domestic	24,908	30,180	36,243
Commercial	22,173	27,170	146,991
Industrial	236,169	276,390	301,887

The above table clearly shows the total consumption of electricity in Kanpur under various categories, particularly in respect of industry has risen rapidly during recent years.

The industrial consumption of electricity in Kanpur is scattered all over the city. With the rapid growth of city's population and its expansion to new areas and new industries to be set up in the town, the demand for power was bound to increase. Upto 1962 there was some shortage of electricity

at Kanpur both for domestic and industrial uses, and power connections were also restricted. The power shortage problem however was partially solved after 1963 by the installation of a 15 million Watts Turbo-alternator set at the riverside power house.

In 1965-66 there was a demand for 117,395 KW at KESA excluding the power demands for a fertilizer factory to be set up shortly and various other defence establishments. At present the main areas of unsatisfied demand are the new developing areas of the city where the mains have not been laid so far. The industrial estate at Panki which itself will require approximately 40 to 45 million Watts and the new connections in the D.C. supply area as A.C. is now replacing D.C. used in some parts of the city.

To meet the ever rising demand for power in Kanpur, a grid sub-station has been set up at Panki to interconnect it with various hydro-electric stations of the State Electricity Board. The Panki Grid Sub-Station was interconnected with Matatila Hydel (30 million Watts capacity) in 1965 from which Kanpur is now in a position to procure at least 10 to 15 million Watts to meet its increased demand for power. The Panki Grid Sub-Station will also be linked shortly with the Rihand Hydel (250 million Watts capacity) which will be another important source of power in meeting the future demand for electricity. It is expected that Kanpur Electric Supply Administration would be able to get about 110 million Watts extra power from the state hydro-electric stations.

It is interesting to note that there is a large fluctuation in the electricity consumption during the day and night. This also varies during different seasons in the year. The maximum load during the day is highest in summer and lowest in winter. In the evening the maximum load is during the winter and lowest during rains. Peak load period during the summer season is usually from 6 p.m to 10 p.m and during winters between 5 p.m to 9 p.m. During nights the consumption of electricity is much less in almost all seasons because shopping centres are without light and factories are commonly off the current.

Before 1909 there was no use of electricity for street lighting and kerosene lamps were used in Kanpur. In 1940-41, the number of street lamps was 4,021 which increased to 4,862 in 1950-51 and 8,703 in 1961-62. The Kanpur Corporation has spent nearly 2 million rupees on lighting streets, parks and other public places every year since 1962-63<sup>9</sup>. In spite of this, the existing system in the city is inadequate and the number of street lights insufficient, being very widely spread with very low power bulbs even on busy streets. Now that the density of population and houses in the city has been very much increased, a much better system of lighting in the town is required.

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9. Office Record, Kanpur City Corporation Office, by courtesy of the Superintendent of lighting department.

## Sewage And Sanitation System<sup>IO</sup>

Prior to the establishment of the municipality in 1861, Kanpur had no formal arrangements for handling sewage. The city lacked the most elementary facilities and there was crying need for a good drainage system. Between 1865 and 1872 some improvements were effected for the first time. In 1866, the sewage disposal system was put on a systematic footing. Special attention was paid to the improvement of three old drains of the city which were no more than unlined ditches. These were: one; running from central city to the Ganga through civil lines (Ganda Nala), the second; was a feeder to the former passing through central city to Sisamau, and the third; from Sisamau to the Ganga passing through western city (Sisamau Nala). All these were constructed as open drains lined with bricks and were calculated to clear a rainfall at the rate of  $\frac{1}{2}$  inch per hour. A loan of Rs. 213,000 was sanctioned by the Government for this purpose. The sanitation department which was working regularly from 1866, drawn up a scheme providing a sewer from Sisamau to the Ganga through eastern wing of the city but it never materialised for want of funds.<sup>II</sup>

In 1872, however, more loan was advanced by the Government to the city for drainage improvements. By this two former major sewers were improved in 1888-89 and in 1892-93; drainage

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IO. All figures quoted and information used in the text, is by courtesy of the Health Officer and Executive Engineer, Sanitation Dept. of Kanpur City Corporation; unless otherwise stated.

II. H.R. Nevill: op. cit., p. 272.

was also constructed in Sadar Bazar area at a cost of Rs. 91,500. The refuse removal system which was solely entrusted to contractors has not been working efficiently. To tone up the system, two European sanitary inspectors were appointed in 1894.<sup>I2</sup>

Despite the periodical improvements, the sanitary conditions in the town were most unsatisfactory at the end of <sup>the</sup> last century. The Army Commission in their report of 1890 pointed out that, "The latrine stuff flows into the street drains and sometimes, through lack of pipes, contaminates the subsoil and wells from where the potable water is drawn".<sup>I3</sup> But the problem was put off until 1902 when a loan of Rs. 300,000 was given by the Government by which a series of pail depots were opened and branch sewers were constructed. A main high level intercepting sewer from Sisamau Nala through the western part of the city to the discharge just above Jajmau was also constructed.<sup>I4</sup>

The outbreak of plague and cholera in the first decade and the increase in crowd and congestion (due to growth of population and industry during the First War) in the second decade of the present century brought a new awareness of the problem of sewage and sanitation in the city. It became necessary to overhaul the existing system. But the matter was put off until after 1921 when the Kanpur Improvement Trust

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I2. H.R. Nevill: op. cit., p. 179.

I3. As quoted in Social Contours of an Industrial City on Page 19, by D.N. Majumdar, Bombay, 1960.

I4. H.R. Nevill: op. cit., pp. 179-273.

undertook the work of general improvement of sewage and sanitation. In 1935-36 an underground drain was laid by the Trust in new factory area. The expenditure on sanitary facilities also gradually increased from Rs. 128,334 in 1900-01 to Rs. 329,285 in 1940-41 as compared to only Rs. 50,000 in 1890-91.<sup>15</sup>

At the end of Second World War, the Development Board of Kanpur appointed a committee to examine the question of housing<sup>and</sup> sanitation in the city. This reported in 1946: "Some of the places that we have seen during our visit of inspection are so over-powering that for days we lost<sup>all</sup> appetite for food".<sup>16</sup>

Before 1952 there was no sewage utilization scheme and all sewage was discharged into the Ganga, thus polluting the river, which is, it should be remembered, the most important source of water supply for the city. This constituted a severe menace to public health. Hence a pilot scheme for utilizing the sewage and industrial effluents was formulated by the Development Board, and a loan of Rs. 750,000 was given by the State Government for the purpose. Under the scheme about 300 acres of land in Jajmau was reclaimed and a farm was established. The Development Board also completed the construction of new trunk sewers, 22 miles in length which has stopped the pollution of the Ganga.

In the second phase of sewage utilization the Kanpur Corporation has constructed two sewage pumping stations and

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15. P.P. Bhatnagar: op. cit., p. 67.

16. Report of the Cawnpore Development Board, p. 33., 1946.

one raw water pumping station, with the necessary rising main and distribution channels in an area of 6,000 acres at Jajmau sewage farm. About 30 million gallons of sewage or only  $\frac{1}{3}$  total capacity is pumped into the farm for irrigation. For utilizing the entire sewage an additional amount of 2 million rupees will be required for extension of the works. It will be possible then to irrigate about 10,000 acres of land by which about 11,000 tons of fresh vegetables can be produced.

During the last few years, the problem of sanitation has been vigorously tackled and the expenditure on sanitation rose steadily from Rs. 2,700,000 in 1960-61 to Rs. 5,500,000 in 1965-66. Nevertheless, the expenditure is not sufficient in view of the nature and size of the city.

At present there are two main trunk sewers. The intake capacity of these sewers has been designed for 925,000 people at 5 gallons per head per day. The total length of both trunk sewers is more than 33 miles. The future plans of the Kanpur Corporation includes further improvement in the existing system and providing more adequate sewage system in the new areas. There is a proposal to lay down two new trunk sewers namely: an eastern trunk sewer and a western trunk sewer. The former will cater for an area of about 6,000 acres for an ultimate population of 8 lakh while the latter will cover an area of about 10,000 acres. In this area the south-west portion is earmarked for industrial development. The whole scheme will cost Rs. 30,000,000 and will greatly improve the drainage system of Kanpur.

Medical Facilities<sup>I7</sup>

The city of Kanpur presents an interesting medical complex. There are diverse system of medicine which are popular among different sections of the people. The traditional modes of treatment popular among the Hindus are called Ayurveda,<sup>I8</sup> and among the Muslims are known as Unani.<sup>I9</sup> But with the growth and advancements of modern medicine, allopathy is becoming increasingly popular, mainly among richer and well-to-do sections and especially among Government employees who are reimbursed for allopathic treatment only. The poorer section of the population is increasingly using the inexpensive, yet efficient system of treatment known as Homeopathy. But in the city of Kanpur as perhaps in the country as a whole, various systems of medical treatment have to co-exist and have to play a significant role for a long time.

Before the Mutiny of 1857, there were only two small military hospitals and a civil dispensary in Kanpur. Branch dispensaries were opened in Nawabganj and Generalganj between 1860-65. In 1877 the civil dispensary was converted into the Prince of Wales Hospital and a women's section was added to it in 1893.<sup>20</sup>

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17. All figures quoted and information used, is by courtesy of the Civil Surgeon Kanpur, Chief Medical Officer of the Kanpur City Corporation and Medical Officers Incharge of the various individual hospitals of Kanpur; unless otherwise stated.
18. An indigenous medical system based on Atharva Veda and as practised by ancient Indian saints like Bharadwaj Rishi and Dhanwantri.
19. An indigenous form of medical system popularised by Muslim rulers in India.
20. H.R. Nevill: op. cit., pp. 184-85.

Vast improvements have been made in the medical facilities during the past decades of this century especially after the Independence of the country. There are two medical colleges in the city. Both of these are a boon to the city for they are well equipped to offer expert medical advice. It is estimated that there are 281 registered doctors and 519 nurses in the city plus about 300 registered homeopathic medical practitioners, 163 vidayas<sup>21</sup> and 110 hakims.<sup>22</sup> The facilities for x-ray and radiology, electro-cardiology and pathological tests exist in ample measure.

Present medical services in the city are being provided by the Government and several other public and private agencies which are running small hospitals and charitable dispensaries in different parts of the city. Besides these a vast number of private general practitioners and specialists in different branches of medicine and surgery also meet the health requirements of the people.

Government is the main agency providing medical relief. The following table shows some of the important Government hospitals, their location, number of beds and average number of patients per month.

<u>Name Of Hospital</u>	<u>Location</u>	<u>No. Of Beds</u>	<u>Average No. Of Patients per month</u> <sup>23</sup>
L.L.R. Hospital	Gutaiya	300	9,208
U.M.H. "	Parade	266	10,144

21. Those practising Ayurvedic medical system.

22. Those practising Unani system of medicine.

23. The average number of patients include both indoor and outdoor patients.

<u>Name Of Hospital</u>	<u>Location</u>	<u>No. Of Beds</u>	<u>Average No. Of Patients Per Month</u>
K.P.M. Hospital	Mall Road	60	7,433
Police "	Police Lines	85	415
P.A.C "	Juhi	25	287
C.M "	Cantonment	120	870
N.R. Health Unit	Railway Colony	6	360
Total		862	28,717

Besides the general hospitals shown in the above table, there are a number of specialised hospitals also in the city run by the Government. The following table shows the names of the specialised hospitals, their location, number of beds and the average number of patients per month.

<u>Name Of Hospital</u>	<u>Location</u>	<u>No. Of Beds</u>	<u>Average No. Of Patients Per Month</u>
Eye Hospital	Gutaiya	75	3,140
Infectious Disease Hospital	Gutaiya	76	188
J.K. Institute of Radiology and Cancer Research Centre	Gutaiya	108	-
T.B. Hospital	Gutaiya	44	600

The city has two important women's hospitals, the Duffrin hospital is at Parade with 192 beds and on average 2,830 patients per month and the Upper India Sugar Exchange Meternity hospital in Gutaiya with 86 beds and about 900 patients per month.

Medical welfare is an important part of the welfare activities carried out by the Labour Department of the State

Government. It runs about 20 dispensaries and 2 T.B. clinics<sup>24</sup> in the welfare centres which are located in the main labour areas of the city, where industrial workers and their families are provided with free medical care.

The Employees State Insurance Corporation also runs 9 dispensaries in various labour localities of the city, giving medical benefit to the insured workers and their dependents. The high incidence of tuberculosis among industrial workers in Kanpur has led the corporation to establish 5 T.B. clinics of its own besides those run by other agencies. It also runs a maternity hospital with 144 beds and one general hospital with 112 beds.<sup>25</sup>

The Kanpur City Corporation is running 39 small dispensaries under different system of medical treatment in different wards of the city. The number of patients treated during 1964-65 by these dispensaries was 447,851. The City Corporation also runs 14 maternity cum family planning clinics. The total number of cases which were treated in maternity sections were 21,783 during 1964-65, while 12,368 women attended the family planning sections during the same period.

The most important hospital run by the City Corporation is in Govind Nagar. Being situated at the southern outskirts, it also caters to the needs of the neighbouring villages besides the large colony of Govind Nagar. The hospital has

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24. Office Record, by courtesy of the Assistant Labour Commissioner, Kanpur.

25. Office Record, by courtesy of Employees State Insurance Corporation, Uttar Pradesh, Kanpur Office.

60 beds and the total number of patients during 1964-65 was about 9,000 out of which 7,000 were outdoor patients.

The most notable addition to the existing medical facilities in the city is the Nehru Children's Hospital. It was started in 1964 by the City Corporation to provide indoor and outdoor treatment to the child patients only. It has a capacity of 100 beds. More than 9,000 patients were treated during 1965-66.

Among the private hospitals, the most important are run by the Christian missions. The McRobert hospital in Civil lines with 14 beds and on average 750 patients visiting the outdoor and indoor sections. St. Catherine hospital on the Mall road having 60 beds and 700 patients visiting every month is a special hospital for female patients. Mariumpur hospital in Shastrinagar provides indoor medical facility for about 50 persons. Besides these hospitals, there are a number of private nursing homes run by private medical practitioners in the city.

The recent survey conducted by the Kanpur Town Planning Department found that the distribution of medical facilities is most uneven in the city, and people must travel sometimes a mile or more to obtain them. The following table<sup>26</sup> throw some light on the subject.

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26. Unpublished Survey Report 1964-65, by courtesy of the Department of Town Planning Uttar Pradesh, Kanpur.

Availability Of Medical Facility

<u>Situation</u>	<u>No. Of Households</u>	<u>Per_Cent</u>
Within the locality (within 1½ mile)	11,323	60
Outside the locality	7,794	40
Total	19,117	100

It is therefore clear that various medical services are unevenly distributed, and as many as 40% people have to travel outside their locality to obtain them.

Education<sup>27</sup>

Education plays a central role in the social and economic life of a city. A city's urban growth potential can therefore be measured in terms of facilities that are provided for different types of education. Such facilities are also indicative of whether or not a city has developed adequate educational structure for meeting its requirements in various aspects of its specialised functions.

From the very beginning Kanpur has been far ahead of other cities of Uttar Pradesh in commerce and industry but during the 19th century lagged behind in the field of education. A number of colleges were established at Agra, Lucknow, Allahabad and Varanasi between 1841 and 1895 but Kanpur did not have any until 1896 in which year the Christ Church school was raised to the status of a college. At the beginning of the present century Kanpur had two colleges,

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27. All figures quoted and information used in the text, is by courtesy of the Registrar Kanpur University, Dist. Inspector of Schools, Supt. Education Kanpur City Corporation and the Director of Technical Education, Uttar Pradesh Kanpur; unless otherwise stated.

of 2 secondary schools and 25 primary schools with a total attendance of 2,221 people during 1906-07.<sup>28</sup>

Great efforts have been made in the past decades of this century, especially since Independence, by the Government and private organizations, to improve the level of education in the city. As a result by 1965-66, 205 infant and primary schools, 26 junior high schools and 60 higher secondary schools had been established. The total number of school-going children in Kanpur was 238,408 during 1965-66.

The chief drawback of the primary and secondary education scheme as it is working in Kanpur is that the bulk of these schools are being run in rented premises which are inadequate for serving the needs of the educational system. The number of school premises built by the Government is very small, and there is hardly any provision for playgrounds or compounds.

Kanpur now has 8 degree and postgraduate colleges, with an average yearly enrolment of 9,000 students. The majority of these colleges are located in Civil lines. Some of these colleges admit girl students and provide teaching in arts, science, commerce and law upto postgraduate level. The oldest and best equipped college in the city is the Christ church college.

Higher education for girls has made remarkable progress; from 2 women's degree colleges in the city till 1959, the

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28. H.R. Nevill: op. cit., p. 182., also appendix- xxviii., No. I., city.

number increased to 6 by 1965. The oldest and best equipped girls college in the city is the Balika Vidyalay.

There are two medical colleges in the city with a total capacity of about 260 students. The G.S.V. Medical college established in 1957, imparts education and training in modern medicine and surgery. The other was founded very recently for the practice of homeopathy.

A University was opened at Kanpur in 1966. It started functioning actively in 1967. It is an affiliated body of the colleges of Kanpur and of certain other districts. A vast University campus is under construction which is expected to be partially completed by 1971.

As Kanpur has been a centre of the cotton textile, leather and oilseeds crushing industries, facilities for technical education in respect of these industries in the city were therefore quite developed even before the Independence of the country. But the facilities in the field of engineering were almost absent in this industrial city. It is only during the Second and Third plan periods (1956-61 and 1961-66), with greater emphasis on industrial expansion, that more attention was devoted to technical education in the city. In 1961 the Directorate of Technical Education was set<sup>up</sup> at Kanpur with the object of taking administrative control over the technical institutes run by the State Government. The institutes under the control of the above directorate in the city are: (1) Govt. Central Textile Institute, (2) Govt. Leather-Working Institute, (3) Harcourt Butler Technological Institute, (4) Govt.

Polytechnic. Beside these, the Industrial Training Institute is run under the State Labour Ministry, while the National Sugar Institute and the Indian Institute of Technology are the all India institutes belonging to Central Government.

Located on the Grand Trunk road to Delhi, outside the Western bounds of the city, the Indian Institute of Technology, Kanpur, with a capacity of 1,500 students was established in 1960 through the USAID in India. It is a residential institution, imparting undergraduate and postgraduate education in various fields of engineering and science.

The Imperial Council of Agricultural Research established the Imperial Institute of Sugar Technology at Kanpur in 1936. It was renamed the National Sugar Institute in 1957 when it came under the control of the Ministry of Food and Agriculture Govt. of India. The same year it was shifted to its present extensive site on the Grand Trunk road to Delhi at Western outskirts of the city. It provides the facility for training and research for about 45 students from all over the country.

The Harcourt Butler Technological Institute renders services in the development of oil, chemical, paints, varnish and soap industries of Kanpur. It was started in 1920, purely as a small scale research institute but few years later regular classes in chemistry, oil technology and textile technology were started. Both its accommodation and courses have been enlarged. New building for its laboratory was completed in 1961 at Nawabganj and courses in alcohol technology and food technology have been introduced. It has a capacity of training

and research for more than 300 students.

In recognition of the importance of leather industry of Kanpur, the Leather-Working Institute was established in 1963 by the Directorate of Technical Education Uttar Pradesh, under the Technical High School Scheme; leather working as the main subject along with other general subjects prescribed for the matriculation. There is a capacity for 50 students in the institute.

The Industrial Training Institute Kanpur is the creation of the Craftmen Training Scheme which was started in 1953 by Central Government. In 1956, the scheme was transferred to the State Government. It was first set up in the building of Kanpur Employment Exchange in Gutaiya but was shifted to a large premises constructed in 1962 at Pandunagar. According to the revised pattern of training the duration of course is 3 years for the award of a National Trade Certificate in various technical subjects. The institute is becoming increasingly popular and the number of admissions has increased from 800 in 1963 to 1500 in 1966.

With a view to meeting the growing demand of technical personal, a step was taken by the State Government during the Third Plan (1961-66) to convert almost all civil engineering diploma awarding institutions to polytechnics. In that series Kanpur Polytechnic was started in 1962 with three years diploma courses in civil electrical and medical engineering. The total number of students in all the sections was 250 in 1966-67.

Recreational Facilities<sup>29</sup>

Kanpur, an unplanned industrial city, is highly congested and over crowded. It lacks much in proper provision of recreational facilities, particularly in respect of parks and playgrounds which are necessary means of recreation for the citizens of a city like Kanpur.

Only a few open spaces are available to the public in Kanpur, and during the evening especially in summer, there is tremendous over-crowding. These are: Queen's Park, Memorial Gardens, Brijendra Swaroop Park, Green Park, Rambagh Park and Corporation Park. The last two are the later additions while the rest were created during the British period. Almost all the parks described are situated in the north-western part of the city particularly in Civil lines area. The remainder of the city is without this facility. The crowded and congested localities which bear the major load of the population have hardly any park or playground. As compared to the older parts which have been highly congested from the beginning, the newly developed areas have been provided with some open spaces for parks and playfields. Among all the existing parks only two have a well laid out gardens. These are Memorial Gardens and Corporation Park.

The city has no place which can serve as a good picnic

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29. All figures quoted and information used in the text, is by courtesy of the Dept. of Town Planning Uttar Pradesh, Kanpur, The Assistant Labour Commissioner, Kanpur and The Executive Engineer (Building Dept.), Kanpur City Corporation; unless otherwise stated.

spot. Allen forest on the river-bank near Nawabganj however provides some scenic beauty for the visitors. It can be developed into a fine picnic spot amidst natural surroundings of a forest. A beautiful place called Kamla Retreat deserves mentioning; situated near Allen forest, it is a great attraction for the citizens and visitors to Kanpur. It is owned and maintained by J.K. family, the wealthiest industrialists of Kanpur. Being a private place the entry is regulated by passes. The place has a small museum and a zoo amidst beautiful surroundings of a well laid out and highly maintained gardens.

Kanpur's Modi Stadium in Green Park has the special importance of being the venue of a number of cricket test matches. Every evening a number of football or hockey matches are organised in its various playgrounds. The playgrounds in the city are very few and even a great majority of schools and colleges are without this facility. The following table gives the idea of availability of playgrounds in the schools and colleges of the city.

Types Of Educational <u>Institution</u>	No. Of Schools and Colleges	<u>Playgrounds</u>		
		Inside <u>Compound</u>	Outside <u>Compound</u>	No. <u>Playground</u>
Infant and Primary Schools	205	-	-	205
Junior High School	26	6	8	12
Higher Secondary Schools	60	20	17	23
Degree Colleges	14	4	4	6
Total	305	30	29	246

This table clearly indicates that, out of a total of about 305 institutions in Kanpur, as many as 246 do not have any playground whatsoever, and only 30 have playgrounds inside the school or college compound, while 29 have it outside.

There are a number of cultural organizations in the city, holding musical recitals and conferences from time to time. Recently, the city's cultural life has been much enriched with the establishment of about half-a dozen new organizations which specialise in staging dramatics, which attract fairly large audiences. The city needs a spacious public auditorium the absence of which causes great problems to the organisers of cultural programmes. At present, the auditorium of the Medical college is generally utilized for the purpose. The taste of literary functions is increasing among the citizens and functions like Mushaira<sup>30</sup> and Kavisamelan<sup>31</sup> are frequently held under the auspices of various associations.

There are about a dozen clubs, chief among them being Kanpur Union Club, Ganges Club, Kamla Club, Defence Services Club, Rotary Club, Lion's Club and the International Centre. The membership of these clubs ranges from 100 to 300, and generally persons belonging to civil service, business executive etc. patronise them. Besides occasional gala meets, facilities for indoor games exist in these clubs. Some of these clubs organise lectures and cultural exhibitions in collaboration with various foreign missions in India.

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30. Poetry recitals in Urdu.

31. Poetry recitals in Hindi.

The city lacks the facility of a well equipped central library. Recently a public library was set up in the premises of the Queen's Park. The other small public libraries belonging to various private trusts are: Gaya Prasad Library, Marwari Library and District Library. These have in all a collection of about one lakh books.

The cinema is the most attractive and popular sources of public recreation in the city. In the absence of adequate facilities of other type of recreations for the common people, there is usually great over crowding in local cinemas. There are in all 23 picture-houses, and most of them screen Indian feature films, with a total seating capacity of more than 17,000. Considering the present population of the city, the number of picture-houses and the seats available in them is fairly adequate.

There are 21 labour welfare centres established by the State Labour Department in various parts of the city. These are infact like workers clubs. Arrangements for games and reading have been made in these centres.

The City Corporation has recently launched a programme of beautifying certain older parts of the city. A circular park has been created in front of the central railway station. On both sides of the Ganga canal and all along the full length of the Mall road have also been provided with narrow parks and maintained gardens. Similarly a large plot of land near Sirsaryaghat on the river-bank has been converted into a public park with a big fountain in the middle showing the

emergence of the Ganga from the head of the Lord Siva. A large swimming-bath has also been constructed by the Corporation in the Memorial Gardens at the cost of Rs. 200,000.

### Summary

al/ It may thus be concluded that the principle facilities and social amenities in Kanpur were completely lacking for a very long time after the city's foundation. They have grown only during this century, especially since Independence, but at a far slower pace than the population and industrialization of the city.

The water and electricity supply systems have undergone reorganization and expansion from time to time during the past few decades but the condition in respect of both are still unsatisfactory in view of the ever rising demand of filtered water and electric power in the city.

The city of Kanpur had a very bad system of sewage and sanitation some decades ago, and this was one of the main reasons for the very bad epidemics and high mortality during the early decades of this century. The condition has gradually improved since, but the system still seem partially developed in view of the size, population and industrial load of the city.

Medical services in Kanpur have shown a considerable growth in recent decades. In all in the city, there are about 82 medical centres of which only 22 provide indoor facilities and the rest are merely small clinics and dispensaries. Important hospitals have 1477 beds in all. This indoor

facility is available in the city for one million people besides many thousands who come to Kanpur from outside for the treatment. The medical services available to the citizens of Kanpur seem to be large in number but they lack certain necessary qualities.

During the past few decades, the opportunity of education in Kanpur has made a remarkable progress, particularly in technical education. With the present trend of continuous growth of various technical institutes assures a significant contribution to the technical man-power and research needs of urban and industrial growth of Kanpur. But on the other hand, the schools in this city are ill housed and colleges are ill distributed. Almost all the colleges are in the north-western part of the city and remainder of the city does not have any institution of higher education, and the students have to cover long distances to attend the colleges. Some of the colleges have a very large number of students and have to work in shifts. Over-crowding in educational institutions leads to its own problems.

Recreational amenities fall short chiefly in the matter of parks and playgrounds, and even most of the schools and colleges in the city are without this facility. The City Corporation in its future plans should <sup>give</sup> priority to the provision of local parks. This will be a better idea if the new schools are located in the corners of the new parks or similarly if the new parks were located in a close proximity

of one or the other school, so that recreation and play in the school can be integrated with the adjacent parks.

## CHAPTER V

GROWTH OF INDUSTRIES IN KANPUR

The urban importance of Kanpur in the state and in the country is felt most through its industrial status. Therefore an attempt will be made in this chapter to study the growth and development of industries in the city.

As an industrial centre Kanpur is about one hundred years old. From an insignificant village it has risen to the largest industrial city of the northern part of the country. During the course of a century its original industrial pattern has shown little alteration. The cotton textile, leather, oilseeds crushing and woollens still occupy a prominent place.

The most significant factor in the origin and advancement of industries has been military supplies. Originally industries came into existence to supply military equipment to the British army stationed in Kanpur, and later on military supplies to the British forces in all parts of India. During the First and Second World Wars Kanpur experienced phenomenal industrial growth. It is now considered one of the most important centres of defence supplies in India.

Initially European merchants could visualise the prospect of profit by establishing industries based on the local resources and by exploiting the extensive market. The Indian industrialists belonging to business and financier class emerged on the industrial scene quite late, only rising to prominence after the First World War. The Independence of the country enabled Indians to have nearly full control over

the industries.

The industrial development of Kanpur over a century can be divided into following three phases which are important landmarks in the economic and political life of the country:

(1) From commencement upto 1921: till then Indian businessmen could not develop adequate momentum to run the industries on their own.

(2) From 1921 to 1947 - A period of industrial development mainly by the efforts of Indian businessmen.

(3) From 1947 to date - Industrial development in Independent India.

#### First Phase

Stationing of the British garison at Kanpur, with the river Ganga available for transport, provided an impetus to commercial activity. Further, the presence of the British forces created a sense of security and encouraged merchants and artisans to migrate to Kanpur and to produce clothing and other equipment on a small-scale for a growing civil and military demand. The East India Company also established their business at Kanpur for the manufacture of indigo and cotton ginning. Kanpur rapidly grew into a great ~~imporium~~ <sup>emporium</sup> of cotton and indigo trade and also became an important supply centre of clothing and leather goods for British forces throughout India.<sup>I</sup>

The era of modern industrial development at Kanpur began

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I. R. Montgomery: Statistical Report of the Cawnpore Dist.-  
1948, p. 9., Calcutta, 1949.

only after the Mutiny of 1857. In 1859 Kanpur was connected by rail with Allahabad and in 1865 with Calcutta and Delhi. The growth of more reliable, faster and cheaper transport provided a fresh impetus for Kanpur's expansion, as goods began to move by rail rather than river, Kanpur's trade prospered as more and more cotton, oilseeds and grain pass through the city.

The industrial development at Kanpur was also assisted by the civil war in United States. This conflict created greater demand for Indian cotton in England, when Kanpur was linked by rail with Calcutta, it promptly became a boom town. Cotton from Doab and Bundelkhund was collected at Kanpur and was sent by railways to Calcutta. By 1862 so much cotton was in shipment that the railways could not handle the load and bales of cotton piled up in Kanpur. Some local English merchants seized the opportunity to convert the raw cotton into cloth goods rather than sending it to mills in England.<sup>2</sup>

Cotton Textile Industry

The first large cotton mill, the Elgin Cotton Spinning & Weaving Co. was founded at Kanpur by some English merchants in 1862 followed by the Muir Mills in 1874, and the Cawnpore Cotton Mills and the Victoria Mills in 1882 and 1885 respectively. By the end of the last century these four great cotton textile mills had 230,331 spindles and 1,770 looms installed, employed on an average 6,603 workers, and consumed about

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2. Dargahilal: Tareekh-e Kanpur, p. 49., 1875.; (MSS. Urdu - Gaya Prasad Library Kanpur).

200,000 maunds<sup>3</sup> of cotton annually<sup>4</sup>. Beside these several concerns for cotton ginning and pressing were established, the largest being the West Patent Press Company and the Hydraulic Pressing Association founded in 1874 and 1880 respectively. The chief factors leading to the growth of the cotton textile industry in this period were:

(1) The cotton textile industry of Kanpur was a raw material oriented industry and Kanpur district provided an abundant supply of raw cotton estimated at 1.5 lakh maunds. Annually considerable cotton was also imported from up-country districts of Agra and Aligarh and from the districts of Bundelkhand. In 1876-77, the total import of cotton to Kanpur amounted to 340,525 maunds from the above districts<sup>5</sup>.

(2) British merchants taking advantage of the raw material supply position and visualising the prospects of large markets in northern and central India took the initiative in establishing modern mills.

(3) Labour supply was cheap and plentiful.

(4) The railway was opened between 1859 and 1865 and more connecting roads were built.

The production of Kanpur mills, although just begun, increased considerably during the Second Afghan War (1878-80). The industry had to face great difficulty when the Government

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3. A unit of weight; 1 maund = about 82 lbs.

4. L.K. Tripathi & N.P. Arora: Kanpur Ka Ittihas, p. 32., Vol. II, Kanpur, 1958.

5. E.T. Atkinson: Gazetteer of North-West Provinces, p. 152., Vol. VI, Allahabad, 1881.

cl imposed <sup>an</sup> ~~ex~~ duty on locally produced cotton yarn in 1892. At the same time the demand for yarn from China also declined. But the <sup>South</sup> African War (1899-1902) saved Kanpur's cotton industry from ruin.<sup>6</sup>

u/ The cotton textile industry of Kanpur had a chance to further expand during the First World War. The cotton mills were completely engaged in meeting the demand for army clothing and tent material, and the goods were exported to other provinces and foreign countries. The production of indigenous cotton in the United Provinces (now Uttar Pradesh) was sufficient to meet the demand of Kanpur mills. In 1913, the United Provinces had about 1.5 million acres of land under cotton cultivation and the yield of cotton in the same year was estimated to be nearly 0.5 million bales (each bale = 400 lbs. in weight).<sup>7</sup>

Between 1900 and 1921 three new textile mills were opened in Kanpur. These were: Swadeshi Cotton Mills, Kakomi Cotton Factory and Curzon Cotton Mills. The total number of cotton textile mills in Kanpur was now 7 which together had 323,512 spindles, 4,965 looms and 12,338 workers employed per shift in 1921.<sup>8</sup>

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6. L.K. Tripathi & N.P. Arora: op. cit., pp. 32-33.

7. Area and Yield of Principal Crops in India, published by the Commerce and Intelligence Department, quoted in the Appendix to the Annual Report of the Upper India Chamber of Commerce, 1917.

8. L.K. Tripathi & N.P. Arora: op. cit., p. 35.

## Woollen Industry

In 1876 a small factory for the manufacture of army clothing called Cawnpore Woollen Mills & Co. was put up at Kanpur by some English merchants. The woollen mills had 1,190 spindles, 273 looms, using 15,000 maunds of wool annually and on an average employed 1,660 workers in 1886.<sup>9</sup> In 1903, the annual production of the Woollen Mills was valued at over Rs. 1,575,000.<sup>10</sup> The mill grew into the largest woollen spinning and weaving undertaking in India, which it turns out all kind of woollen cloth, blankets and knitting yarn etc. Its products with 'Lal-imli' as trade mark for pure woollen material has established a reputation throughout India.

During the First World War entire production capacity of the Cawnpore Woollen Mills was placed at the disposal of the Government. By the end of 1917 it produced about 12.5 million yards of woollens.<sup>11</sup>

In 1921, the Cawnpore Woollen Mills had 23,364 spindles, 380 looms and employed 2,895 workers.<sup>12</sup>

## Jute Industry

Like the cotton and woollen industries, the jute industry in Kanpur was introduced by an English merchant. He founded North-West Provinces Jute Mills in 1883. A few years afterwards, the mill was purchased by a local Indian Firm which

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9. H.G. Keene: A Handbook of Hindostan for Visitors, p. 27., Calcutta, 1896.  
 10. Imperial Gazetteer of India, p. 83. U.P., Vol. I., Calcutta 1908.  
 11. Presidential Address, p. 9., Annual Report of the Upper India Chamber of Commerce, 1917.  
 12. L.K. Tripathi and N.P. Arora: op. cit., p. 61.

started it under the name of Dwarka Dhias Jute Mills, producing sacking and floor cloth, chiefly to meet local demand. The mill failed after the First World War and remained closed until 1936.<sup>I3</sup>

### Leather Industry

Before the growth of the cotton industry, Kanpur's chief small industry, built upon a good trade in hides and skins, had been leather tanning and currying of leather. This had <sup>os</sup> prospered due to an abundant supply of raw material and a large number of workers of the chamar caste, traditionally assigned leather work, a generally despised occupation. The presence of the British military and ordnance department at Kanpur from very early days created a large demand for leather goods, and the native industry received a helpful boost. In 1847 more than 300 families in Kanpur were engaged in leather and leathergood trade and a total import of hides and skins to Kanpur was valued at Rs. 100,000 during the same year.<sup>I4</sup> Boots, harness and other equipment including all the saddlery for India was supplied from Kanpur, although the leather was made by crude native processes.

8 | After the Mutiny of 1857, the Government established a Harness and Saddlery Factory at Kanpur in 1960 for tanning leather and for the manufacturing of leather goods on modern lines. The factory developed into a great concern affording employment for more than 2,500 people in 1867, when it was

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I3. L.K. Tripathi & N.P. Arora: op. cit., p. 65.

I4. R. Montgomery: op. cit., p. 114.

making all the harness and saddlery for the entire army in India.<sup>15</sup>

Besides the Government Harness Factory several private concerns were established in Kanpur for manufacturing leather and leather-goods, the most prominent of which, Cooper Allen & Co. was started in 1880. It introduced improved methods of tanning and production along western lines. The concern started making boots and leather equipment and secured orders from the Government in 1883. It became the largest producer of leather army footwear in the country. Its production of military supplies resulted in rapid expansion as revealed by the following table.

Military Boots Manufactured By Cooper Allen & Co. Kanpur<sup>16</sup>

Year	1891	1895	1897	1900-01
Boots	175,708	242,000	336,426	944,713

Between 1880 and 1905 five new leather factories were set up in Kanpur by European merchants. The North-Western Tannery Co. became famous for its good quality leather and in 1900 it was the only organized factory in India mass producing civilian footwear with the latest machines. It was taken over by M/S Cooper Allen & Co. in 1904. The Wense Tannery and Leather Works started by a German leather merchant from Agra. He established a plant for making tan liquers and experimented with chrome tanning. The firm failed in strong

15. H.R. Nevill: Cawnpore Dist. Gazetteer, p. 79., Allahabad, 1909.

16. Office Record, by courtesy of D.N. Sinha, Manager Production Planning of the Cooper Allen & Co., Kanpur.

competition with Cooper Allen & Co., which finally purchased its buildings. The Cawnpore Tannery Co. was also started by a German for tanning leather and for the manufacture of footwear. The Shewan Tannery and the Prime Products also came into existence during this period. The organized leather concerns of Kanpur employed about 7,000 persons in 1908.<sup>17</sup>

During the First World War, the export of raw hides to foreign countries was curtailed and the import of leather goods diminished considerably. As a result of eliminating foreign competition and of increasing home demand, the leather industry in Kanpur progressed rapidly. A new leather factory called Indian National Tannery was also established in 1914. Cooper Allen & Co. and the North-Western Tannery after their combination in 1904 became the largest and continued to progress. During the War it supplied the entire requirement of the army for boots, producing about 6 million pairs of boots during 1914-18. By 1921-22 the organized leather concerns of Kanpur employed more than 8,000 workers.<sup>18</sup>

Besides the big organized sector, there were about 10,000 cottage workers in the district of Kanpur making leather goods from the leather tanned in local tanneries. These goods were sold not only in the local market but also exported to far off places like Peshawar, Kabul and Rangoon.<sup>19</sup>

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17. H.G. Walton: A Monograph on Tanning and Working in Leather in the United Provinces Agra & Oudh, p. 13., Allahabad, 1909.

18. Industrial Survey Report, Cawnpore Dist., U.P., p. 92., Allahabad, 1924.

19. Ibid., p. 89.

## Rolling Mills And Engineering Industry

It is said that the first rolling mill in India was started at Kanpur in 1904 by a local Muslim businessman to process railway scrap. The concern had to close down a few years afterwards because of competition from foreign goods.<sup>20</sup> After the First World War, Inder Singh who migrated to Kanpur from Punjab, visualising the prospects of rolling mill industry in Kanpur, founded a partnership under the name of Shyam Iron & Steel Co. This concern also went into liquidation, but in 1920 Inder Singh established Singh Engineering Works and started making spare parts for mills and also some agricultural implements.<sup>21</sup>

## Brushware Industry

The Pioneer Brush Co. which had started at Kanpur in 1896 was taken over by M/S Begg Sutherland & Co. in 1903, when it was renamed Cawnpore Brush Co. Ltd. Expert brushmakers were brought from England to instruct the workmen. All kind of Brushes were made and large quantities were supplied to the army.<sup>22</sup>

## Sugar Industry

The Cawnpore Sugar Works, managed by Begg Sutherland & Co. was set up in 1896. At that time there was only one other modern sugar factory in the province, the Rosa Sugar Factory which was operated in conjunction with a distillery

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20. W.E.J. Dobbs: A Monograph on Iron and Steel Works in the United Provinces of Agra & Oudh, p. 7., Allahabad, 1907.  
 21. Industrial Survey Report - 1924: op. cit., pp. 107-08.  
 22. H.R. Nevill: op. cit., p. 82.

in Shahjahanpur. Two more sugar mills have set up during this period in Kanpur.<sup>23</sup> The Union Indian Sugar Mills was started in 1905 by the combined efforts of some local Indian businessmen, but in 1920 it was purchased by a local Indian firm known as Kamlapat Singhania which restarted the mill under the name of Kamlapat Motilal Sugar Mills. The other mill called Balmukand Sugar Mills was also set up by the firm Kamlapat Singhania after the First World War.

### Distillery

The Indian Distillery was founded at Kanpur by Biharilal, a local Indian businessman, in 1913. During the 8 years of its existence, it grew very rapidly. It was the only factory in India producing synthetic spirit; it also produced whisky, brandy, rum and gin. In 1921 the distillery had 150 workers and utilized about 50,000 maunds of Mahuwa and about 60,000 maunds of molasses obtained from the Kanpur Sugar Works. Though it had a capacity of 600,000 gallons annually, due to reduced sale resulting from prohibition, it was distilling only about 200,000 gallons of spirit and liquor.<sup>24</sup>

### Oilseeds Crushing Industry

The oil industry at Kanpur owes its origin and development to the adequate supply of oilseeds raised in this part of the country. Long before the establishment of power mills for crushing oilseeds, Kanpur had developed a good trade in oilseeds with Calcutta, and annually about 1,000,000 maunds

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23. L.K. Tripathi & N.P. Arora: op. cit., p. 88.

24. Industrial Survey Report - 1924, op. cit., pp. 41-42.

of oilseeds were imported to Kanpur from the western districts of the United Provinces and also from the districts of Bundelkhund.<sup>25</sup>

The oil-mill industry in Kanpur started about 1910 when the mechanised ghanis driven by steam plant came into use. After that a number of oil mills were founded in Kanpur for extracting oil from mustard, rape, castor seeds and linseeds. The linseed-oil was consumed mostly in the production of paints and varnish.

The factor most responsible for the growth of oil mills in Kanpur, besides the sufficient production of oilseeds in the neighbouring areas, was the railway transport facility by metre and broad gauge railways connecting the city with the eastern part of the country, that is Bihar, Bengal, Assam and Orissa. Mustard and rape oil found a very good market in these areas because of its great use in all kind of cooking there.

By 1921-22, there were 9 well organized oil mills in Kanpur, employed about 600 workers, crushed 1,500,000 maunds of oilseeds and produced about 500,000 maunds of oil.<sup>26</sup> Oil-cake was exported to Darjeeling to be used as manure in tea plantations and also to foreign countries for manufacturing.

#### Second Phase: 1921 - 1947

This section deals with the growth of Kanpur's industry from the end of the First World War to Independence with

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25. E.T. Atkinson: op. cit., pp. 148-50

26. Industrial Survey Report - 1924, op. cit., p. 55.

special attention to the development of cotton, woollen, leather, sugar and oilseeds crushing industries.

Before the First World War, the manufacturers of Kanpur enjoyed a good protected market in northern and central India. During the War they all geared their production to war demands which were only temporary. After the War, the fall in prices caused by the sudden drop in war demands, and also competition with foreign goods, adversely affected the Kanpur industries; competition with Japanese goods particularly aggravated the situation. The industries of Kanpur, especially textiles and leather, slowed down for a shorter period. From 1923 onwards the industrial Kanpur again started growing steadily, especially because local Indian businessmen who had been engaged in trade and money lending activities came forward and invested their funds in a variety of industrial concerns. The following table<sup>27</sup> shows that the number of factories and the total number of workers increased steadily from 1923 to 1939.

<u>Year</u>	<u>No. Of Registered Factories</u> <sup>28</sup>	<u>Total Employment</u>
1923	49	28,000
1927	65	32,617
1931	72	34,430
1935	83	46,680
1939	90	55,814

27. Office Record, by courtesy of the Chief Inspector of Factories, U.P., Kanpur.

28. Total number of Factories include: (a) employing more than 19 workers with power, (b) employing more than 49 workers without power.

With the outbreak of the Second World War, the Government took prompt steps to control essential industries, at least so far as the defence requirements were concerned. In origin, industrial Kanpur was military-oriented and contributed to its subsequent industrial growth. In the Second World War as in the First World War, huge war contracts accelerated the tempo of the economic life in the city. Industries worked to capacity and extra shifts resulted high profits to industrialists. New lines of production were started to fill the gap caused by the total stoppage of imports. The output of leather and textile industries increased immensely. Two new Government owned defence factories also came into existence in Kanpur during the war.

The Second World War brought about an enormous increase in industrial and commercial activities and provided greater employment. In 1941 Kanpur became the largest city of the state, while it had ranked only third in 1921. Its population increased 100% over the previous decade. The employment in registered industrial units, including defence establishments, rose from 55,814 workers just before the war to 82,500 in 1941 (an increase about 45%).<sup>29</sup>

The industries which gave their best during the war years had to face serious difficulties after the war, mainly because of the sudden drop in the war demands and the consequent fall in the level of employment. In the beginning of

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29. Presidential Address, p. 13., Annual Report of the Upper India Chamber of Commerce, 1941.

1946, labour unrest started, and the twenty six day strike during 1946 involving about 50,000 workers, was most serious. In the following year, the partition of the country brought about extraordinary difficulties in transport, supply of raw material and fuel shortage resulting in mal-distribution of consumer goods. As such the industries were badly affected, shortage of food, numerous controls, labour strikes, the refugee problem - all worsened the situation. In this historical context let us look at the growth of each major industry.

### Cotton Textile Industry

The growth of cotton textile industry was slow in this period. Between 1921 and 1939 only five new cotton mills were set up. Of these only, Atherton West & Co. was founded by an Englishman, the other four were the ventures of Indian businessmen.

The industry which had enjoyed prosperity during the First World War, suffered from falling prices and increasing foreign competition, and the industry could not push its sales. The production was curtailed and a number of manufactures had to close down their business.<sup>30</sup> The industry also greatly suffered during this period by a rapid ~~production~~ increase in the acreage and yield of the cotton crop in the United Provinces as revealed by the figures in the following table.<sup>31</sup>

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30. Industrial Survey Report - 1924, op. cit., p. 23.

31. 'Area and yield of principal crops in India', published by the Commercial Intelligence Department, quoted on page 377 in the Annual Report of the Upper India Chamber of Commerce, 1938. For the rapid decline of cotton cultivation in U.P., the following general explanation is given in the same report: "In the wake of agricultural prosperity the population also rose thereby increasing the pressure of increasing food production".

United Provinces - Area Under Cotton Crop In Acre &Yield In Bales Of 400 Lbs.

<u>Year</u>	<u>Area</u>	<u>Yield</u>
1919-20	1,268,000	436,000
1923-24	654,000	213,000
1928-29	643,000	199,000
1932-33	526,000	170,000
1936-37	587,000	172,000

With the outbreak of the Second World War, the demand for cloth and yarn began to rise and the prices also naturally showed an upward trend. In order to cope with the orders of defence supplies an unknown quantity of cotton was imported to Kanpur from outside the Province, and the Kanpur mills worked extra shifts to achieve further industrial prosperity.

Kanpur-Production Of Yarn And Cloth; In '000 Lbs.: 1939-46<sup>32</sup>

<u>Year</u>	<u>Yarn</u>	<u>Cloth</u>
1939	81,943	59,891
1940	93,052	69,262
1941	100,425	74,709
1942	110,036	79,861
1943	113,354	78,666
1944	109,072	74,889
1945	105,023	73,105
1946	84,177	63,449

32. From the Memorandum submitted by the Employer's Association Northern India to the U.P. Labour Enquiry Committee - 1946, quoted on page 143 in the Annual Report of the Upper India Chamber of Commerce, 1946.

In this table, the figure for the year 1942 shows the peak production of cloth by Kanpur mills which was higher by about 33% than 1939 level. During the years of Second World War, the employment was also highest being about 50,000 workers.<sup>33</sup> In spite of various difficulties and of all the controls during the war years, the period between 1941 and 1945 was the most prosperous for the cotton textile industry of Kanpur.

After the War, the production dropped because of the reduction in the working hours, shortage of coal due to transport difficulties, frequent labour strikes and a further decline in the cotton acreage of the Province; cotton had to be imported from Bombay and Saurashtra. The cotton mills of Kanpur therefore were confronted with great difficulties which resulted in declining production. Under the circumstances two concerns, Narain Cotton Mills and Sachendi Cotton Mills which were floated during the war, could not survive after the war.

#### Woollen Industry

The Cawnpore Woollen Mills, which had placed its whole production at the disposal of the Government during the First World War had to face the difficulties of disposing of their product in the civilian market afterwards. Imports of cheap woollen goods from Italy and Japan posed a critical situation for the industry. In 1936 there was a fresh revival of demands due to re-armament programmes in Europe.<sup>34</sup>

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33. Report of the Upper India Chamber of Commerce, p. 31., 1946.

34. British India Corporation Silver Jubilee Souvenir, p. 27., Cawnpore, 1946.

With the outbreak of the Second World War, large orders were placed with the Cawnpore Woollen Mills for the materials required by the defence services. The industry was wholly engaged in war production. The average working force employed in 1941 was 2,000 as compared to 1,200 in the pre-war period.<sup>35</sup> The prices of woollen goods reached a record level and as a result Government control was imposed; this was lifted in 1946.<sup>36</sup> Two years later, the Kashmir conflict raised the demand for woollen goods again. From 1950 raw wool was freely imported from Australia to meet the increased civil and military demand.

### Jute Industry

The jute industry, although started at Kanpur much before the end of the last century, failed to flourish, because of the difficulties in supply of raw jute. There was no jute cultivation in the United Provinces until 1921. Till then the raw jute for the Kanpur mills had to be brought solely from Bengal. In 1921 cultivation of jute was started in two districts of the Province, Sitapur and Kheri. The gradual increase of jute cultivation in the Province provided an incentive for the opening of a new jute mill and the revival of the old one in Kanpur. The mills were helped by the increase in the demand for jute goods in the Province, specially sacking material. The J.K. Jute Mills was established in 1929 and M.D. Jute Mills came into existence in 1936 with the absorption of an

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35. U.P. Labour Enquiry Committee Report, p. 29., Lucknow, 1948.

36. Annual Report of the Upper India Chamber of Commerce, p. 83., 1946.

old jute mill. The consumption of raw jute in both mills in 1939-40 was estimated at 225,000 maunds and nearly 150,000 maunds of raw jute was supplied from the districts of the United Provinces.<sup>37</sup>

In all the position of the jute industry was not very happy at the outbreak of the Second World War. During the War, the industry had to work under great strain due to transport difficulties and inadequate supply of coal. It continued its production, however, as is evidenced from the table below:

Kanpur - Production Of Jute Goods In Maunds<sup>38</sup>

<u>Year</u>	<u>J.K. Mills</u>	<u>M.D. Mills</u>	<u>Total</u>
1943	18,480	4,670	23,150
1944	19,151	4,876	24,027
1945	15,508	4,292	19,800
1946	14,471	4,221	18,692

Leather Industry

The end of abnormal war demand and increasing foreign competition created serious difficulties for the Kanpur's leather industry after the First World War. Although the prices of raw hides fell after 1927 but the tanneries could not take advantage of this due to low demand for leathergoods, especially shoes. Cheap Japanese canvas shoes seriously retarded the growth of the leather industry; the average

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37. U.P. Labour Enquiry Committee Report, op. cit., p. 36.

38. From the Memorandum submitted by the Employer's Association of Northern India to the U.P. Labour Enquiry Committee - 1946, quoted on page 149 in the Annual Report of the Upper India Chamber of Commerce, 1946.

imported price of a Japanese pair of shoes was about 8 annas in 1932.<sup>39</sup> After 1934 the industry began to grow steadily with the active Government support due to the increase in the demand of dressed chrome leather for foreign export. During this period, the scarcity of the principal tanning material, babul bark, also created great difficulty. Its price increased so much that the wattle bark imported from South Africa became less expensive. But with the outbreak of the Second World War, the import of wattle bark became very difficult.

In spite of all the difficulties which confronted the leather industry, five new tanneries came into existence at Kanpur between 1929 and 1940. Kanpur's most prominent leather-goods manufacturer, the Cooper Allen & Co. after coming under the management of British India Corporation in 1920, introduced the trade name 'Flex' for their civilian footwear. They appointed sub-agents in every town throughout the country for the marketing of their shoes. At the outbreak of the Second World War there were about 1,200 such sub-agents in the country.<sup>40</sup>

During the Second World War, the organized sector of the leather industry operated under strict Government control and their entire output was taken over by the Government for war purposes. The increasing military demand gave a great impetus to the industry. The demand of the civilian population had to be met by the village tanners and cottage workers who

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39. U.P. Labour Enquiry Committee Report, op. cit., p. 59.

40. British India Corporation Silver Jubilee Souvenir, op. cit., p. 31.

expanded their activities considerably. M/S Cooper Allen & Co. played a very important role in meeting the military requirements for footwear. Their production of military supplies increased fantastically from nearly 2 million pairs of boots in 1940 to 4.5 million pairs of boots in 1944.<sup>41</sup> This concern supplied about 20 million pairs of boots to the Government between 1940 and 1945, by employing on an average 10,000 workers; 8,000 hides per day were used during the war years.<sup>42</sup>

At the close of <sup>the</sup> war, the demand for leather goods fell abruptly. Government withdrew the control over the tanneries. From 1946 tanneries of Kanpur were freed entirely to enter the civilian market, but the partition of India in 1947 affected the leather industry very severely due to loss of best quality hides and skins. From 1949, the supply of hides became increasingly difficult due to the anti-cow slaughter <sup>an</sup> campaign, which had <sup>an</sup> adverse effect on the industry.

### Sugar Industry

Kanpur was the most important sugar distributing centre in northern India because it was the head office of M/S Begg Sutherland & Co. They were the managing agents of many sugar mills in the eastern United Provinces and Bihar. They had also started a sugar mill in Kanpur which manufactured sugar from gur<sup>43</sup> during 1896 to 1932. In 1932 when they started extracting sugar directly from cane, the mill became unprofit-

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41. Office Record, by courtesy of D.N. Sinha, Manager Production Planning of the Cooper Allen & Co., Kanpur.  
 42. British India Corporation Silver Jubilee Souvenir, op.cit. pp. 35-36.  
 43. Solidified Sugarcane juice.

able and was closed in 1942. The two other sugar mills, Motilal Sugar Mills and Balmukand Sugar Mills belonging to an Indian firm M/S Kamlapat Singhania, which had started extracting sugar directly from cane in 1938, also found it unprofitable<sup>44</sup> a few years later.

The sugar industry came into existence in Kanpur at a time when the process was to manufacture sugar from gur, but when the modern method of producing sugar direct from cane gained popularity, the factories at Kanpur became uneconomical and had to be closed down because an adequate supply of sugarcane was not available nearby. During the Second World War controls on the sale and distribution, transport difficulties and inadequate supply of sugarcane drove away the sugar industry from Kanpur. Two sugar mills closed their business permanently and the Motilal Sugar Mills shifted to Faizabad.<sup>45</sup>

#### Oilseeds Crushing Industry

Kanpur had become an important centre of the oil industry. Beside nine well organized oil mills which existed in 1921, three new oil mills came into existence between 1924 and 1938. Among the new mills, the Ganesh Oil Mills became most important as they started manufacturing Vanaspati (Hydrogenated vegetable oil product) from groundnut oil. from 1938. This new branch of oil industry showed greater business. The factory required 15,000 maunds of groundnuts per month.<sup>46</sup>

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44. U.P. Labour Enquiry Committee Report, op. cit., p. 71.

45. H.Chandra: "Rise of Industrial Cawnpore", p. 26,, Citizen, Kanpur, Oct. 1944.

46. Om Prakash (Oil expert to U.P. Govt.): Report on Oil and Allied Industries in Uttar Pradesh, p.37., Kanpur, 1951.

Before 1925 oil mills of Kanpur used power driven ghanis but gradually improved equipment was installed and replacement parts began to be manufactured locally. This helped a great deal in the progress of the oil industry of Kanpur and the industry continued to grow during this period.

During the Second World War great supplies of castor and linseed oil increased the business and profitability of oil mills in Kanpur. After the war, like other industries, the oil industry also had to face a number of difficulties such as control on vegetable oils, shortage of coal and raw material due to transport difficulties. This affected the industry as a whole badly. The Vanaspati industry, however continued to progress rapidly, helped by the rapid increase in groundnut cultivation in the Province. The cultivation in the Province started about 1940 and increased rapidly thereafter; the production in 1947-48 was 117,000 tons.<sup>47</sup>

#### Chemical And Pharmaceuticals

These industries were almost absent in Kanpur before the Second World War. The country as a whole was totally dependent on imports. Increased activities of the war forced India to make some headway in respect of large-scale chemical industry. The Cawnpore Chemicals, which had started just before the war as a small concern, expanded its activities and acquired great importance during the war by supplying large amount of acids and chemicals to the Government and to the local mills.

In the field of pharmaceuticals, there were two small

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47. Om Prakash (Oil expert to U.P. Govt.): op. cit., pp. 37-38

firms in Kanpur, Mathur & Manzoor Co. and Hind Chemical Works, the former being older. Hind Chemicals earned a good name and fortune by supplying exclusively the essence of chicken to the Government for the forces during the Second World War. It also manufactured tincture drugs, tablets and ointments etc. on large scale. Mathur & Manzoor Co. became famous for the manufacture of hydrogenperoxide. A new firm, the Indian Oxygen and Acetylene Co. was also set up in Kanpur during the war to supply the oxygen cylinders.

### Rolling-Mill And Engineering Industry

The Singh Engineering Works which had started at Kanpur as a small firm in 1926, expanded into a large rolling-mill by 1932. In 1933 another big concern, the Cawnpore Rolling Mills was started. In the following year a local business family founded a very large mill called J.K. Iron & Steel Mills. The owner of the Singh Engineering Works established a plate mill in 1936. The decade preceding the Second World War witnessed a remarkable growth of iron and steel industry in Kanpur. During the Second World War alongwith these big units a number of small engineering works grew carrying on some casting and general jobbing work.

### Third Phase<sup>48</sup>: 1947 To Date

The country's Independence brought about a complete change in the outlook of the Government and people towards industrialization. In order to achieve the objective of

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48. Informations used in the text of this section are based on personal enquiry from the offices of various industrial concerns of Kanpur unless otherwise stated.

planned economic development and rapid industrialization, the state began to assume greater responsibility. The industrial act of 1951 attempted to control every facet of the industrial field. Three Five-Year Plans have been taken up since with greater emphasis upon industrial development. Under a scheme for more expansion of small engineering industries, a large industrial estate was also set up at Kanpur by the State Government during the Third Plan period (1961-66). During First and Second Plan periods (1951-56 & 1956-61), the role of the State Government has been largely confined to providing big loans to the existing private industries for their expansion and also for the development of some new ones. Beside many small concerns, a big rayon textile mill and a factory for the manufacture of textile machinery came into existence at Kanpur during this period by a large loan from the Government. Many other medium and small sized industries have come up solely through the efforts of private enterprise.

#### Engineering And Chemical Industry

Immediatly after Independence, the engineering industry made considerable advances. M/S Singh Engineering Works are the fore-runners in this field. During the Third Plan, a gigantic enterprise, the Singh Wagon Factory, near the Panki Power Station was established by them. A super phosphate factory by Rallies (India) Ltd. came into existence during the Second Plan period. In the Fourth Plan<sup>a</sup> fertilizer factory is envisaged in collaboration with the Imperial Chemical Industries of England.

The defence industry in the public sector has come to occupy a prominent place in Kanpur. Besides the old Harness Factory, the Ordnance and Small Arms Factory and a Parachute Factory, were established during the Second World War, another addition has been the establishment of Hindustan Aeronautics Ltd. for the manufacture of small aeroplanes (AVRO-748) near Chakeri Aerodrome. An aluminium alloy factory has also been planned to be set up in Kanpur to supply necessary alloy material to Hindustan Aeronautics. The defence factories have been a source of large employment opportunity at Kanpur. During the Chinese and Pakistani conflicts in 1962 and 1965 respectively, defence industries were well engaged in producing all sorts of defence requirements. Again shortage of many articles due to import and transport difficulties created the necessity and opportunity to produce them locally. A number of chemical and engineering works in Kanpur are the outcome of such conditions.

Kanpur has a well developed bus transport system owned by the State Government. The State Government has established Roadways Workshop in 1942 for the repair and maintenance of the Government vehicles. After 1956 this workshop was considerably expanded and it started making bodies of modern design and comfort. It also manufactures some spare parts and accessories for the Government buses.

#### Cotton Textile Industry

This is the biggest and the most organized industry in Kanpur. At present there are 10 mills in actual operation.

About 5.5% of the total workers employed in all the cotton textile mills in India in 1965 were employed in Kanpur mills, which have nearly 5.2% of the country's looms, producing about 6% of the country's cloth. In 1951 the share of Kanpur mills in the production of the cloth in India was 7%.<sup>49</sup>

Kanpur- Progress Of Cotton Textile Industry: 1900-1965<sup>50</sup>

Year	No. Of Mills	No. Of Spindles Installed	No. Of Looms Installed	No. Of Workers Employed <sup>51</sup>	Production Of Cloth
1900	4	230,331	1,770	6,603	-
1921	7	323,512	4,965	12,338	-
1939	12	530,104	10,499	20,637	-
1945	13	553,832	10,402	24,190	-
1951	11	558,136	10,298	18,920	<u>In Yards</u> 260,506,866
1956	10	554,308	10,877	18,022	352,038,214
1961	10	536,244	10,857	39,445	<u>In Metres</u> 281,697,729
1962	10	524,218	10,838	42,846	285,941,756
1963	10	514,308	10,706	43,920	256,574,856
1964	10	527,244	10,872	44,292	287,402,888
1965	10	536,288	10,966	43,848	283,599,758

It is quite obvious from the table above that cotton textile industry in Kanpur has been stagnant. No new cotton

49. U.P. Textile Industry Enquiry Committee Report - 1964-65, p. II., Lucknow, 1966.

50. This Statement has been compiled from the Statements issued by Bombay Mill Owners Association every year, by courtesy of the Secretary of the Upper India Chamber of Commerce, Kanpur.

51. Before 1961, the number of workers given are per shift and not total employed. During 1945 the total number of employed were 49,247.

mill has come into existence during the last 25 years, while the number of cotton mills in the country has increased from 356 in 1948 to 575 in 1965.<sup>52</sup>

The cotton textile industry of Kanpur, which enjoyed a boom period during the Second World War, was confronted with serious difficulties thereafter. Since Independence unrest has been shown by long drawn-out strikes. Mills are working below their capacity and one or the other mill is closed due to inadequate supply of cotton. Three mills have totally closed their business. From 1961 the industry faced difficulties all round. Consequently, the State Government appointed U.P. Textile Industry Enquiry Committee to devise ways and means for rehabilitation and modernization of cotton textile industry in Kanpur.

The chief factors responsible for the present state of affairs of the cotton textile industry are summarised below:

(I) The original advantage of procuring raw material from the areas of the Province on which the textile mills thrived in Kanpur has practically disappeared. The yield of the short staple variety of cotton, which was chiefly used by Kanpur mills to produce coarser variety of cloth has very rapidly declined. The production of raw cotton in Uttar Pradesh declined from 436,000 bales in 1919-20 to 172,000 bales in 1936-37<sup>53</sup> and came down to only 63,449 bales in

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52. H.C. Gupta: The Commercial & Economic Geography of India & Pakistan, pp. 273-74., Calcutta, 1967.

53. Refer Table: United Provinces - Area Under Cotton Crop and Yield on page 130 of this chapter.

1964-65<sup>54</sup> Now the Kanpur mills are entirely dependent upon the supply from Bombay and Gujerat.

(2) The market for coarse varieties of cloth, in which the Kanpur mills specialised has now declined with the change in taste and fashion.

(3) From the view point of export Kanpur mills are unfavourably located, as they have to incur extra expenditure for shipment, and thus Kanpur mills have to cater for the internal market only.

Although there are apparant disadvantages to the cotton textile industry at Kanpur, its deterioration may spell ruin to the very foundation of the basic character of the city, as this industry alone provides employment to more than half of the labour force<sup>55</sup> of Kanpur. For its revival and survival, complete renovation of machinery and improvement of transport system appear to be the only solution.

### Leather Industry

Kanpur occupies a unique position in the field of leather industry in present India. Perhaps it is the most important assembling and distributing centre of leather goods in the country. Practically all the large-scale units in the state are centered at Kanpur. The other important centre for leather goods is Agra where it is mainly a cottage industry.

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54. Crop and Season Report, Agricultural Statistics Uttar Pradesh, 1964-65, Lucknow 1965.

55. The total number of workers employed in all the registered factories of Kanpur was 76,000. Out of this 39,000 were employed in the cotton textile mills of Kanpur in 1961.

There are in all 33 tanneries in the State of Uttar Pradesh, only a few are located outside Kanpur. The number of tanneries and workers employed in leather industry of Kanpur in 1951, 1961 and 1965 is as under:

Kanpur - No. Of Tanneries And No. Of Workers Employed<sup>56</sup>

Year	Tanneries	Workers
1951	22	2,123
1961	24	2,964
1965	28	3,189

From the figure in the table above it is clear that Kanpur claims 85% of all the tanneries in the State. Separate figures for the production of Kanpur tanneries is not known but the annual total production of leather in all the tanneries of the State of Uttar Pradesh was estimated at 5,358,835 sq. feet in 1965.<sup>57</sup> Thus on a proportionate basis it can be said that about 90% leather in the State was manufactured by Kanpur tanneries. One special feature of Kanpur tanneries is that they specialise in manufacturing sole leather.

The leather industry of Kanpur meets its demand for raw hides and skins from within the State and also by imports from neighbouring states especially Bihar and Madhya Pradesh. It has been estimated that about 1.5 million pieces of hides and skins are annually collected at Kanpur.<sup>58</sup> Under the prevail-

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56. Office Record, by courtesy of the Chief Inspector of factories, U.P., Kanpur.

57. Office Record, Directorate of Industries U.P., by courtesy of R.K. Agarwal, Development Officer (Leather).

58. Ibid.

ling conditions, there is little scope for expansion in tanning industry because the existing units are working below their capacity due to shortage of hides and tanning materials.

So far as the manufacture of boots and shoes is concerned, there are 9 organized units producing about Rs. 30 million worth of footwear annually.<sup>59</sup> Of all the units M/S Cooper Allen & Co. is the largest undertaking. After reaching its peak in 1944, in which year nearly 5 million boots were produced by employing about 10,000 workers, the production and employment fell thereafter. Its production of boots and shoes was only 1 million in 1950 when about 2,500 workers were employed. The concern has made a successful effort to develop and expand its civilian market in the country and abroad, with the result that it exported about 1 million pairs of shoes to U.S.S.R and E.Germany between 1956 and 1965.<sup>60</sup>

In the cottage-scale sector Kanpur has become predominantly a chappal manufacturing centre. It is roughly estimated that about 6 million pairs of chappals (slippers) are annually produced in Kanpur.<sup>61</sup> Other types of leather goods such as suitcases, holdall, bags and belts etc. and certain quality shoes are also made in this sphere. Besides meeting local demand, cottage-scale units have a wide Indian and foreign market like Aden, Iran, Saudi Arabia and E. Africa.

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59. Office Record, Directorate of Industries U.P. Kanpur., op. cit.

60. Office Record, by courtesy of D.N. Sinha, Manager Production Planning of the Cooper Allen & Co., Kanpur.

61. H.N. Sinha: A note, Annual Magazine of Leather Working Institute, p. 19., Kanpur, 1965.

Oilseeds Crushing Industry

The oil industry of Kanpur accounted for 70 to 80% of the total oilseeds crushed annually in the organized sector in Uttar Pradesh during 1948 to 1950.<sup>62</sup> The total production of oilseeds, particularly mustard and groundnuts, in Uttar Pradesh has rapidly increased after 1950. It increased from 767,165 maunds<sup>63</sup> in 1951 to 1,641,300 maunds<sup>64</sup> in 1965. With increased production of oilseeds crops in the State, the arrival of raw material in Kanpur increased sufficiently. But the industry did not benefit much because of the imposition of Sales Tax, with the result that oil-crushing declined and the industry was struggling for its existence during the period 1951-1963. This is evident from the fact that the number of registered oil factories and their employment in Kanpur declined from 22 units employing 2,038 hands in 1951 to 19 with 1,310 hands in 1961. In 1964 the number of registered units was further decreased to 17 with approximately 1,545 workers.<sup>65</sup>

In 1964, after negotiation between representatives of the oil industry and the State Government, Sales Tax on oilseeds was converted into Purchase Tax, and Sales Tax on mustard oil was reduced from 6 to 3% and on groundnut oil

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62. Om Prakash (oil expert to U.P. Govt.): op. cit., p. 13

63. Bulliten of Agricultural Statistics, U.P.- 1950-51, p. 28, Vol. III, Lucknow, 1951.

64. Bulliten of Agricultural Statistics, U.P.- 1964-65, p. 37., Vol. XVI, Lucknow, 1965.

65. Office Record, by courtesy of the Chief Inspector of Factories, U.P., Kanpur.

from 3 to 1%. Similarly the inter-state sales tax was reduced from 2 to  $\frac{1}{2}$ % in 1965. This afforded some relief to this industry which since then has made rapid progress.

### Industrial Employment

One of the important indicators of industrial development in a city is the growth of factories and their employment over a period of time. It will be interesting therefore to study the growth of factories and their employment in Kanpur during the period of 1939 and 1966.

#### Kanpur - Number Of Registered Factories And Industrial Employment For Selected Years During 1939-1965<sup>66</sup>

<u>Year</u>	<u>Registered Factories</u> <sup>67</sup>	<u>Total Employment</u> <sup>68</sup>
1939	90	55,814
1945	176	116,252
1948	181	90,066
1955	281	61,839
1956	292	68,846
1957	318	70,297
1958	334	64,072
1959	346	67,990

66. Office Record, by courtesy of the Chief Inspector of Factories U.P., Kanpur.

67. Upto the year 1948, for the purpose of registration the factories covered under the Act were: (a) Employing more 19 workers with power, and (b) Employing more than 49 workers without power. After 1948 for the purpose of registration the factories covered are those (a) Employing more than 9 workers with power and (b) Employing more than 19 workers without power.

68. Employment Figures upto 1948 include those of Defence Factories also but Figures of later years exclude them, although the number of registered factories include Defence industrial establishments.

<u>Year</u>	<u>Registered Factories</u>	<u>Total Employment</u>
1960	366	72,956
1961	424	76,320
1963	461	83,559
1966	503	85,801

e/ The above table clearly shows that, from 90 registered factories employing 55,814 workers, the number of factories jumped to 176 in 1945 and employment reached its peak figure of 116,252 due to the boom of the Second World War. The end of the War brought a fall in production and curtailment of employment. The number of registered factories, however, continued to grow mainly due to change in registration Act of 1948, though employment went on falling. By 1955 the number of registered industrial units had risen to 281, but the employment came down to 61,839. This steep fall in the employment figure of 1955 was followed by a quick recovery in 1956 and 1957. The year 1958 again experienced a sharp drop in the figure of employment due to adverse trade conditions in cotton textile industry. However after 1958 the figures of employment continuously rose to 76,320 in 1961, 83,559 in 1963 and 85,801 in 1966. The increase in the number of registered factories was rapid after 1956 coinciding with the Second and Third Five Year Plans periods. In these periods, medium and small-size industries of light engineering group, chemicals and paints came into existence in large numbers.

The percentage of workers engaged in the manufacturing sector is a fairly good indicator of the degree of industrial-

ization in a city. This can be observed in the following table in which the percentage of workers in the manufacturing sector to total population of other major cities of India have been presented.

Percentage Of Workers In The Manufacturing Sector To Total Population In 8 Largest Cities Of India In 1961<sup>69</sup>

<u>City</u>	Bombay	Calcutta	Delhi	Madras
<u>Per Cent</u>	17.7	11.8	8.5	9.5
<u>City</u>	Hyderabad	Bungalore	Ahmadabad	Kanpur
<u>Per Cent</u>	7.0	13.0	17.0	13.1

The table above shows that Kanpur occupies third place in the percentage of total workers employed in industry. This is a clear indication of the size of its industrial base.

Conclusion

It is therefore concluded, that the industrial development in Kanpur city has assumed two clearly distinct patterns with 1940 as a dividing line. In <sup>the</sup> early period most units produced traditional items such as textiles, woollens, sugar, oil, jute goods, leather and leather goods. Most of these industries were agro-based and consumer-oriented.

After 1940, and especially after Independence, the pattern of industrial development took a different form. During this period greater emphasis was laid on non traditional industries based on metals, minerals and chemicals.

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69. P.P. Bhatnagar: Special Report on Kanpur City, p. 72., Census of India 1961, Vol. XV., U.P., Part. X., Delhi, 1965.

These new industries include manufacture of glass, rubber and plastic goods, heavy chemicals, hardware, machine tools, machinery and transport equipment etc.

It is significant that out of 334 new units registered with the Directorate of Industries between 1940 and 1961 only 112 were for the manufacture of traditional items and the remaining 222 were for the manufacture of non traditional items.<sup>70</sup> This diversification of Kanpur's industrial base has taken place mainly in medium and small size factory industries. Another remarkable feature of the post 1940 period has been the greater emphasis upon small-scale units, and it should be noted that out of 50 existing large-scale units only 3 have been established since 1940.

Industrialization in Kanpur thus seems to be proceeding in the right direction with opportunities for the development of human and agricultural resources which are in abundance in Kanpur's surrounding region. Diversification in industries of Kanpur has already started. New industries are catering for new needs of the people and also supplying necessary materials and spare parts to the traditional industries. What is required is the re-invigoration of both of the traditional industries, cotton textile and leather of Kanpur.

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70. Office Record, by courtesy of the Assistant Director (Registration Department), Directorate of Industries, U.P., Kanpur.

## CHAPTER VI

LAND USE

The land use pattern is an important indicator of the nature and character of internal structure and organization of a city. An attempt has been made to present in this chapter the existing internal structure and organization of Kanpur on the basis of land use distribution among the various functional areas of the city. In addition to political, economic and social factors, local topography and modes of transport have also played an important role in the location, character and space requirement of urban activities within the city.

General Land Use

In 1941, the total area of Kanpur Town-Group<sup>I</sup> was 14.26 sq. miles, when it was made up of the city and cantonment. At the 1951 census, with the extension of the city limit in 1944 and by the recognition of certain new areas under railways and defence as the parts of the Kanpur Town-Group, the total area of Kanpur became 36.99 sq. miles. Out of this how much was actually developed or built-up is not known.

In 1959, after the formation of a corporation in place of the municipality, the city area was vastly extended, making a total area of Kanpur at the 1961 census as 114.54 sq. miles or 73317.0 acres. Out of this total the built-up land is 21903 acres and vacant land is 6353 acres, while 45062

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I. A group of contiguous independent local bodies or localities such as Municipality, Cantonment and Railway Colonies etc.

acres are still under agriculture. Table I and 2<sup>2</sup> give areas and percentage respectively of the existing general land use in Kanpur, and abreak-up of the total built-up land under the different categories of functional uses.

Table I:

General Land Use; Area In Acres; Per Cent Of Total; 1963

<u>Total</u>	<u>Built-up Land</u>		<u>Vacant</u>		<u>Under Agriculture</u>	
Area	Area	%	Area	%	Area	%
73317.0	21903	29.9	6352	8.7	45062	61.4

Figures in table I clearly show that the single largest user of land within the area of Kanpur is agriculture. This results from the annexation of a large area of rural land on the outskirts of the city by the Kanpur City Corporation in 1959. The built-up land, is equal to half of the existing land use under agriculture and about one third of the total area of Kanpur. In the absence of any comprehensive city and metropolitan planning in the past, varied land uses in the built-up area have been intensified in the limited spaces; and in spite of the periodical extension of the city's limit, the space requirements and organization of the diversified urban activities which gave rise to the disproportionate pattern of land uses remained largely unchecked. Immediate future space requirements of the urban activities can be met by utilizing 6352 acres of vacant land. This vacant area now consists mostly of the unproductive Usar land, undeveloped

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2. Source: Kanpur: Department of Town Planning, Uttar Pradesh.

grazing ground and forest. The Usar land is capable of new residential and industrial development. The forest land with groves and grazing fields can be developed into parks and playgrounds since Kanpur lacks this facility which is necessary for an industrial town.

The city shows marked regional variations of land use, as a result of the varied functions and diverse urban activities performed.

Table 2: Land Use On Built-up Land; Area In Acres;

Per Cent Of Total Built-up Land; 1963

<u>Built-up Land</u>		<u>Residential Use</u>		<u>Commercial Use</u>	
Area		Area	%	Area	%
21903.0		6958.6	31.5	406.7	1.9
<u>Industrial Use</u>		<u>Public Facilities</u>		<u>Parks &amp; Playgrounds</u>	
Area	%	Area	%	Area	%
1407.0	6.5	1443.2	6.7	259.8	1.2
<u>Transport</u>		<u>Railway</u>		<u>Use Under Govt.</u>	
Area	%	Area	%	Area	%
1907.1	8.8	2020.0	9.2	366.7	1.7
<u>Defence Establishments</u>		<u>Water Bodies And Brick-Works</u>			
Area	%	Area		Area	%
6645.0	30.3	488.9			2.2

Because of the existence of a large cantonment and several other isolated defence establishments such as Chakeri Aerodrome, Central Ordnance Depot and Armapur Defence Industrial Estate, and considerably large portion of land being under the restricted use of railways, rather more than one third of Kanpur's built-up land was close to competitive use

and the natural process of growth which results from free competition was interrupted. This however, induced a more intensive use of land in the remaining city area. Residential uses are by far the most important of the uses of built-up land in Kanpur. Land uses under commercial, industrial and transport establishments are also important, obvious from the fact that Kanpur is a great centre of commerce and industry with important business centres. The concentration of mills and factories benefit from a good road network with a number of road transport establishments. In Kanpur a proportionately large area has been devoted to the buildings for various public facilities and social amenities. A large portion of Kanpur's land is exclusively under the use of Government offices since the city has now become a place of important regional, State and Central Government offices and allied institutions, while it was already a centre of the civil and administrative headquarters of one of the largest districts of Uttar Pradesh. Most of the public and Government establishments are occupying spaciouly built over areas. The proper Civil Lines, planned by the British is spaciouly built with large planted compounds or frontages. The use of land for parks and playgrounds is very much less in Kanpur. Area under the category of water bodies include canal, natural and artificial ponds, open drains and water-works reservoirs. The land occupied by the brick-works include active and abundant brick-work areas.

Land Value

2/ The functional areas of Kanpur have evolved out of a complex interaction of administrative decisions, of social reactions and of most influential economic competition. These functional areas are essentially dynamic and change their location and character with the change in socio-economic conditions. Such changes are reflected in land values.

Although lack of data makes it difficult to discuss the evolution of land values in Kanpur, nevertheless from the available information, it can be concluded that some of the formerly low valued areas are now of a very high value. Until 1947 land values in Kanpur were very moderate and no locality residential or commercial was rated at more than Rs. 40 per sq. yard. The phenomenal rise in land values has only followed the Independence of the country when there was a rapid growth of commerce and industry and an increase in population especially due to an influx<sup>of</sup>/refugees from West Pakistan which resulted in increased building activity. The land prices became inflated because of free competition for land, speculation, security in land ownership and the absence of zoning laws.

Locally, the value of land in Kanpur has also been greatly affected by service facilities such as the system of routes, water mains, sewers and telephone lines. Efficient transport reduces the time and cost of travel, minimises the effect of weather on goods or persons in transit and increases the capacity for carriage. As a result with an increase in

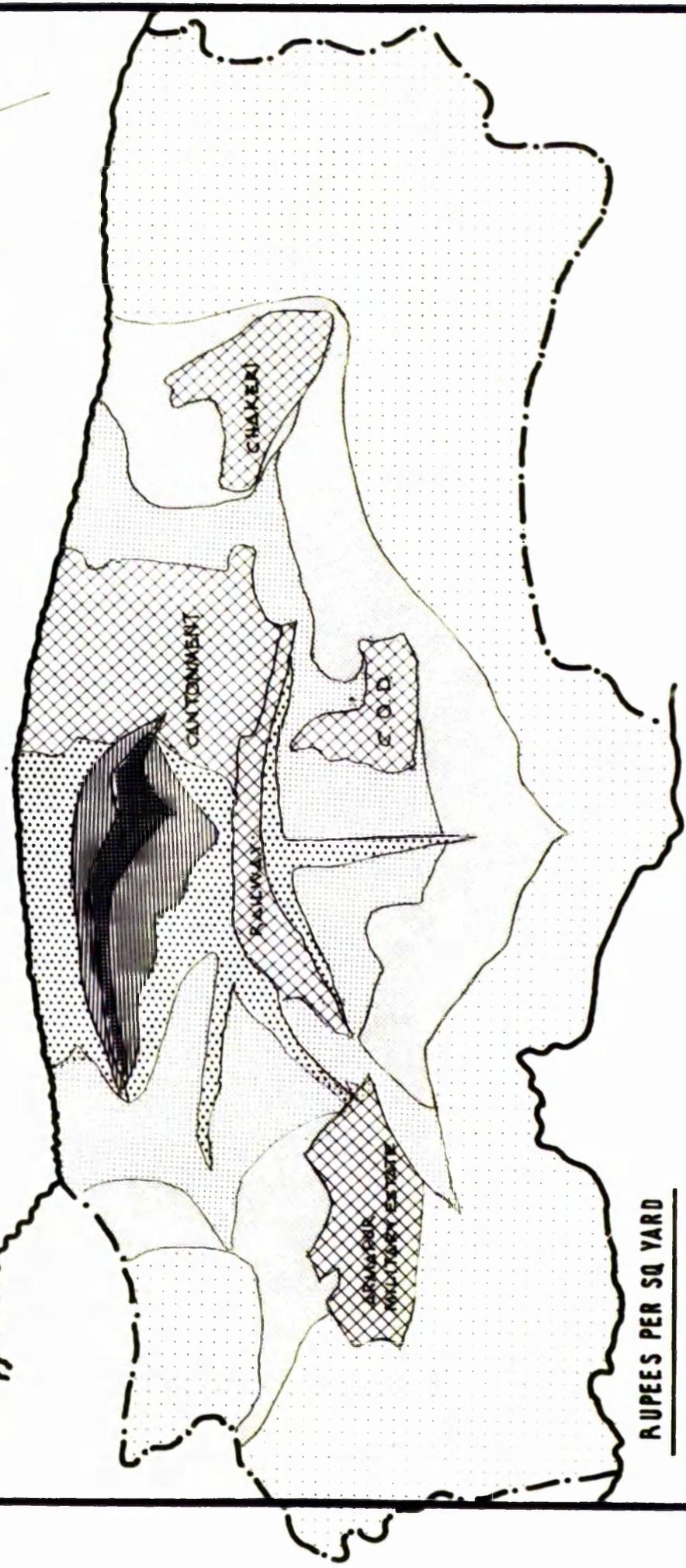
the range of accessibility, well served business streets in the city have attracted more commercial firms and business offices and this has led to a great rise there in the cost of land and in the rent of shops and stores because of the stronger competition for relatively limited space. Among the major thoroughfares, by far the most important is the Mall Road and the other important streets are those which enclose the central business areas, namely: Halsey Road, LaTouch Road and Meston Road where bus routes from all parts of the city converge. Hence most of the Mall Road has some of the highest land value areas, and these are enclosed by the next highest land value areas of the city.(Fig.2I)<sup>3</sup>

Land prices in purely residential areas are to a certain extent influenced by proximity to work place, shopping facilities and better street frontage. The other considerations are usually the electricity, water supply and sewage facilities. Areas fully serviced are much prized for residential development despite high land values. Land not fully serviced is not in much demand even though its sale price may be very low. Land values fall sharply from fully developed centre to under-developed peripheral land and this results in finger shaped areas where under-developed lands are adjacent to important business streets as in the south and

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3. Based on the market rates for sale of lands for different localities in the city (Kanpur) as revised by the Executive Committee vide Resolution No. II76 dated 24.8.1963; by courtesy of the Kanpur City Corporation Office.

# KANPUR - AREAS OF DIFFERENT LAND VALUE (1963)



## RUPEES PER SQ YARD

- 100 TO 125
- 75 TO 100
- 50 TO 75
- 25 TO 50
- Less than 25
- UNDER AGRICULTURE
- ⊗ DEFENCE AND RAILWAY

FIG - 21

west of Kanpur. Now-a-days, the areas of Rs. 75 per sq. yard marks the maximum range to which residential uses compete for street frontage with commercial functions. Beyond this range the competition is exclusively among various businesses seeking the most advantageous locations.

The relative stagnation of eastern and southern Kanpur as compared with the dynamic growth of the central and western part is borne out by the sharp differences in their land values. In the east and south most land is Rs. 25 per sq. yard and less with only a narrow wedge of higher land values along the principal highways like Kalpi Road, Hamirpur Road and Grand Trunk Road. The static position of the east and south is emphasised in showing land value graph for 1952 and 1963 of the main localities of the city (Fig.22)<sup>4</sup>. Except along the Mall Road and round Moulganj, prices in the city increased but at a slower rate during the last decade. Land values in central and western parts have risen phenomenally along the principal commercial thoroughfares and adjoining residential sectors. The differences in land values between 1952 and 1963 are inversely proportionate to increase in distance from the premier commercial areas, becoming almost insignificant towards the outskirts.

It may thus be observed that land values in Kanpur have

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4. The Land value graph is based on the market rates for sale of lands for different localities in the city (Kanpur) as approved by the Municipality in 1952 and revised by the Corporation in 1963; by courtesy of the Kanpur City Corporation Office.

KANPUR — AVERAGE LAND VALUE ( In rupees per sq. ft. ) 1952 - 63.

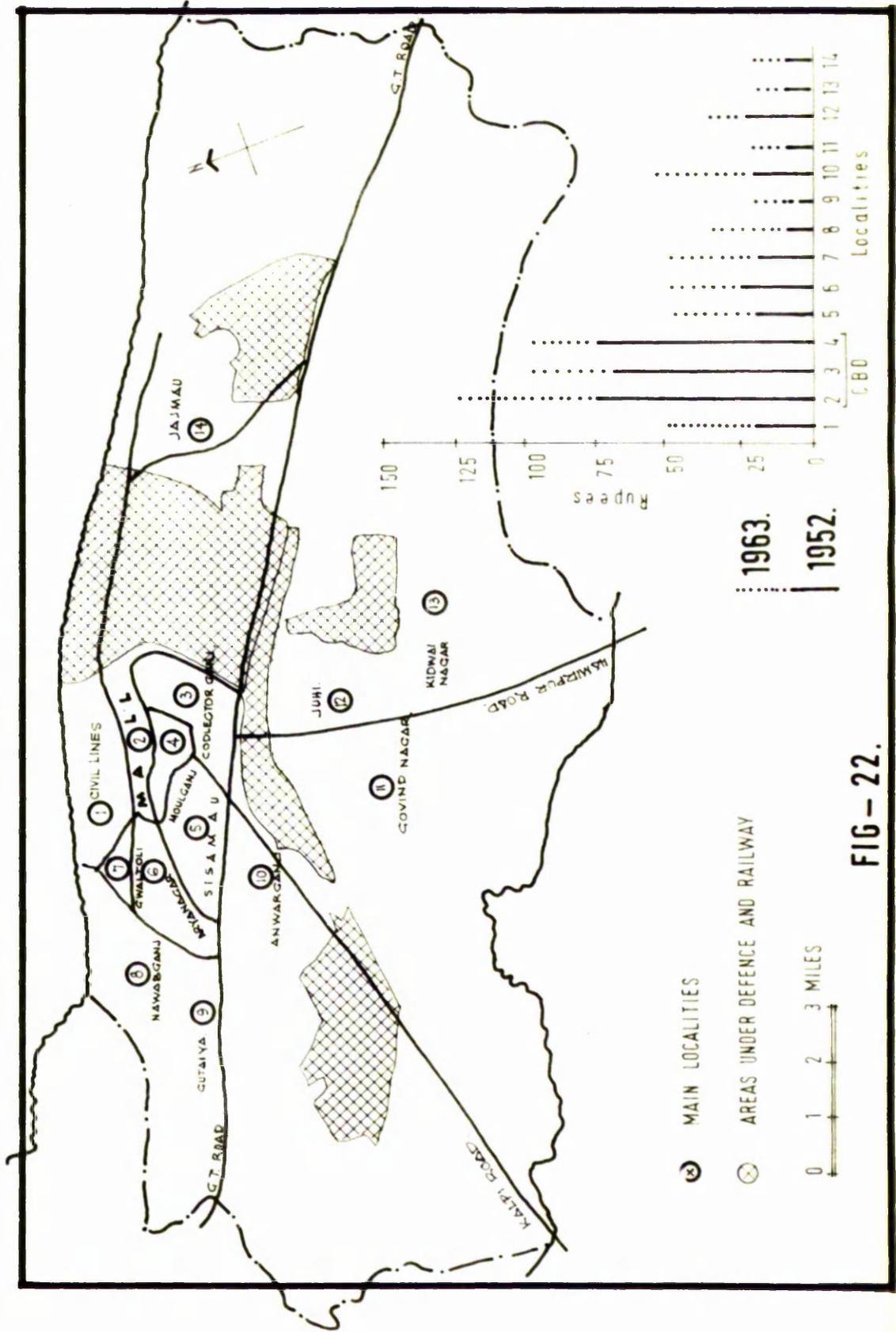


FIG - 22.

been determined primarily by direction of growth, accessibility, differences in public utility services, available in different areas and also by relative importance of certain functional areas.

### Transport

Total land under transport covers 3927 acres, 5.3% of the total area of Kanpur and 18% of the built-up land. This includes the land use under roads and railways and all associated establishments.

The land exclusively under the use of railways is 2020 acres or 9.2% of Kanpur's total built-up land, which includes the central railway station, old railway station, Anwarganj station, Gutaiya station, Kalyanpur station, Rawatpur station, Govindpuri station and Juhi station, Loco area, Station yards and different railway goods sheds. Juhi railway yard and railway penetrating the interior of the city and the main railway goods sheds are situated at Collectorganj and Cooperganj, the most congested part of the city, but their location being necessiated due to the presence of the biggest grain and cotton market there. On the same account the truck transport agencies were lately attracted close to markets and the railway goods sheds. Kanpur, like any other Indian city of this size, has the rail-road cutting right across its length. These rail tracks create separate segments of the town by the absence of through means of communication such as under bridge or over bridge. The branch line of the Central Railway runs south-west and the main line of the Northern

Railway passing east-west; a branch line of the system cuts the city longitudinally in a north-south direction connecting Kanpur across the river Ganga to Lucknow by means of a separate rail bridge serving both broad and metre gauge systems of the railways. A branch line of North-Eastern Railway connects Lucknow on one side to Kasganj and Agra on the other. Moreover the various railway tracks or sidings feeding the mill areas that run through the interior of the city add to the congestion created by the rail track of the main and branch lines.

In Kanpur, roads occupy nearly 862 acres of land out of the total area under the use of transport. Important roads and their respective widths are given in Table-3.

Table-3: Main Roads Of Kanpur And Their Average Width In Feet<sup>5</sup>

<u>SL. No.</u>	<u>Name Of Road</u>	<u>Average Width</u>
I	Grand Trunk Road	90
2	Kalpi Road	90
3	Hamirpur Road	85
4	Mall Road	95
5	Halsey Road	85
6	Benajhabar Road	75
7	LaTouch Road	70
8	Meston Road	70
9	'P' Road	60
10	Birhana Road	40

In view of the present varied and rapidly increasing

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5. Source: Kanpur: Department of Town Planning, Uttar Pradesh.

urban activities, the roads are insufficient in Kanpur. And even the widths of the existing main roads are very inadequate to meet the needs of the growing commercial and industrial traffic in the city. Roads today in Kanpur have to perform multiple functions serving not only the uniform flow of fast moving vehicles, they have to cater also to the slow moving passenger as well as goods traffic. This mixture of slow and fast, goods and people, pedestrian and cyclist traffic is a problem compounded by the fact that streets have to cater for hawkers and wayside shops, which add to the incredible chaos congestion of the traffic arteries. Last but not least of the uses that any major road has to perform is the off street parking of vehicles; servicing and repairing of those motor vehicles tending to reduce the road side to virtual open air garage cum service shed and workshop. Thus the entire road width is not available for normal traffic. On certain places, the multiplicity of the uses to which a road mileage or section are put, have reduced the effective usable road surface even to a fraction of the available road surface.

The total road mileage of Kanpur increased effectively only after 1950. A 1947 publication of Kanpur's Development Board summarised the condition of roads as: "Most of the network of road in Kanpur is a mediaeval arrangement, ill-suited to the volume, intensity and variety of traffic in modern conditions. Narrowness and insufficiency of roads, sideways encroachments, meagre provision of footpaths, absence of parking places for vehicles and railway level crossings on

important roads render traffic clearance difficult, delayed and hazardous"<sup>6</sup>. Today perhaps, the position is better. In 1951 the total length of roads in Kanpur was about 75 miles which increased to 280 miles in 1961<sup>7</sup>. Yet the nature of traffic is basically mixed, its volume is also increasing and the hand driven carts still claim room alongside the trucks and other mechanical transport, and the traffic in busy areas is becoming uncontrollable. The major points of traffic bottlenecks in the city are given in table-4.

Table-4: Points Of Bottlenecks On The Road Of Kanpur<sup>8</sup>

<u>Road</u>	<u>Location</u>	<u>Barrier or Causation</u>
Mall Road	Near Ganga Bridge Near Murrey & Co. Parade	One way traffic at interval of 15 minutes. Railway level crossing with frequent trains to and from Lucknow. Passage of goods trains to river side mill area.
Halsey Road	Central Railway Station Collectorganj	Heavy rush of State roadways buses. Heavy rush of hand and animal driven carts.
Hamirpur Road	Cooperganj	Concentration of truck transport agencies with crowd of trucks for loading and unloading.
Grand Trunk Road	Faithfulganj Near Ganga Canal	Railway level crossing of main line trains between Delhi and Calcutta. Railway level crossing of trains from Banda and Jhansi.

6. Cawnpore Development Board: Report on Housing and Sanitation, pp. 27-28., 1947.

7. Office Record, by courtesy of the Department of Town Planning, Uttar Pradesh, Kanpur.

8. Based on personal observation.

### City's Traffic System

werch  
 In olden days rabbas, dolis and plunkians used for going from one place to another. Then came horse-drawn carriages such as ekkas, tongas, buggies and phaetons. All have been gradually replaced by faster, power-driven vehicles such as motor-cycles, scooters, motor cars, taxi cabs, trucks, lorries, buses and tramways, and also by bicycles and cycle rickshaws. Bicycles are by far the most popular and cheap means of individual transport. Buses are also very important source of public transport and equally the cycle rickshaws which ply for hire throughout the congested city of Kanpur.

### Bus Transport

As early as 1907 a tramway, running from Central Railway Station through premier commercial areas upto the district and civil headquarters, was the only means of public transport in Kanpur. There were no buses in the city until 1933. The tramway was carrying the major load of public traffic in the city supplemented by the horse driven carriages. In 1934 a city bus service was started for the first time by the Kanpur municipality as there was a pressing need for cheap and faster transport, and only seven buses were put on the main road. Expectations of profits were belied and the number of buses did not increase. The service was eventually wound up in 1941. The city remained without any bus service between 1942 and 1945. It was again revived in 1946 by the Kanpur Omnibus company and gradually developed the number of buses on limited

routes from 33 buses in 1946 to 41 buses in 1955. In 1956 the <sup>taken over</sup> omnibus service was overtaken by the municipality of Kanpur which restarted it under the name of Kanpur Nagar Transport. This service had to discontinue on the 1st January 1963 on account of financial difficulties. The city remained without the bus service again for one month. On the 1st February 1963, the Government Roadways Uttar Pradesh introduced their bus service in Kanpur city. Since then it has operated successfully on many routes within city and even beyond. Figures in Table-5 show the number of buses and the route mileage in different periods of time between 1934 and 1967.

Table-5:

Kanpur; Average Number Of Buses And The Total Route Mileage<sup>9</sup>

Period of service	1934-41	1946-56	1956-63	1963-67
Number of Buses	7	41	49	65
Route Mileage	11	29	61	105

It is clear from the table-5 that since their introduction in 1934, in spite of the break between 1941 and 1946 due to war conditions and strong competition with cycle rickshaws, the bus service gradually expanded from about 11 route miles to more than one hundred route miles in 1967. Their coverage particularly in the southern and eastern parts of the city were inadequate prior to 1963. The bus routes, however have now been increasing fast as of the total mileage, 44 miles were added since 1963.

9. Source: Kanpur City Corporation Office.  
Uttar Pradesh Government Roadways, City Bus Depot,  
Kanpur.

e | In the present decade business has spread extensively in the direction of bus routes and the new shopping centres developing on them can be visualised on comparing the Fig.25A showing business streets with the bus route map (Fig.23). The development of route patterns reveals some interesting aspects.

In 1956, six major city centres; Sirsayaghat, Nawabganj, Benajhabar, Sisamau, Juhi and Central Railway Station were linked together. In the city proper, the bus routes covered the important Mall Road and Parade, Halsey Road and Meston Road business streets and also the district and civil headquarters and an upper class residential area of Civil lines along the western extent of the Mall Road. These bus routes terminated at Kanpur Central Railway Station passing through the city's principal business streets and upper class residential area. In the past few years in Kanpur, the bus routes improved the business of these commercial streets at the same time they also initiated the growth of Mall Road as commercial street; today it has emerged as the city's premier retail thoroughfare. This road once lined with bungalows and lodges of the British people is now full of shops, banks, hotels, restaurants, business offices and educational institutions. Before 1963 the bus routes were mainly expanded only in the city proper. In 1963 bus service were extended from the main city to peripheral and outskirt areas and even beyond, such as Chakeri Aerodrome, Kidwainagar, Panki, Kalyanpur and the campus of the Indian Institute of Technology. These routes

# KANPUR BUS ROUTES 1934 - 1967

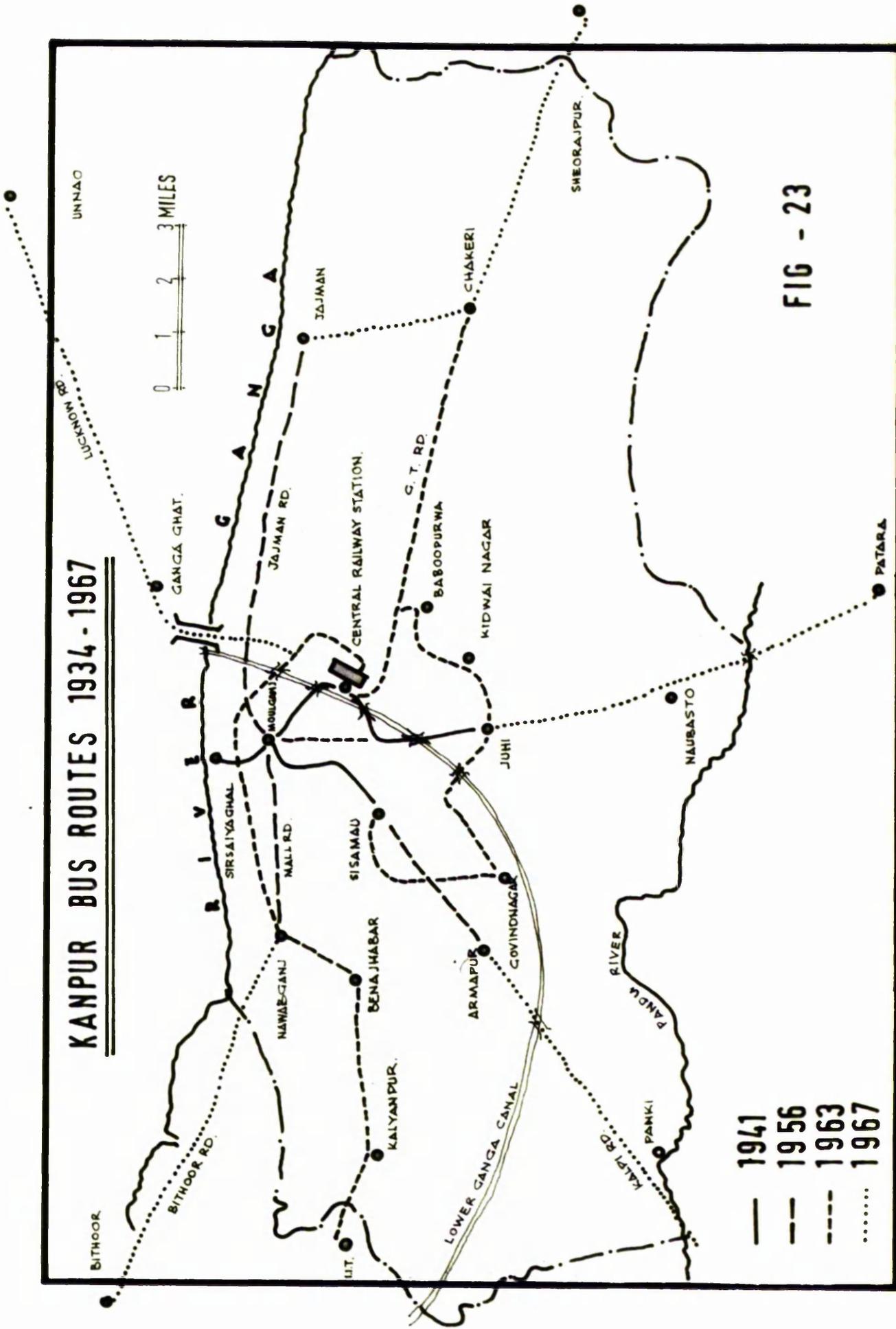


FIG - 23

joined the newly developed population centres and industrial estates and colonies in almost all directions, and these areas are linked by the same routes with principal business areas of the main city and railway station(Fig.23).

Today in Kanpur a well defined radial pattern of bus routes has developed. The central city with premier commercial centres has close network of routes which thins out in all directions, running only on a few major roads. Bus routes are extended in all direction from the main city to those peripharel centres and outskirt villages which enjoy rapidly growing contacts with the city centre. In fact, the bus routes have been extended to almost all the major localities within the city, yet the bus service in the main city is slow and irregular due to the diversified nature of traffic on the streets. Except for Mall Road which has been considerably widened, most of the streets are narrow and obviously not very suitable for the vehicular traffic in modern conditions, and would be far too expensive to widen since they are lined with shops.

Lastly, the ubiquitous cycle rickshaws, numbering 5034<sup>10</sup> in 1967 in Kanpur, offer strong competition to the bus service of the city. They can ply in the narrowest of lanes offering transport to and from any points in the city and for short distance on crowded routes are almost as fast and cheap as the buses. They are therefore generally preferred by the common

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10. Source: Kanpur City Corporation.  
Kanpur Cantonment Board.

people and even by businessmen during peak hours traffic.

Of the 14 bus routes 8 are the main city routes and the rest are extended to outskirts and beyond. The eight main city routes bring the dynamic and developing parts of the inner and outer city into lively contact and assist their mutual development. These routes link the functional heart of the city and some of them have the highest frequency of service and greatest density of traffic and points of bottlenecks lie on them.

The city has no suburban train service; since the majority of workers and businessmen reside within the approachable distance of their work by bicycles or buses. A large number of people use their bicycles or hire rickshaw to reach their work place. Workers and businessmen from outlying areas and outskirt villages travel by non-stop buses of the city bus service to reach the main city and to return home during morning and evening peak hours. Yet few use normal train or rail cars service of various railway systems, since some of these are quite frequent between Kanpur and certain outlying places.

#### The Journey To Work

On account of inadequate means of transport in the city, residential areas excluding those which have very recently developed, have developed largely in or round the principal work centres such as the Central Business District, river side industrial centres, Civil lines and railway colonies. But the distances between the residences and work centres have lately

# KANPUR (Commuting Area)

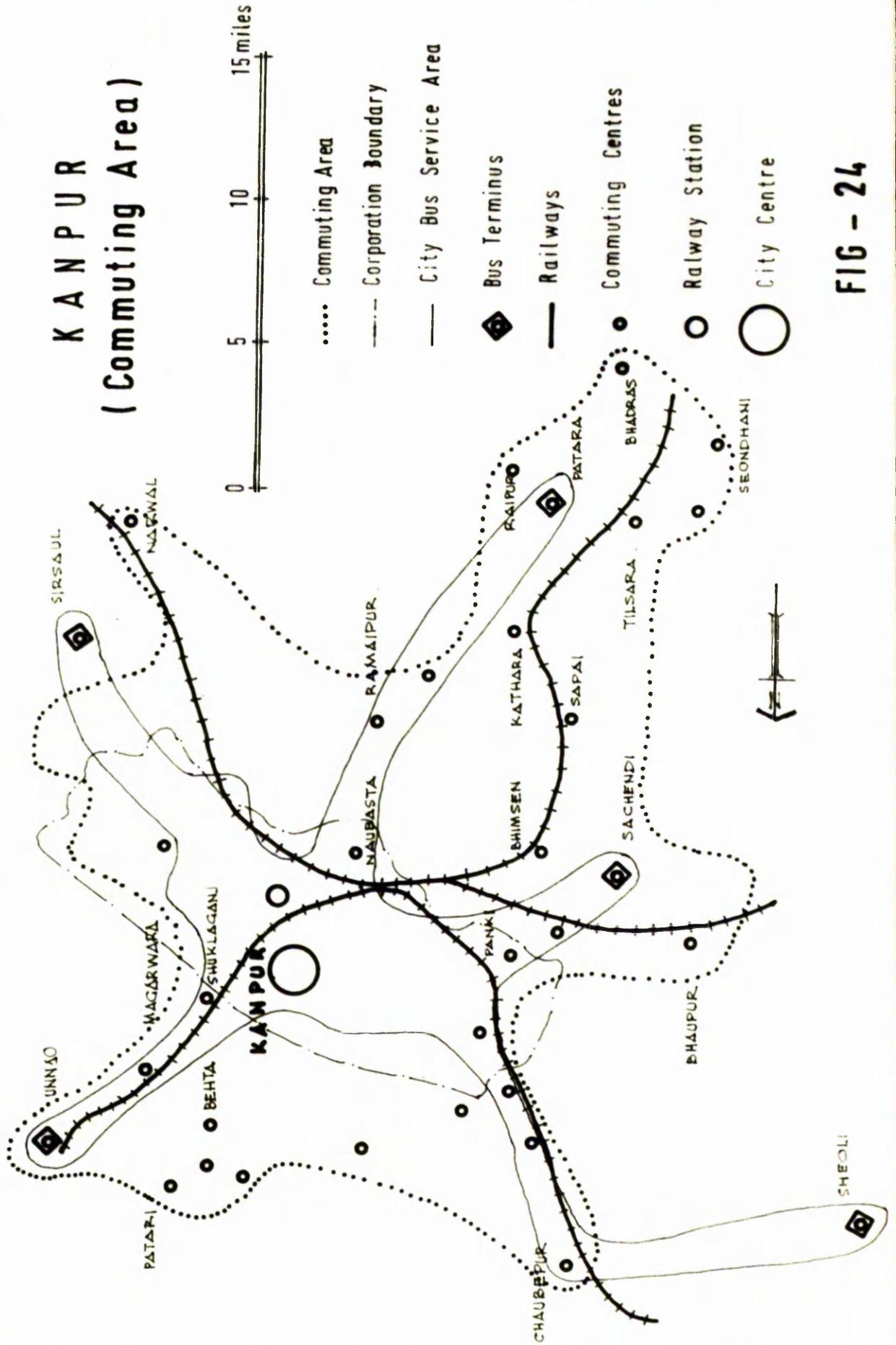


FIG - 24

started increasing due to the rapid extension of the city's built-up areas. It is clear from Fig.24<sup>II</sup> that even the remotest commuting centres are well within 45 to 60 minutes (a reasonable time to spend on the journey to work) from the city's principal work and entertainment centres. The core of the city is well within convenient travel time from peripheral areas in all direction of the city.

New industrial concentrations along the Kalpi Road and Hamirpur Road in southern part of the city and the Jajmau industrial estate in the eastern part of the city have developed their local labour colonies and are therefore little affected by the drawback of travel time. But Kalyanpur and Panki industrial areas being located on the western and south-western outskirts respectively appear isolated for a large part of the built-up area of the city. Being inconveniently located for most of the populated parts of the city large residential neighbourhoods are now developing around Kalyanpur and Panki, and a fairly regular bus service from the city makes up for their inconvenient locations to a great extent.

#### Commercial Structure Of Kanpur

The area under the commercial use in Kanpur is 407 acres which is about 2% of the total built-up land. Kanpur owes its development mainly to commerce and industry. Today it is a

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II. By courtesy of the Department of Town Planning,  
Uttar Pradesh, Kanpur.

# KANPUR - BUSINESS STREETS

- (circle) — IMPORTANT BUSINESS STREETS.
- (circle) — SUBSIDIARY BUSINESS STREETS.

0 1 2 3 MILES

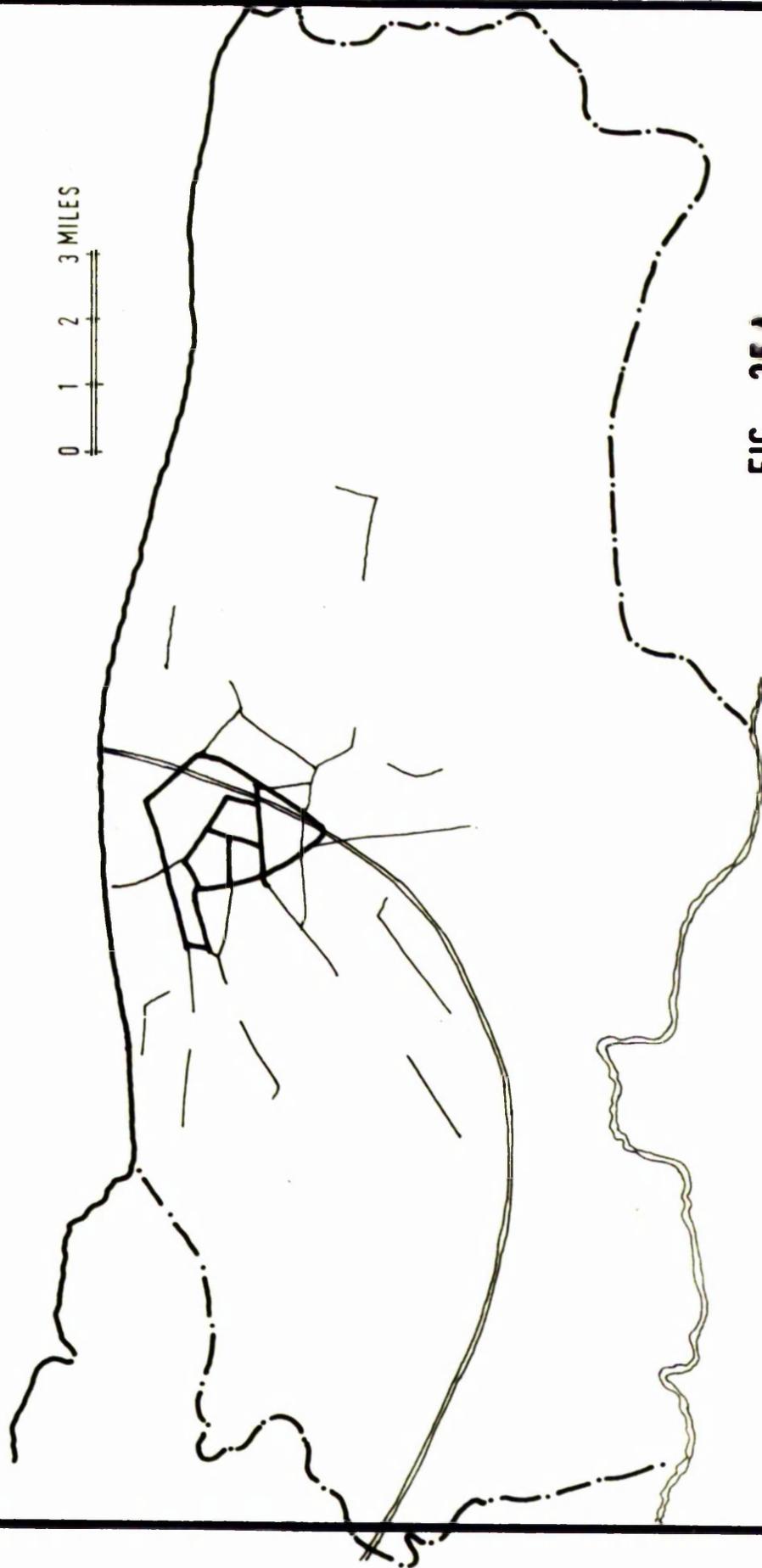


FIG - 25A

great trading and distributing centre. There is a well developed segregation by commodity in wholesale business areas and the retail business centres of various grades exist in different parts of the city.

In Kanpur business streets decrease in importance from the city centre to its periphery. The tapering-off of business streets from strong continuous development in the centre to weak and isolated clusters towards the margin of the built-up area is illustrated in Fig.25A and Fig.25B. On these business streets beaded along lines of traffic, shopping nuclei of varying grades have emerged. Business is intensified at traffic intersections. Besides the Central Business District which includes the principal retail thoroughfare, banking and commercial offices and wholesale districts, the city has two other types of business centres which may be classified as local and neighbourhood business centres.

#### Local Business Centres

These small isolated clusters of shops are found in each mohalla (precinct) and deal only in elementary goods for daily needs. They normally consist of shops for each of the following: cloth, food stuff and spices etc., sweets, vegetable, meat, firewood and coal, cigaretts and pan (betel leaves), cold drinks, hair cutting, tailoring, cycle repair and cycle hire, and a small cafe or tea shed. Shops of each type do not number more than one or two. The quantity and value of sale are limited and the margin of profit meagre. The quality of goods offered in these shops is poor and their

# KANPUR BUSINESS CENTRES

0 1 2 3 MILES

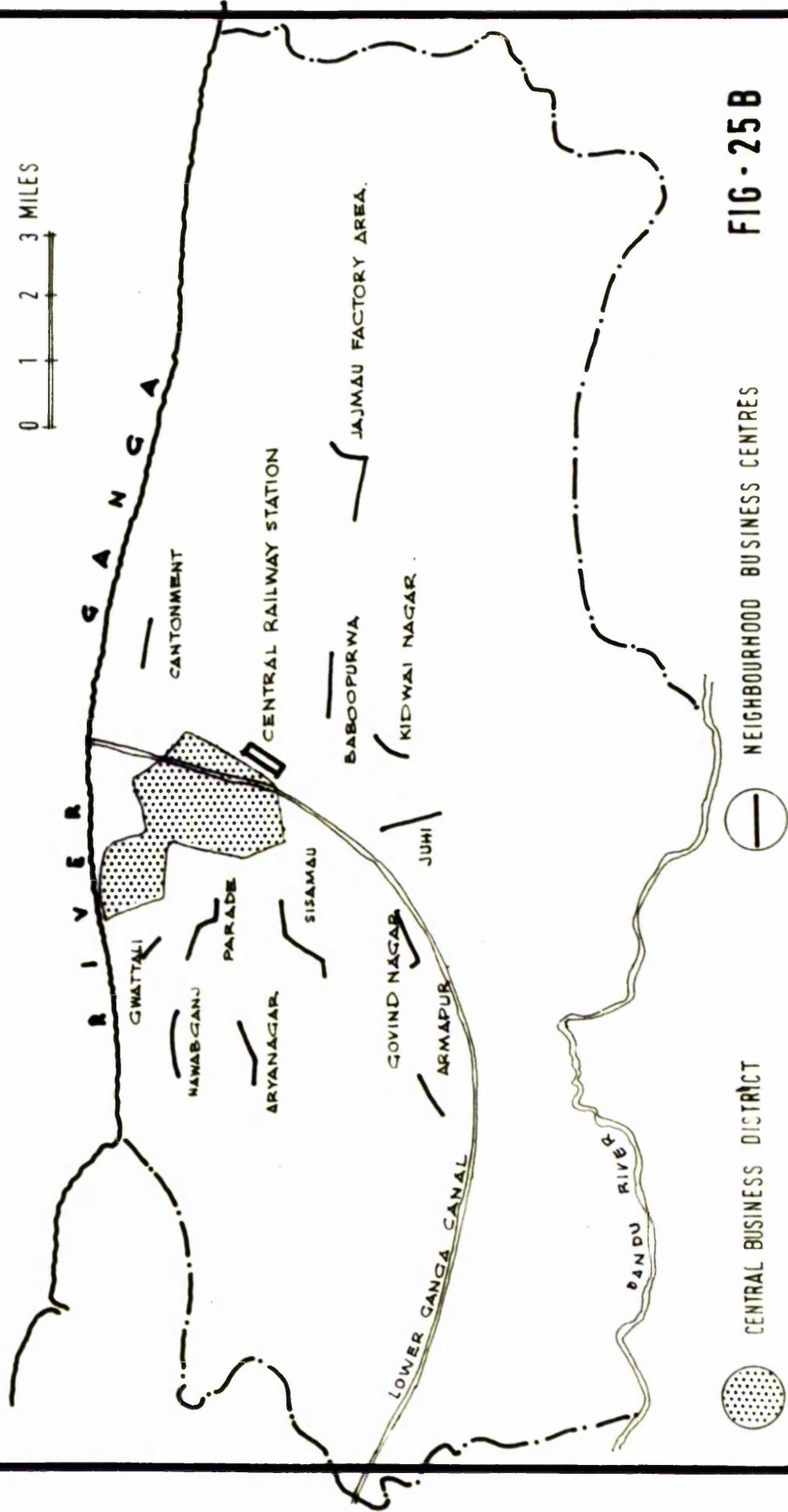


FIG - 25B

NEIGHBOURHOOD BUSINESS CENTRES



CENTRAL BUSINESS DISTRICT



range extremely restricted, although both these limitations are removed however if the shops are in or near an upper class residential locality where a general merchandise store and a dry cleaners shop will also be found. In local business centres food stores also sell shoes, hosiery, stationery, cheap cosmetics and other haberdashary articles. Cloth shops also some times deal with ready made clothes, jewellery and money lending. These shops generally are shabbily kept having only small frontages and without any sign-boards to advertise the goods sold. Most of the stores in the local centres are operated by their owners but in cafe, cycle on hire shops, food and fuel shops owners do employ a few shop assistant. The local business centres reflect old pattern of business of the early stages of city's growth where shopping centres are not distinguished from residences and when there are only a few stores dealing a variety of business.

#### Neighbourhood Business Centres

Neighbourhood business centres are larger clusters of shops and stores along the intersections of traffic arteries with a sizeable flow of vehicular and pedestrian traffic. They sell goods of sufficient range and variety to save the customers unnecessarily long journey to the central business district. In Kanpur neighbourhood centres are generally clustered around an important temple or a mosque of a neighbourhood. There are eleven such markets in the city. Besides providing the whole range of services of the local centre, but on a larger and a more specialised scale, the neighbour-

hood centres add the following characteristic shops: cosmetics, ready to wear dresses, embroidery, electrical goods, hardware, paints and varnish, mirrors and glassware, leather goods, steel trunks, book<sup>s</sup>ellers and stationers, bangles and jewellery chemist, optician, watches, radio repair, cycles, crockery and cutlery store, bakery coupled with a restaurants and sweetmeats. The absence of shops dealing in sports goods, high quality toys, refrigerators and other costly electric goods, sewing machine, automobile and other things of similar character reflects the standard of living of the majority of the people in Kanpur, for these articles are beyond the means of a large section of the population in the areas served by the neighbourhood centres, which therefore concentrate on retailing inexpensive goods whether required regularly or occassionally.

By the standard of maintenance the shops are normally <sup>u</sup>superior to that in local centres. Shops selling similar commodities are generally found more or less in distinct group and contiguous rows of dealers in cloth, shoes, medicine, cosmetics, books, stationery, jewellery and the like can be observed along the streets of these centres. Despite some noticeable mingling of the sale of different wares such as crockery store which deals also in electric goods, specialisation here is fairly advanced. Although the owners personally supervise the management of their shops, they employ a number of shop assistants to attend to the large flow of customers.

Of the eleven neighbourhood business centres Parade is

the largest and unique in many aspects. By virtue of its situation in close proximity of upper income group residential localities like Civil lines and Swaroopnagar, where people maintain a good standard of living, it has become a specialised centre of business in superfine goods such as high order cosmetics, costly shoes, modern furnishing and superior decorative things. The sale of these goods has greatly increased since City Corporation has established a highly specialised market called Navin Market exclusively for the sale of these goods in this centre.

### Central Business District

The Central Business District or the core of the city of Kanpur is its functioning heart in which are located its highly specialised central functions which serve areas far beyond the municipal limits. It includes the principal retail and wholesale districts, banking and commercial offices and administrative district, see Fig.26<sup>I2</sup>.

### Principal Retail And Banking District

The Mall Road is the principal retail thoroughfare in Kanpur. It runs in an east-west direction through the middle of the inner city. A strong and compact commercial core consisting of the wholesale district is on the south, and the administrative district on the north of this thoroughfare. This thoroughfare is the only major road; it is extremely

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I2. In Fig.26, the boundary of the Central Business District of Kanpur has been marked with the help of traffic arteries which enclose the main business and administrative areas of the city.

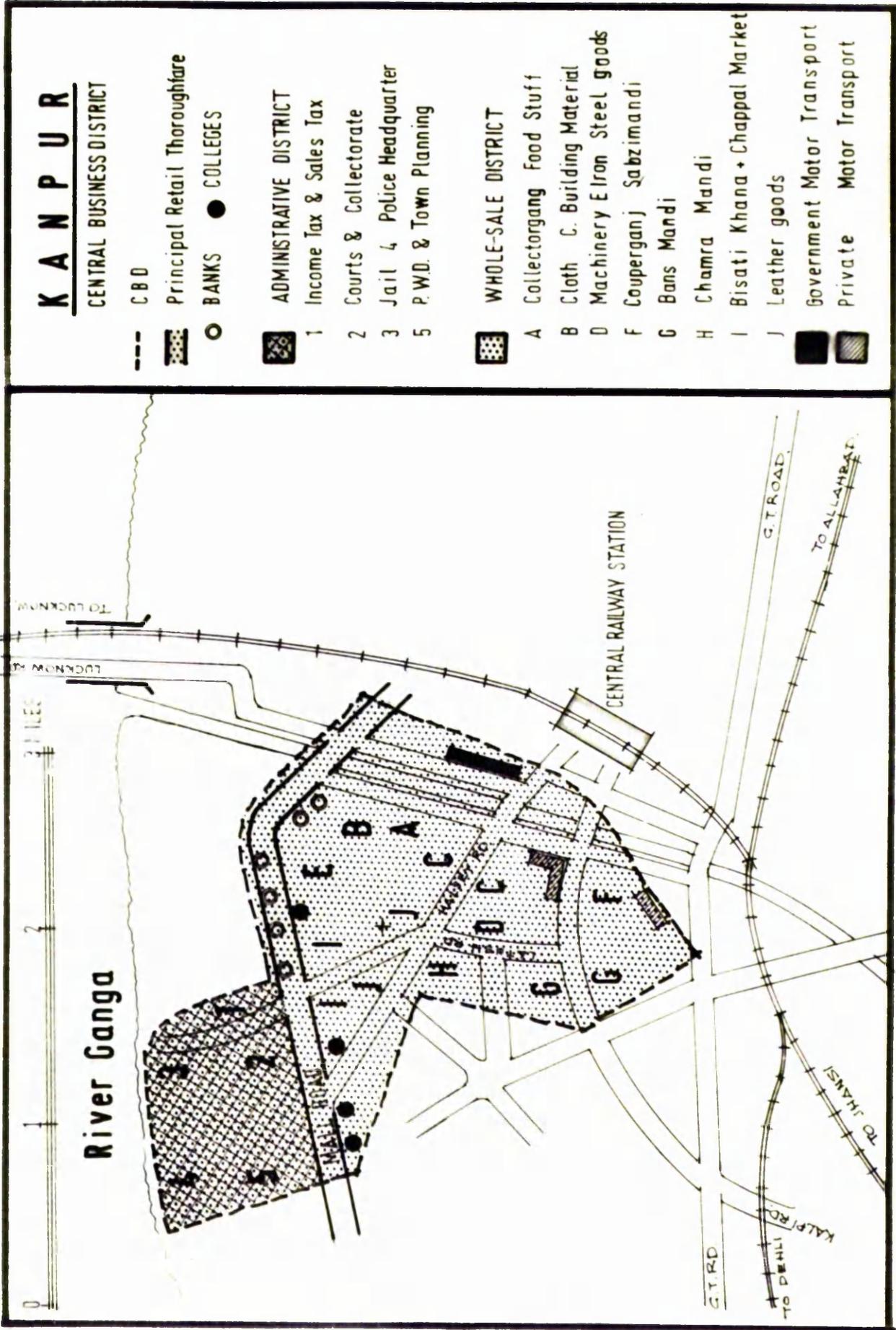


FIG - 26

open, and routes from different business quarters converge on it. With the growth and expansion of Kanpur during the recent years this retail thoroughfare has extensively developed and the marked changes are taking place in the original axis of retail growth.

The principal thoroughfare of Kanpur is the line of maximum traffic; the area with the greatest concentration of centralised services and the area of the highest land and rental values in the city. This retail district offers most of the central services found in Kanpur and in addition monopolises a number of others. It is markedly different from the neighbourhood business centres in its shop frontages, showrooms, window display and decoration, range of goods and services available; in its size of market and number of employees per shop. Despite a wide variety of goods offered by the neighbourhood centres they lack the exclusive choice of high quality and fashionable wares available in this district.

The principal retail district of Kanpur serves the middle and upper income group of the whole city. Costly radios and watches, automobile and steel furniture show-rooms, Government handicraft emporium, high quality electric goods, air-conditioners and refrigerators and other expensive gifts and provision (tinned goods) stores, fashionable tailoring firms and luxury hotels and bars are the exclusive monopoly of this district. Stores selling goods of daily need such as food grain, fruits and vegetables, meat, poultry and fish

and other associated with low income group are repelled by this district.

The shop groupings though are very similar to those of neighbourhood business centres but with a great degree of specialisation particularly in cloth stores, many of which sell only exclusive varieties of handloom cotton or silk cloth, fine mill cotton or woollen cloth. Few stores only sell different types of blankets. And some of these cloth stores sell only the fabric for tapistry and upholstery produced by local mills. On account of this specialisation the stores can offer a vast choice of goods with a varying range of prices which however, exclude the lower income group as regular customers.

Normally in western cities banks, insurance companies and other commercial offices and major educational institutions are excluded from the principal retail thoroughfare but in Kanpur they have gathered there in strength. Some of these activities such as banking and education were established there in the early 20th century, long before the development of retail business in this district. Their concentration has considerably magnified the scope and range of central services performed by this district.

Although land in this principal retail district of Kanpur is not being put to intensive commercial use compared with other business centres in the city, it has intensive use, evidenced by the absence of residential land use from this district. Residences used to exist but they have been

gradually converted and improvised for business and other associated centralised commercial uses. Before 1947 most of them were the houses and lodges of the Europeans; as a result, a great many buildings in the business section are still single storied. However, after 1947, the commercial activity in this district has expanded and an era of intensive use set in, resulting in keen competition for land and accommodation in this district. The face of this district is being largely transformed; building activity is now most prominent. Many old houses and bungalows are being torn down to be replaced by new multi-storied buildings, and these even while under construction are rented out in advance for commercial and allied uses; in other cases old buildings are being completely renovated. Single storied buildings are mostly occupied by banking and other commercial offices, while in double and more storied buildings the ground floor is mostly occupied by retail shops but do not extend into the upper floors which are generally used by commercial offices, bank and insurance offices, clinics and hotels.

#### Wholesale District

The wholesale district of Kanpur covers a compact commercial area on either side of Halsey Road on the south of the principal retail thoroughfare. It originated and developed near the railway station and railway goods sheds. Wholesaling has been so firmly tied to railways from the very beginning that despite of great crowd and congestion created by the addition of new distributing firms within the same limited

area of the district, there was hardly any movement to shift some of the wholesaling to other adjoining areas. In addition to railway, motor transport facilities are available here.

The principle articles of wholesale distribution from this district are food grain, spices, edible oils, fruits and vegetables, oilseeds, cotton, cloth, building material, timber, brassware, agricultural tools and implements, hides and skins, leather and leather goods and general merchandise.

Firms handling the grain, oilseeds, sugar and cotton are congregated in Collectorganj which is also one of the chief centres of truck transport agencies in Kanpur. The Halsey Road, leading to the neighbourhood business centre of Parade from the Central Railway Station, links the various wholesaling quarters of this district is the biggest bottleneck of traffic, frequently clogged by the continual influx of carts and trucks.

Collectorganj is one of the biggest wholesale markets in Uttar Pradesh for the business in grain, spices, sugar, oilseeds and cotton. It is handling all the city's requirements in food grains and spices. The market occupies about 6 acres near the railway station, lined on all sides with godowns for grains, oilseeds and cotton. All agricultural commodities are brought to Collectorganj market, which not only supplies the city of Kanpur but also exports to markets outside. All supplies are received through brokers of stockists who do not auction but sell direct to the wholesalers.

Generalganj is supposed to be one of the largest

wholesale markets of all types of cloth in northern India. The market is situated on the east of the Halsey Road near Collectorganj. The wholesalers stock coarse and fine mill cloth as well as mill and handloom silk cloth and brocade. Most of the coarse cotton mill cloth comes from the local textile mills. A large stock of fine and superfine cloth is imported from Bombay and Ahmadabad. Handloom silk and brocade cloth are commonly brought from Varanasi, Delhi and Agra. The retailers of Kanpur obtained a large portion of their stock from the Generalganj stockists. These stockists supply cloth to almost all parts of Uttar Pradesh.

A section of Halsey Road between Collectorganj and Moulganj is lined with stores of building material such as cement, sand, lime and coloured earth powders etc. A group of contiguous stores in this section belongs to the coal stockists, who stock both natural coal imported from Bihar and Bengal as well as locally supplied charcoal. Because of the building material stores and coal depots and the nature of their stock in respect of loading and unloading, this whole section of the Halsey Road is found generally blocked by carts and trucks.

The iron and steel goods, brass and copper wares and jute products wholesaling is concentrated in Hatiya on the north of Halsey Road between Generalganj cloth mart and Chowk market. Adjoining the Hatiya on the east of Moulganj is the great stationery mart and bullion market of Chowk.

Stockists of stationery also sell books and supply office stationery in bulk to various establishments all over the city and beyond.

Some of the localities within the wholesale district have names suggestive of wholesaling in a particular commodity such as, Sabzimandi (vegetable and fruit market), Bansmandi (bamboo and timber market), Chamramandi (hides and skin market) and Bisatikhana (market of general merchandise). The name of these localities are old and now they strongly specialise in the wholesale business of the commodity after which they are named.

Sabzimandi of Kanpur is situated in a plot of about 8 acres on the south of Halsey Road in Cooperganj close to the junction of inter-regional transport highways. This is one of the biggest fruit and vegetable markets in Uttar Pradesh. It deals with seasonal fruits and vegetables which are brought to the mandi direct from growers and are stacked in lots to be sold in open auctions by the stockists through brokers to the retailers. Of the total arrival approximately 50% is carried by bullock-carts, 40% by trucks and the rest by railways.<sup>I3</sup> Although the annual value of trade ranges between 5 to 6 million Rupees,<sup>I4</sup> the distribution of produce from this market is almost entirely within the city itself.

The entire locality of Bansmandi from Sabzimandi to Cooperganj railway goods shed is occupied by timber depots,

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I3. Source: Personal enquiry from few experienced brokers of Sabzimandi, Kanpur.

I4. Source: Kanpur City Corporation, Tax Department.

which obtain their supplies through forest contractors. They not only stock wood logs, sleepers, boards and bamboos but also sell building requirements such as doors and windows etc. Good quality timber like teak and shisham is commonly brought from Dehra Dun and central India. A large stock of timber is sold beyond the city in the district and outside.

Chamramandi in Farrashkhana is on the north of LaTouch Road. It is supposed to be the largest wholesale market in northern India for the business in hides and skins. Occupying a plot of about 10 acres, it is lined on all sides with large godowns for raw hides and skins. The hides and skins are collected and brought by the stockists own agents from all over northern part of the country and are put to open auction in the market. A large stock of hides auctioned are sold to the local tanneries, since there are 28 factories for tanning and leather finishing in Kanpur, which normally buy hides worth more than 15 million Rupees<sup>15</sup> annually. Almost all the stock of sheep and goat skins are exported to Agra, Calcutta and Madras.

Bisatikhana or market of general merchandise is a compact area on the west of Chowk round Moulganj. It comprises the following streets each of which is lined with shops specialising either in one type or few allied types of wholesaling: (1) Machlibazar for mirrors, glass, glasswares and cheap crockery; (2) Misribazar for haberdashery articles and hosiery; (3) Makhaniabazar for cosmetics and oriental

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15. Source: Association of Hides and Skins Merchants, Kanpur.

perfumes; (4) Meston Road for leather goods including footwear luggage articles and harnesses. A large section of a back street of Meston Road is devoted to the wholesaling of chappals (leather slippers). Kanpur supplies chappals to the retailers throughout India and even to foreign countries like Ceylon, Burma, Saudi Arabia, Aden and Kuwait etc. A large stock of chappals are now machine made in the small factories and are generally supplied to the stockists of the chappal market from where they are distributed throughout India, especially Deccan where people prefer chappals than shoes due to warm climate.

Much larger floor space is devoted to commercial use in this district than in other business districts. It is being extensively used and there has been considerable vertical expansion of business, especially in cloth and leather goods wholesaling and also in stationery and chappal markets. Almost all the buildings in wholesale District of Kanpur are two to three storied but the second and third floors are generally in residential use. The increasing intensity of business is leading to expulsion the residential uses from this district and second floor as well as back street houses are being fast converted into godowns and warehouses. Many new constructions purely for commercial uses have recently sprung up in certain quarters of the wholesale district. This wholesale district is actively growing but lacks the vigour and beauty of the principal retail district.

### The Administrative District

Although some Government offices are scattered in different parts of the city, there is a concentration of district and civil, state and central Government offices in one place what may be termed administrative district of Kanpur. This administrative district, situated between the river bank and the Mall Road, began to emerge as such during the early sixties of the last century, when the district and civil headquarters, as well as the courts of Kanpur district, were shifted here from the locality of Nawabganj after the Mutiny of 1857. Since then, a planned Civil lines, the residential locality of the officials, developed to the west of this administrative district. This district expanded more since 1947 and many new regional and State Government offices were added. Besides the old offices of revenue, courts and local bodies, a number of offices for income tax, education, health, transport and public works and housing departments were established here in recent years. Among the principal offices outside the administrative district are the directorate of industries, employment exchange, all India radio station (Kanpur) and the town hall.

### Industrial Land Use

Industrially Kanpur is very important. Besides cottage and service types of industry in almost all wards, there are many concentrations of large scale manufacturing industries (Fig.27). A large portion of land is therefore devoted to Government and private industries.

# KANPUR - INDUSTRIAL CONCENTRATIONS

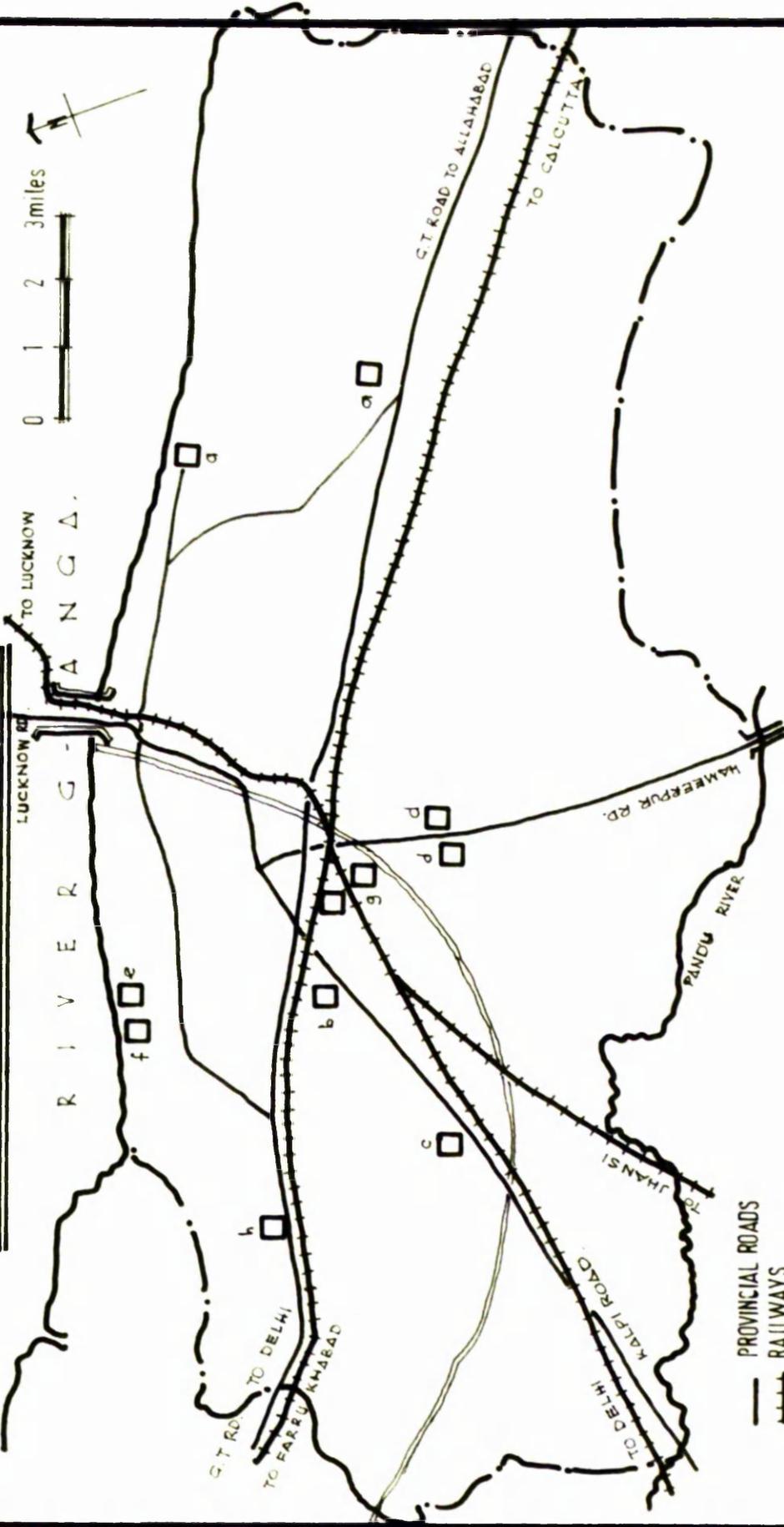


FIG - 27

In Kanpur 1707 acres of land are under industrial use excluding about 313 acres occupied by the Government defence factories. The existing total industrial land use acreage is therefore 1720, nearly 8% of the total built-up land of Kanpur

There were 424 registered industrial units (excluding defence installations) at Kanpur in 1961, occupying an area of about 800 acres out of the total land under industries, while the defence installations cover an area of 313 acres, and the rest 607 acres is under the use of unregistered units of cottage and service types of small industry.

There are eight main industrial concentrations of manufacturing industry including defence. They are:

Table-6: Industrial Areas And Their Location

<u>Industrial Locality</u>	<u>Location</u>	<u>Ward No.</u>
(a) Jajmau Industrial Area	Jajmau	34
(b) Fazalganj Factory Area	Kalpi Road	29
(c) Armapur Defence Industrial Estate	Kalpi Road	36
(d) Juhi Industrial Area	Hamirpur Road	35
(e) Civil Lines Industrial Area	River bank	6
(f) Sootarganj Power House Area	River bank	5
(g) Lakshampurwa Mill Area	Anwarganj	15
(h) Kalyanpur Industrial Area	Grand Trunk Road	36

Civil lines and Sootarganj industrial localities, which developed in late 19th century outside the main city, are now surrounded by densely populated wards; water consuming industries such as the manufacture cotton textiles and tanning and leather finishing are concentrated there. Proximity to river and power house assisted their development. Similarly Lakshmipurwa mill area in Anwarganj is an old concentration of oil mills and cotton ginning and pressing factories, which developed on the outskirts of Kanpur and which is now surrounded by heavily populated areas. Proximity to provincial roads and access to both Kanpur main line station and the Anwarganj metre guage station assisted its development. But Jajmau is one of the old industrial areas which, being far away from the city in the north-east is, from the land use consideration, ideally located for leather factories. Other industrial areas of Kanpur including defence are new. Their distinguishing feature is that they are fairly well planned. They are far removed from centre of commerce and population but close to the new labour colonies constructed recently by the Government.

#### Ubiquitous Small Industries And Services

The industries and services under this heading produce cheap goods or articles of daily consumption; or perform auxiliary services helpful in running the principal urban activities. They seek location amid active residential and commercial areas and are therefore widely dispersed. Their space requirements are small, being relatively unimportant, and they cannot compete with important retail shops and are

therefore found mostly in lanes and bylanes off the commercial streets. Their location also depends on the type of market they serve. The production of articles of cheap quality such as cheap handloom and hosiery, steel trunks, ordinary wooden furniture and cheap leather goods etc. is mainly confined to the western part of Kanpur and the units are normally situated in residential quarters from where they draw their labour. Handicrafts such as dyeing and printing or embroidery work command a city-wide market but since they require skilled labour, they are found near the source of such a labour force that is the commercial district round Parade and Moulganj. However, in some cases these workshops are also located in residential areas. Small size flour mills are widely scattered throughout the city of Kanpur. Auxiliary services such as engineering, polishing, printing, electrical and mechanical repairing are generally found in bylanes near principal commercial roads and around industrial centres. These industries and services are excluded from the principal retail thoroughfare of Kanpur. However they are found in local and neighbourhood business centres where they can compete for site with retail stores. The availability of a market is by far the most important factor governing the location of these industries and services.

#### Residential Land Use In Kanpur

In Kanpur city the land under residential use covers an area of about 6958 acres, 31% of the total built-up land, and includes private as well as Government owned residential

houses but excludes the residential houses under defence and railway colonies.

Despite the major percentage of land devoted to residential use, the city is confronted with numerous types of housing problems, such as shortage of houses, slum clearance and general deterioration of housing due to various factors.

### Housing Shortage

The shortage of houses in urban areas is a national problem. In Kanpur this problem represents the legacy of the dramatic growth of population during the Second World War, influx of refugees from West Pakistan in the later years and of the haphazard expansion of the city over the past decades.

The magnitude of the problems that confronted the city during the years of Second World War when the population almost doubled itself was considerable. The housing shortage in the city area continued to be a chronic feature. The executive officer of the Development Board Kanpur commented on the situation in 1947: "the extent of overcrowding could be judged by the incredible average figure of 32 persons per house in the present built-up area"<sup>16</sup>.

A retrospective and prospective view of the housing problem in Kanpur city could be had by comparing the rate of increase in the population with the rate of housing activity in recent decades. A number of structures in the form of houses, ahatas and quarters were developed on the allotted, pre-developed as well as on new areas of the city under

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16. Cawnpore Development Board, Report-1947, op. cit., p. 8.

various civic authorities in different periods of time between 1920 and 1963. The number of these constructions at several points of time since 1920 as given in table 7, is a fair indication of the rate at which the residential land use expanded in the city.

Table-7: No. Of Houses Constructed In Kanpur City;

1920-63 Excluding 1950-57<sup>I7</sup>

<u>Type Of Construction</u>	<u>1920-1933</u>	<u>1920-1938</u>	<u>1920-1943</u>	<u>1920-1949</u>	<u>1958-1963</u>
Houses	2,072	5,036	7,592	8,569	9,684
Ahata <sup>I8</sup>	186	447	627	749	-
Quarters	3,228	9,283	11,340	15,598	19,138
Total	5,486	14,766	19,559	24,916	28,822

Table 7 clearly shows that the building activity in the city, which spurted between 1933-38 ebbed in later years, but the rate of construction from 1958 onwards has been high again, particularly in respect of labour quarters.

The following table presents the rate at which the building activity progressed within the city.

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I7. Source: Kanpur City Corporation, Building Department.

I8. An ahata, according to the Development Board Kanpur byelaws is a group of tenements not less than nine in number and each of them having two or less than two rooms intended for human habitation.

Table-8: No. Of Houses Constructed In Kanpur City Between  
Certain Intervals Of Time, 1920-1963 Excluding 1950-57<sup>19</sup>

<u>Types Of Construction</u>	<u>1920-33</u>	<u>1933-38</u>	<u>1938-43</u>	<u>1943-49</u>	<u>1958-63</u>
Houses	2,072	2,964	2,556	977	1,115
Ahats	186	261	180	122	-
Quarters	3,228	6,055	2,057	4,258	3,540
Total	5,486	9,280	4,793	5,357	4,655

The figures in table 8 clearly reveal that house construction declined considerably in the periods 1938-43 and 1943-49 while the population on the other hand increased at a tremendous pace. While most of the constructions rose in the earlier years as a result of the efforts of private builders, the reverse has been the case since 1943. Scarcity of building material and the controls on the distribution of iron and cement must have been discouraging factors for the private builders. To reduce the problem to more precise terms, the number of houses in the city increased only by about 30,000 between 1920-1949 and 1958-1963, whereas the population in same period increased by about 600,000. Thus extremely overcrowding has resulted.

According to the Department of Town Planning, Kanpur, the total number of houses in Kanpur city were about 110,000<sup>20</sup> in 1961 and the population of the city area was 686,092 in the same year. Extremely overcrowded conditions is not clearly

19. Source: Kanpur City Corporation, Building Department.

20. Kanpur: Department of Town Planning, Uttar Pradesh, unpublished Survey Report on Housing, p. 13., 1961.

indicated by these figures, nevertheless they do suggest that for the most part four or more families shared a house. The municipal area of Kanpur had 686,092 population living in 110,000 houses. Taking four constituting one household on the average, the total number of households in the area is 171,523. Thus it is irrefutable that in 1961 Kanpur city had a shortage of nearly 62,000 houses.

Out of the total number of houses in the city nearly 70% are in northern part of the city. Yet house building was greatest in southern part where from 1958 to 1963 more than 3,000 new dwellings appeared, nearly three times the number constructed in northern part. But the type of construction in southern part has predominantly been two to three rooms quarters while in northern part multistoried buildings or modern bungalows were mostly constructed.

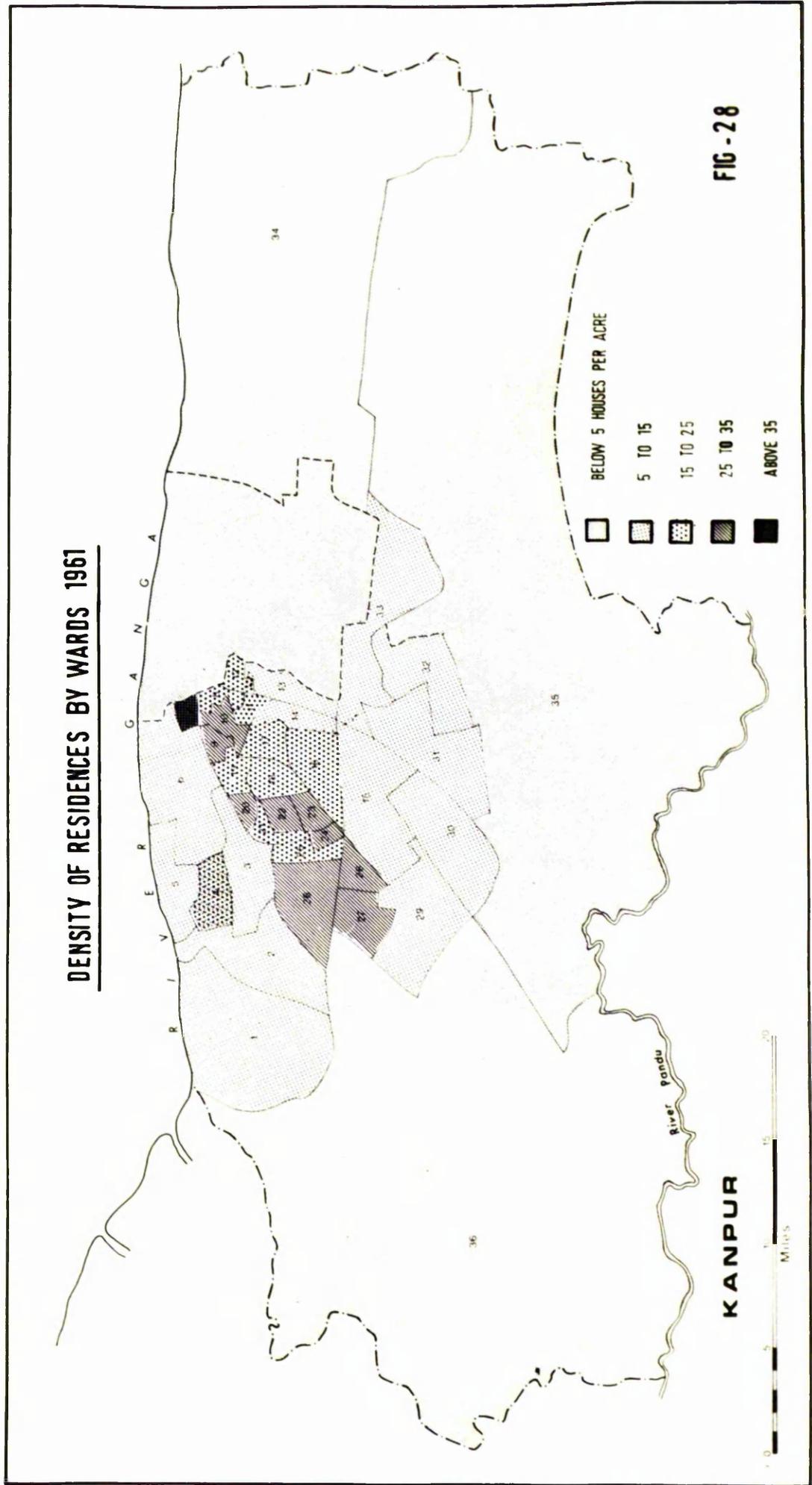
Average density of dwellings in Kanpur city has very slightly increased in the last decade, from 2.1 houses per acre in 1951 to 2.7 houses per acre in 1961.<sup>21</sup> These figures indicate no acute overcrowding in the city, for a density of 15 houses per acre has been recommended by the Department of Town Planning, Uttar Pradesh. Nevertheless an examination of the density of the residences by wards reveals a less satisfactory situation (Fig.28).<sup>22</sup> The problem of overcrowding is more acute in the central city where the density ranges 20 to 60 houses per acre, and where almost all the wards very

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21. Unpublished Survey Report on Housing - 1961, op. cit., p. II.

22. Ibid., Table-XII.

# DENSITY OF RESIDENCES BY WARDS 1961



much exceed the standard residential density recommended by the Department of Town Planning, Uttar Pradesh.

### House Conditions

The popular distinction between pakka and kachcha still holds, the former being well built houses of brick and plastered with lime or cement and occupied by well-to-do families, whilst the latter are of poor construction and are associated with poor and low status groups. The distinction between them forms one basis for identifying the status of residents in different parts of the urban area.

The social survey of Kanpur city classified the households into four categories based on the different types of residential localities with varied degree of the availability of the amenities. The following is the percentage distribution of households under each category.

Table-9: Percentage Distribution Of Households In

Different Types Of Localities In Kanpur City<sup>23</sup>

<u>Not given</u>	<u>Civil area</u>	<u>General area</u>	<u>Slum area</u>	<u>Business area</u>
5.80	4.24	60.77	24.23	4.96

The classification in table 9 stresses the points that, 24% household are in slum areas and a major portion of the families constituting 60% live in what can be described as general areas, with variegated environmental patterns and differing standards of civic amenities. Only a small minority live in decent localities known as civil areas, which have all

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23. D.N. Majumdar: Social Contours of an Industrial City, Social Survey of Kanpur, 1954-56, p. 99., Bombay, 1960.

urban amenities.

According to the same survey nearly 18% of the households live in their own houses; 2.5% live in houses belonging to their employers. The rest are rent paying tenants paying varied rents; these are given in the table below:

Table-10: Owners Of Houses And Tenants: Percentage Distribution Of Tenants According To The Rent Paid By Them<sup>24</sup>

<u>Not given</u>	<u>Upto Rs. 5 per month</u>	<u>Rs.5 to 10</u>	<u>Rs.10-20</u>
3.44	30.04	25.98	10.34
<u>Rs.20-50</u>	<u>Rs.50 and above</u>	<u>Own houses</u>	<u>Rent-free Residences</u>
7.53	2.14	17.97	2.56

As can be seen from the table 10, 30% of the families pay a rent of less than Rs. 5 per month; nearly 66% pay a rent of less than Rs. 20 per month. This by itself is a measure of the low standard of living among a large section of city's population and it also reflects the low condition of houses in the city.

The general housing condition in Kanpur is still far from satisfactory. There are overcrowded and insanitary areas, numerous, old and dilapidated dwellings, shabby ahatas and kachcha tenement houses which have all created slums in the city.

#### Slums In The City

Slums are social hazards and symptoms of urban disintegration. A typical Indian slum has been described as, "chaotically occupied, unsystematically developed and gener-

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24. D.N. Majumdar: op. cit., p. 99.

ally neglected area which overcrowded with ill repaired and neglected houses".<sup>25</sup> This is true of Kanpur. There are many portions of Kanpur city containing poor quality residences, where a great deal of congestion is created by haphazard construction of houses which have inadequate sanitary arrangements. Kanpur city had two types of slums: (a) hutments and (b) pakka slums. Both types are basically the result of hazardous and unplanned development of houses. In 1961 there were more than 70,000<sup>26</sup> slum dwellers in the city or nearly 9% of the total population. The slum areas in Kanpur are mostly found in old labour localities.

#### Housing Schemes

Under the Town Improvement Bill of the Government of India, the Improvement Trust of Kanpur was founded in 1919 for the planned development of Kanpur city. It was replaced by the Kanpur Development Board, which looked-after the housing development in the city until 1958 when the City Corporation came into existence, and the Development Board was merged therewith.

Under the Kanpur Improvement Trust, 1920 to 1944 and the Kanpur Development Board, 1944 to 1958 thirteen slum clearance schemes were completed and seven new residential localities covering an area about 1200 acres created. By the schemes of the Trust and Board nearly 25,000 houses were

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25. Report on the, "Slum Clearance Seminar"- Bombay 1957; extract taken from the Survey, Report on Housing - 1961, p. 4., op. cit.

26. Survey Report on Housing - 1961, p. 4. op. cit.

constructed in the city.

The Kanpur City Corporation, from its establishment until 1963, completed 3 slum clearance schemes and altogether constructed 1,115 houses for middle income group and about 3,500 quarters for industrial workers. These workers quarters were constructed under the Industrial Housing Scheme of the Government of Uttar Pradesh. The principal areas where these industrial housing schemes were executed have been mostly in southern part of the city. Houses constructed under such schemes are fitted with essential conveniences, have adequate floor space per head and some open space around them. The main purpose of the Government housing scheme is to encourage the development of new residential neighbourhoods in order to relieve the central city from congestion and overcrowding.

#### Summary

The residential, industrial, commercial and other uses of land in the city of Kanpur are essentially dynamic, like any other growing urban centre and are pressing through a phase of change due to change in the social and economic structure.

The land use pattern in the main built-up city shows, on the whole, a well developed segregation by function. But there is not the clear-cut segregation of residential land use from business and industry, particularly in the areas of early origin. This shows the persisting influence of a mediaeval pattern of urban living and also reflects the common fact that the early establishments of residential

localities have chiefly been dictated by the traditional human scale of commuting, namely a walkable distance.

The great changes in the existing land use pattern can be noticed from the recent development of planned residential neighbourhoods far removed from the centre of commerce and separated from the new industrial estates. This is also shown by the exclusive growth of commercial uses on the major retail thoroughfare and by the vertical extension of business in the wholesaling quarters of the city.

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