"REGIONAL STRUCTURE OF LONGITUDINAL - VALLEYS IN CENTRAL ARAVALLI REGION".

Dissertation submitted in partial
fulfilment for the degree of
Master of Philosophy
in
Regional Development

BY

NAND LAL GURJAR

Under the Supervision of

DR. S.K. NANGIA

CENTRE FOR THE STUDY OF REGIONAL DEVELOPMENT
SCHOOL OF SOCIAL SCIENCES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI

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CENTRE FOR THE STUDY OF REGIONAL DEVELOPMENT
SCHOOL OF SOCIAL SCIENCES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI

It is certified that the dissertation, entitled 'Regional Structure Of Longitudinal Valleys In Central Aravalli Region', submitted by Shri Nand Lal Gurjar in fulfillment of six credits out of the total requirements of twentyfour credits for the degree of Master of Philosophy (M.Phil.) of the University, is his original work according to the best of my knowledge and may be placed before the examiners for evaluation.

Chairman

Professor & Head
Centre for the Study of Regional Development
Jawaharlal Nehru University
NEW DELHI

28.6.75

Supervisor

CONTENTS

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(NAND LAL GURJAR)

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CHAPTER - I

INTRODUCTION

The longitudinal valleys in Central Aravallis are the life-lines of the region and draw our attention because of the prominent role they have played in its socio-economic history. They bear the testimony of the ancient physical, as well as, cultural-landscape. These valleys were parts of Ajmer Merwara in British Raj but have undergone radical administrative changes in the post Independence period. The longtudinal valleys have become the constitutent parts of Ajmer District, having a physognomic unity in their alignment and structure, and stand out as a distinct geographic unit.

The Area of Study:

The region lies between 25° 41' to 26° 54' North and 73° 55' to 75° 12' East. It has an area of about 5310 Km^2 i.e. 1.55 per cent of the country, and has a population of about 909,021 (1971) i.e. 3.54 per cent of Rajasthan state and 0.17 per cent of the India's population.

Administratively the region covers three tehsils of district Ajmer in Rajasthan, namely, Kishangarh, Ajmer and Beawar. This region covers 62.63% of the area of the district of Ajmer and 82.64% to population. It has a population density of 167 persons per Km^2 compared to 75 persons in Rajasthan and 162 persons in India. The

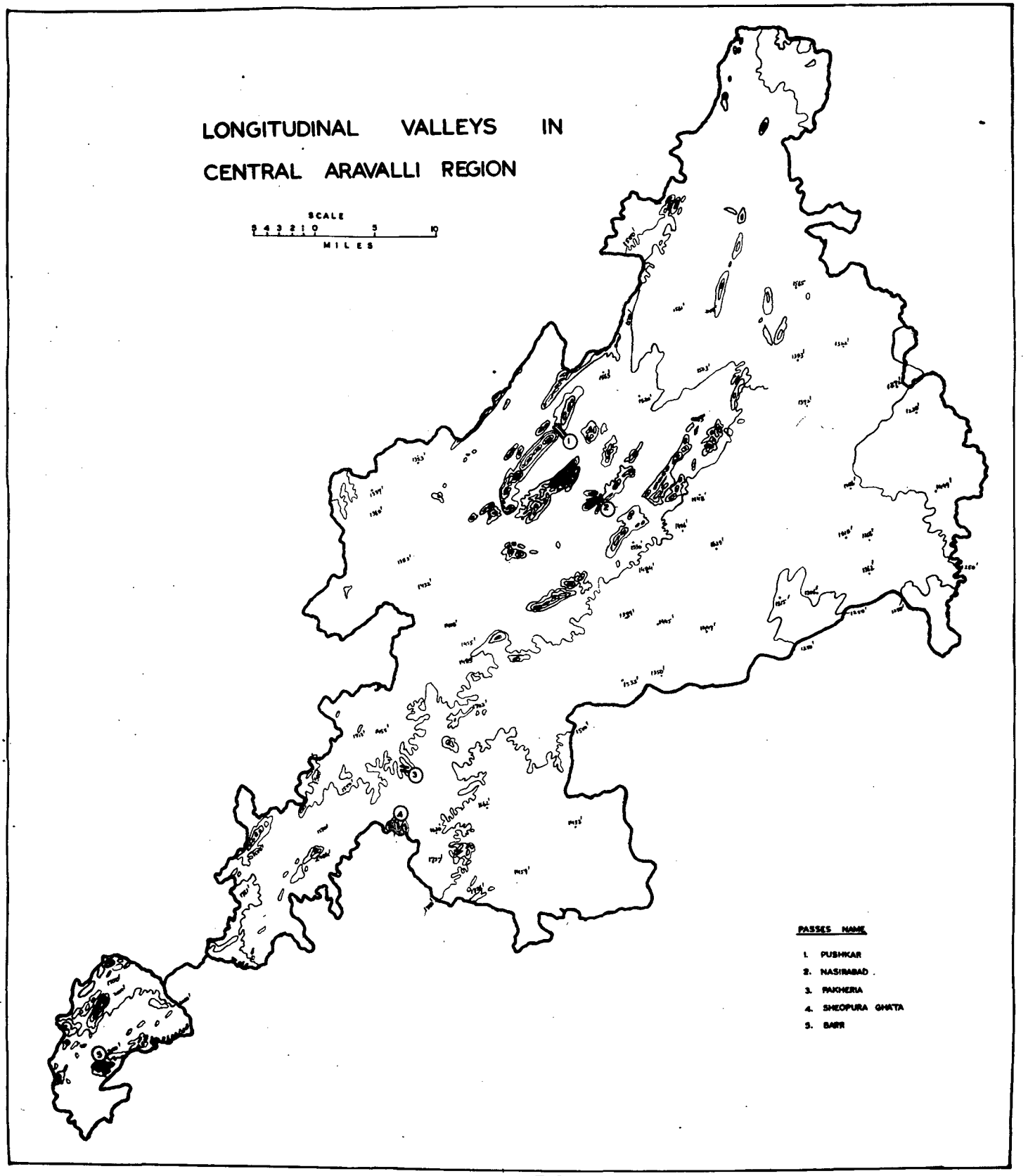

LONGITUDINAL VALLEYS IN
CENTRAL ARAVALLI REGION
SCALE
MILES
PASSES NAME
1. PUSHKAR
2. NASIRABAD
3. PAKHERIA
4. SHEOPURA GHATA
5. BABR

FIG. 1.1

TABLE NO. 1.1

Some Aspect of Longitudinal Valleys in Central Aravalli Region - Rajasthan and India:

S.NO:	Title:	Longitudinal Valleys in Central Aravalli Region:	Rajasthan	India
1.	Total Area (in Km^2)	5310	342214	3276141
2.	Total Population	909021	25765806	547949809
3.	General Density	167 persons per Km^2	75	167
4.	Scheduled Caste Population	150904 (16.6%)	4075580 (15.81%)	79995896 (14.59%)
5.	Schedule Tribes Population	7291 (0.80%)	3125506 (12.13%)	38015162 (6.93%)
6.	Sex Ratio	905	971	929
7.	Literacy Rate	35.70%	19.07%	29.34%
8.	Total Workers	303693 (33.40%)	8048859 (31.23%)	180373399 (32.19%)
9.	Dependency Ratio	1.99	2.2	2.0
10.	Total Settlements	689	33462	--

literacy level is 35.7 per cent compared to state's and national level of 19.07 and 29.34 per cent respectively. The general sex ratio of the region is 905 where as it is (910 in district) 971 in Rajasthan and 929 in country.

The human settlements are generally small and distributed severally in the valleys; they are clustered in the southern part while are relatively evenly distributed in the eastern and north eastern part. The number of rural and Urban settlements are 683 and 6 respectively. The sex Urban centres are Ajmer, Pushkar, Nisrabad.

Nearly 17.4% of the population belong to the backward class, of which 16.6% belong to scheduled castes and 0.80% to scheduled tribes. The scheduled caste people are primarily the agricultural labourers while some are also the cultivators. The dependency ratio is 1.99 which is equal to the state and national average.

Delimitation of the Region:

The Arvallis form an area of great physical complexity and stand out as a distinct physiographic unit in Western India. The region extends from Gujarat to Delhi (430 miles). The main southwest/northeast strike is remarkably regular, though the steep front to the aeolian plains of the Thar is formed of discontinuous and sometimes echelonned ridges. Around Udaipur, the Aravallis reach their culmination in a great node of spurs and

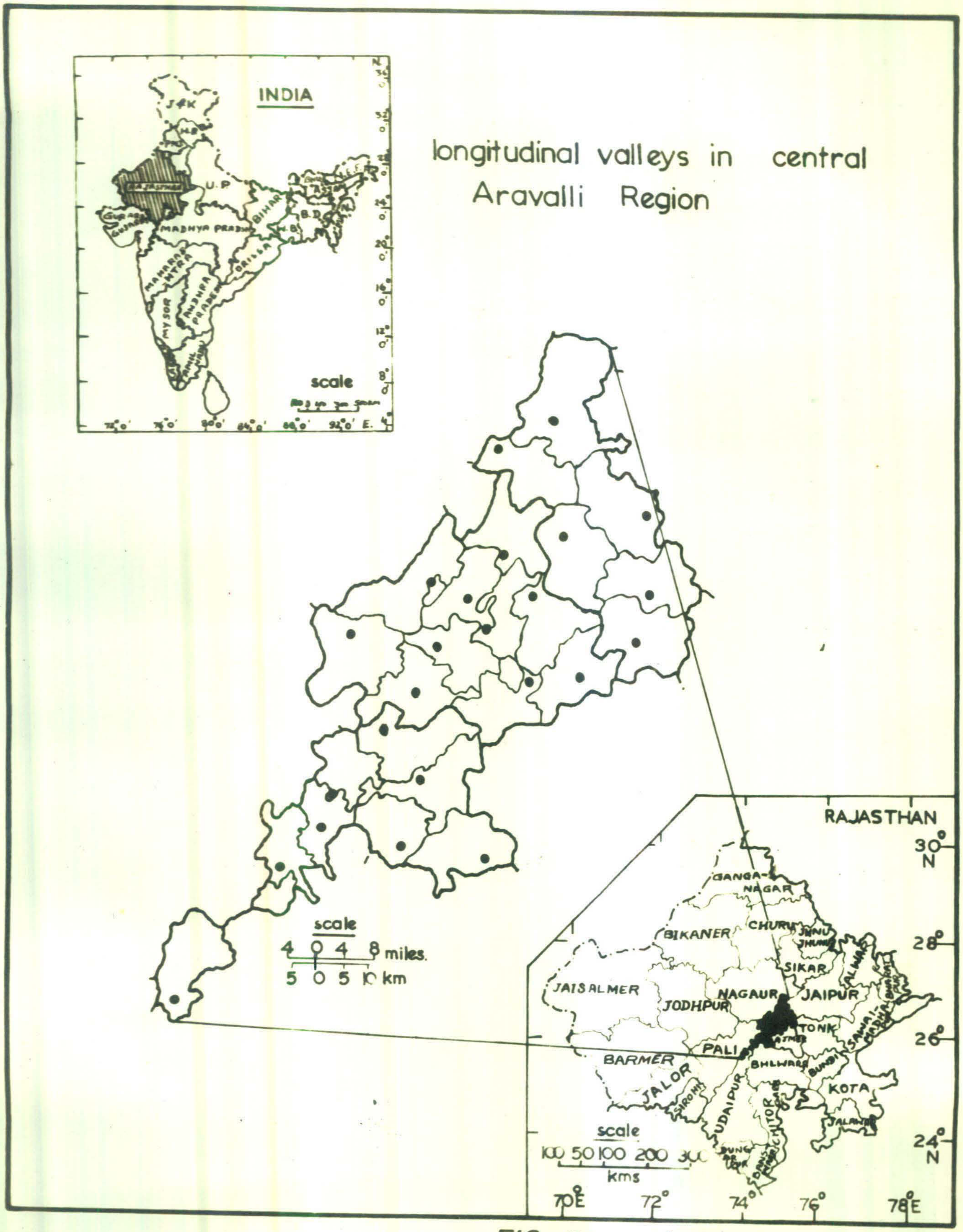
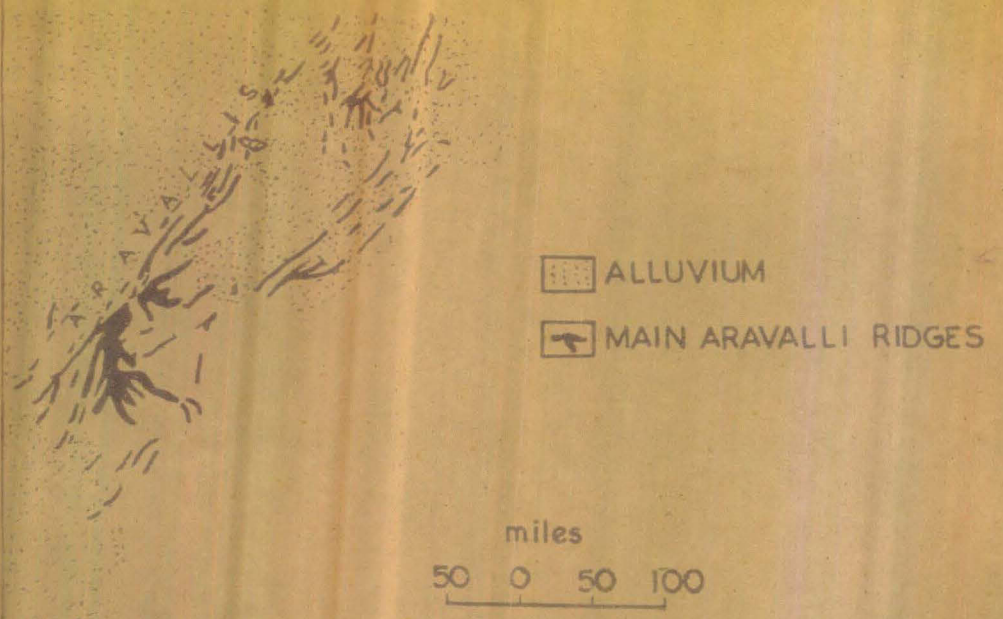

longitudinal valleys in central Aravalli Region
INDIA
J&K
U.P
BIHAR
MADHYA PRADESH
ORISSA
scale
scale
4 0 4 8 miles.
5 0 5 10 km
RAJASTHAN
GANGA-NAGAR
BIKANER
CHURU
SIKAR
JAISALMER
JODHPUR
NAGAUR
JAIPUR
TONK
PALI
BARMER
JALOR
UDAIPUR
KOTA
scale
100 50 100 200 300
kms
30° N
28°
26°
24° N
70°E
72°
74°
76°
78°E

FIG. 1·2

ARAVALLIS STRUCTURAL ELEMENTS



THE ARAVALLIS AT AJMER

1: Streams (a) perennial, (b) Seasonal; 2: Over 2,000 ft.; 3: (a) Seasonal and (b) Perennil tanks, (C) bunds; 4: Cultivation; 5: Settlement; 6: Sand-dunes creeping in from Thar.

SOURCE: 'INDIA PAKISTAN & CEYLON, The Regions' by: O.H.K. SPATE, A.T.A. LEARMONTH AND B.H. FARMER (1967)

FIG. 13

curving ridges; thence another series of ridges strike off east northeast along the great boundary fault.

The whole area underwent the process of planation in the later mesozoic and was afterwards warped, so that in Udaipur, summits are around 4,000 ft. and south of Delhi around 1,000. A probable second peneplain (on rather softer schists and gneisses) is found on the plains east of the western axis and in the strike valleys; much of it is covered by a thin veneer of older alluvium, which according to Heron[1], has itself been recently peneplaned. "These Tertiary and Pleistocene peneor pediplains meet about 1,400 ft. (427 meter) in central Rajasthan. West of the main axis, the alluvium is at about 1,00 ft. and smothered by the blown sand from the Thar. All the hills are dissected by generally dry but at times torrent filled nullahs and are surrounded by pedimentfans"[2].

From the natural region of Aravallis given by O.H.K. Spate (Fig. 1.4). The stretch of the range can be divided in to main three subregions: (i) North of Sambhar lake ranging upto Delhi, flanked by sandy deserts of Jhunjhunu on the west, and the horse-shoe pattern of Alwar

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1. A.M. Heron, 'The physiography of Rajputana', Proc. 25th Indian Science Congress (Calcutta, 1938), Part II, 119-32. The physical account above is based on this excellent presidential address to the geography section of the congress.

2. India, Pakistan & Ceylon - the Regions; by O.H.K.. Spate, A.T.A. Learmonth and B.H. Farmer. p.618.

hills connected towards the northern apex. (ii) It is constituted by the longitudinal valleys of central Aravallis. The region has been separated from the west by the Nag Pahar and its off-shoots in the east and south west, while in the south by Deogarh Madariya hills of south Aravalli on the one hand and the river Khari on the other, which is the northern boundary of Mewar region. (iii) The third region is south of Beawar tehsil, stretching upto border of Gujarat. This part is surrounded by marshy Kutch to the south west, and the uplands of Hadowti to the east.

Similarly, the region has been separated in the north-east by the Malpura-Upland which has been separately identified by O.H.K. Spate[3]. The region comprises of tehsils of Kishangarh, Ajmer and Beawar in the district Ajmer.

Objectives of the Study:

The main purpose of the study is to understand the geographic personality of the region by analysing its various components like historical, physical, socio-economic etc. such a study would also enable us to identify different levels of development attained by different parts of the region based on their resource utilization and the availability of social & public amenities. This can help

3. India, Pakistan & Ceylon - the Regions; by O.H.K. Spate, A.T.A. Learmonth and B.K. Farmer. pp.619-20.

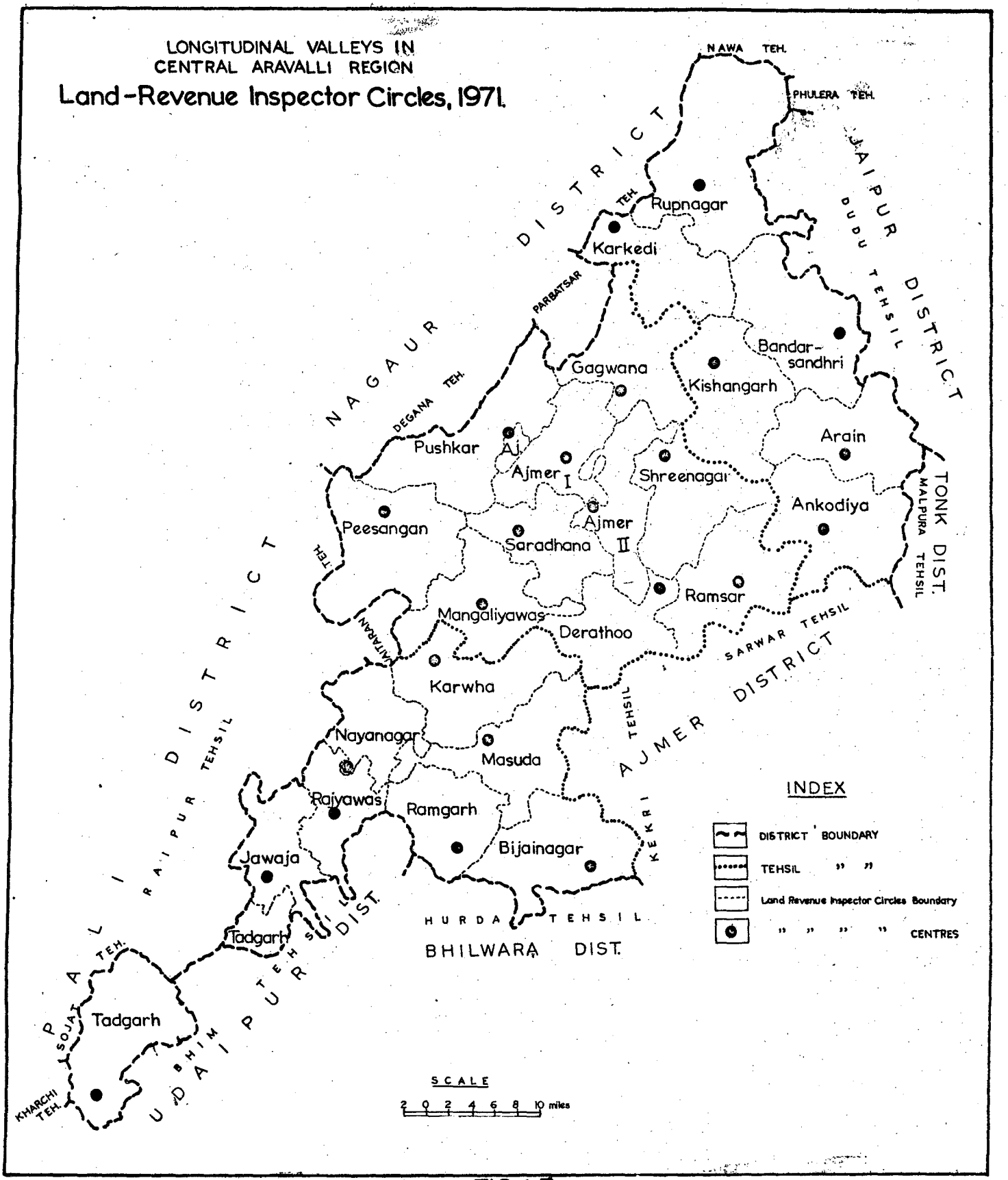
LONGITUDINAL VALLEYS IN
CENTRAL ARAVALLI REGION
Land-Revenue Inspector Circles, 1971.
NAWA TEH.
PHULERA TEH.
JAIPUR DISTRICT
DUDU TEHSIL
NAGAUR DISTRICT
TEH.
Rupnagar
Karkedi
PARBATSAR
DEGANA TEH.
Gagwana
Kishangarh
Bandar-
sandhri
Pushkar
Aj
Ajmer I
Shreenagar
Arain
Peesangan
Ajmer
II
Saradhana
Ankodiya
TONK DIST.
MALPURA TEHSIL
TEH.
Ramsar
Mangaliyawas
Derathoo
SARWAR TEHSIL
AJMER DISTRICT
SAMBHARAN
Karwha
Nayanagar
Masuda
TEHSIL
KEKRI
Rajyawas
Ramgarh
Bijainagar
Jawaja
HURDA TEHSIL
BHILWARA DIST.
Tadgarh
PALI DISTRICT
RAIPUR TEHSIL
SOJAT TEH.
Tadgarh
UDAIPUR TEHSIL DIST.
BHIM
KHARCHI TEH.
INDEX
DISTRICT BOUNDARY
TEHSIL " "
Land Revenue Inspector Circles Boundary
" " " " CENTRES
SCALE
2 0 2 4 6 8 10 miles

FIG. 1·4

us in formulating programmes for further development in the region.

Data Base:

The published data of the census and other organisations form the main source of information. For instance, the climatic data is obtained from the Indian Metrological Department (IMD), the population & occupation data from the census and the land-use data also from the district census hand books etc. Besides, the historical background is obtained from Historical Records.[4] At places maps published by the survey of India have been used for data - generation as in the analysis of geological structure, drainage pattern and settlement pattern.

The data have been collected at three levels of unit analysis, viz; at Tehsil level, land-revenue Inspector circle level (one land Revenue Inspector circle consists of 20 to 40 villages) and at village/town level. Most of the analysis in the text, however, is based on Inspector circle level.

Methodology:

Various statistical and cartographic techniques have been applied to analyse various physio-socio-economic aspects of the region. The morphometric analysis of the

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4. The material available in various ancient books like the Puranas, Ain-i-Akbari, Gazetteers and old records.

drainage patterns in the region has been done after Strahlar's work in the field. The analysis of the rainfall dispersion and its variability is based on Crowe' method. The distribution of demographic and socio-economic phenomena have been shown by quartile and grouping method. Their concentration has been worked out through location quotient method. The settlement patterns have been identified by Nearest Neighbour Distance method. In the last chapter, the composite index of the different indicators has been formed through location quotient method and the inter-relationship among the variables have been analysed by co-efficient of co-relation technique. Beside these statistical methods, various cartographic techniques, such as Isopleth, choropleth, dispersion, straight line measurements etc., have been applied to highlight the results of computation.

Scope and Plan of the Study:

The study has been divided into seven chapters including introduction. The second chapter unfolds the historical background of the region. Various physiographic aspects, such as geology, relief, drainage-pattern, climate, soils and vegetation have been dealt with in the third chapter. Chapter four deals with the basic demographic aspects and the availability of various social amenities i.e., educational, medical, power supply,

drinking water, transport and communication. The fifth chapter deals with the economic structure of the region, which has been studied under two heads viz; the occupational structure of the workforce, and the patterns of landuse with special reference to agricultural land-use. The distribution pattern of the settlements in the region has been identified in the sixth chapter. In the last chapter, an exercise has been done to identify the interrelationship among some of the socio-economic indicators discussed in the earlier chapters. This is followed by an exercise on the identification of subregions with different levels of development based on a composite score for number of indicators selected to identify such levels.

CHAPTER - II

HISTORICAL BACKGROUND

INTRODUCATION:

The area of the longitudinal valleys in the Central Aravalli region forms a part of the central Rajasthan. This state, which is also named as 'Rajwara', 'Raithan' or 'Rajputana', signified the 'abode of Kings.' The area under study, has faced many ups and downs during the course of its long history. The imoortance of the area dates back to the Puranic period and the process can be traced through medieval to the recent period. A brief account of its historical heritage can be presented as follows:

1. Ancient Period:

The area has been inhabited from the dawn of the civilization in the coutry. One of the earliest Brahmi inscriptions, found in the Bhilot Mata temple (Barli village) and various findings at Chosla and Samelia show definite links of the region with Mohan-Jodaro civilization.[1]

1. (i) The geographical evidence, available in the Puranas prove the area, covering Pushkar and its surroundings, as the most sacred region in Aryavarta[2].

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1. Dhoundiyal, B.N. 'Rajasthan District Gazetteers - Ajmer' (Ajmer; March, 1966), pp. 29-51.
2. Ali, S.M. 'The Geography of the Puranas' (PPH; Delhi 1973), p.2

It is one of the nine sacred Aranyas (forests) mentioned in the Devi Purana. According to the Padma Purana, Brahma - the creator - found this place suitable to perform a Yajna. The performance of penance by Vishwamitra at Pushkar and the visit of Menaka - an apsara - to take bath in the sacred water of the same place, have been mentioned in the famous epic of the Ramayana.[3]

The Mahabharata narrates the programme of travels of Maharaja Yudhisthira, in which the pilgrimage to Pushkar has also been incorporated.

1. (ii) With the rise of Buddhism, Pushkar became a famous centre of Buddhist faith and learning, like Mathura, Varanasi and Gaya. The stone inscriptions of the Buddhist Stupa at Sanchi (M.P.) reveal the fact that Pushkar was a holy town in the 2nd century B.C., but with the decline of Buddhism in India, the centre's importance also started declining.

1. (iii) During the Chauhan period, the history of the region remained rhythmic to the rise and fall of the Chauhan (Chahman) rulers of the northern India. The Chauhans came to Rajputana from Ahichhatrapur in 6th or 7th century A.D. and established the region of Sapadlaksha with the first capital at Sambhar town which is situated adjecent to the northern most boundary of the region.

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3. Valmiki Ramayana, Shloka 28 of Sarga 62, and Shloka 75 of Sarga 63.

Traditionally, the founding of the city of Ajmer and the Taragarh is attributed to the Chauhan King Aja - a descendant of Anhal. But the historians have different opinions about the kind and his time. While Dashrath Sharma, identifies Ajayraj of the 12th century A.D., as the kind Aja, H.B. Sarada, on the other hand, holds the view that it was Ajaypal of the 6th century A.D., who built the city and the fort and Ajayraj made only addition to the town in the 12th century A.D.[4]

Among various chauhan rulers Arnoraj (1133 to 1151 A.D.), Vigrahraj IV (1151 to 1164 A.D.) and Prithviraj II (1170 to 1192 A.D.) need special mention. Arnoraj gave a crushing defeat to the foreign invaders - Turuskas and constructed the famous lake of Anasagar. Vigrahraj IV of Bisaldeva founded a number of towns and constructed a lake known as Visalsar (Bisla). Prithviraj is, probably, the most famous king of the Chauhan dynesty. He is reported to have inflicted many defeats upon Mohammad Ghori, but was defeated at Tarain in 1192 A.D. In 1194 (Vaisakha, V.S. 1251), "Ajmer finally slipped from the hands of the Chauhan rulers and with it the curtain was hung upon the five hundred years old history of the Kingdom of Sapadlaksha.[5]

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4. D.G. Ajmer, p.39
5. Op. Cit., p. 51

2. Medieval Period:

2. (i) Qutb-ud-din Aibak, who inherited the Indian conquests of Ghori in 1206 A.D., made this region a part of the Turkish conquests. After Aibak's death in 1210 A.D., the region was ruled by Iltutimish and Balban. But Balban's death in 1287 A.D., resulted in the defeat of the turks through Hammir Dev Chauhan of Ranthambhor, who ruled over the region till he was defeated in 1310 A.D. by Alauddin Khilji.

2. (ii) The period of next 250 years in region was marked with turmoil. At one time the region became a part of Mewar, but later it was put under the possession of the Malva rulers. Rana Sanga of Mewar again conquered the region and it remained as a part of the Mewar state upto 1533 A.D. Rao Maldev of Marwar, ruled the area for nearly 24 years and then the region fell into the hands of Akbar and from 1561 to 1730 A.D., for a period of 170 years, Ajmer remained an integral part of the Mughal Empire.

2. (iii) Akbar's Period: (1556 - 1605) - The present description is based upon the records available in Abul-Fazal's 'Ain-i-Akbari', which contains substantial material about the ten Subas in Akbar's empire.[6] Only the Sarkar Ajmer of the Suba Ajmer has been taken into condideration as whole of the region under study was

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6. Abul Fazal, "Ain-i-Akbari', (Translated by H.S. Jarrett) Calcutta; Asiatic Society, Bengal, 1897, Vol. II p. 273

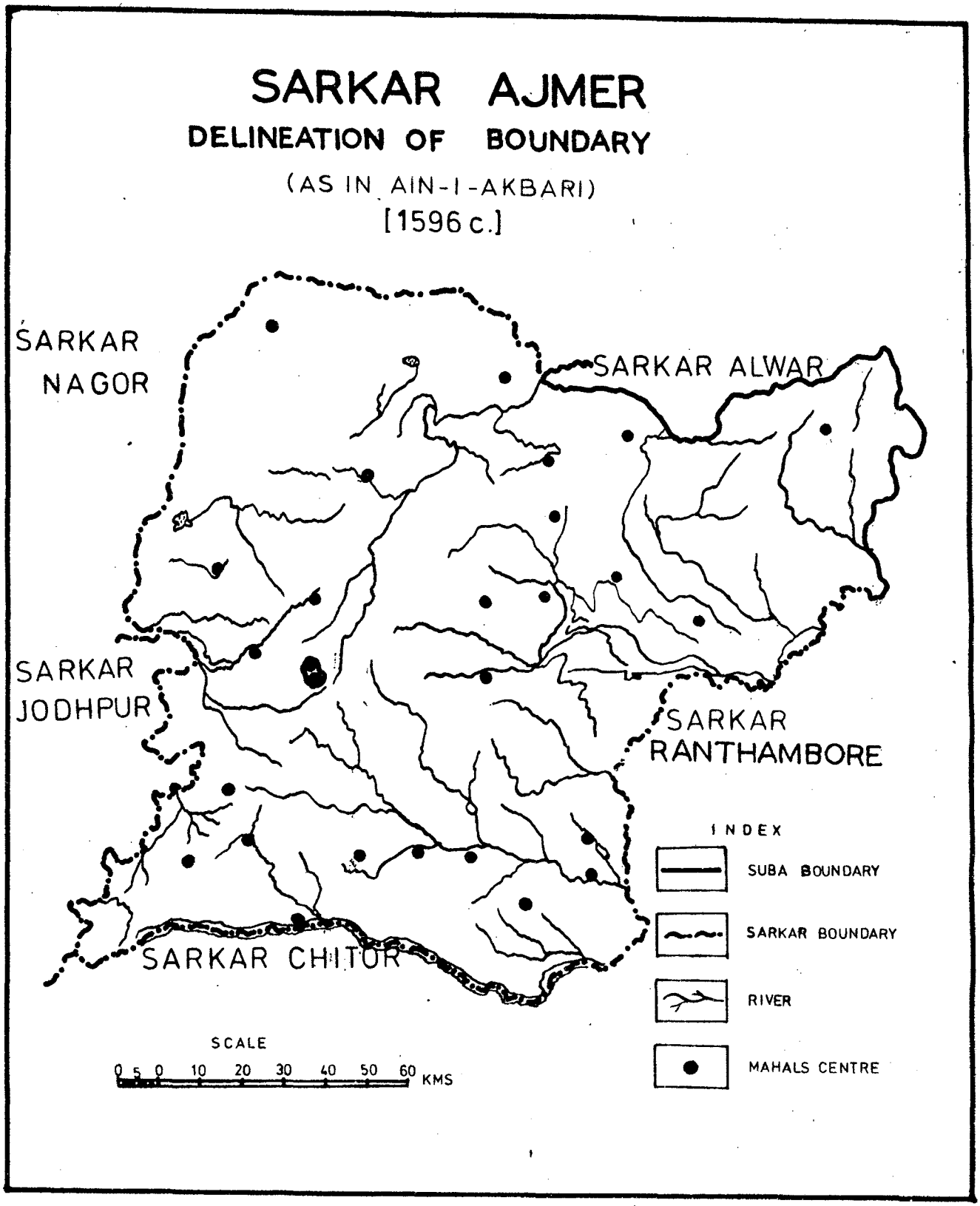
SARKAR AJMER
DELINEATION OF BOUNDARY
(AS IN AIN-I-AKBARI)
[1596 c.]
SARKAR NAGOR
SARKAR ALWAR
SARKAR JODHPUR
SARKAR RANTHAMBORE
SARKAR CHITOR
INDEX
SUBA BOUNDARY
SARKAR BOUNDARY
RIVER
MAHALS CENTRE
SCALE
0 5 0 10 20 30 40 50 60 KMS

FIG. 2.1

covered in it at that time.

Sarkar Ajmer was one of the seven Sarkars which constituted the Suba of Ajmer. The Sarkar was again divided into 27 Paraganas and Mahals for revenue collection. This Sarkar Ajmer was surrounded by Sarkar Alwar in the north-east, Sarkar Ranthambhor in the south-east, Sarkar Chitor in the South, Sarkar Jodhpur in the south west and by Sarkar Nagaur in the north-west (Fig. 2.1). Ajmer city was the centre of the Sarkar, as well as, Suba. As the region was situated in the midst of Rajputana, with a strong fort, it became a famous trade centre and a nodal point between the northern India on the one hand, and Gujrat and Malva on the other. The strategic importance of the region was accepted by the Muhammadan rulers.

All the high officials, such as Governer, Diwan Chief Qazi, Sadr, Faujdar etc., had their head Quarters in the city of Ajmer, the capital of the Suba. It was one of the fourteen cities where copper coins were struck in Akbar's time. Due to these factors, as mentioned above, Ajmer became the nerve-centre of the Mughal power in Rajasthan, and its importance was enhanced further with the frequent visits of Akbar, although of short duration.

Prominent Settlements -

With rhe records available, the following settlements were identified with certainty in the area:

Ajmer - It is situated almost in the centre of Rajasthan

It was the administrative head-Quarter of the Suba of Ajmer. Akbar fortified the city and its ramnants can be seen even today.

Masuda (Masudabad) - This ancient village is situated to the south of the city of Ajmer. Akbar sent Thakur Jagmal Singh with a strong army who defeated the Panwars of Masuda after a fight at Harmara. The Thikana was then given to Hanuwant Singh - the son of Jagmal Singh. The total revenue of the Thikana amounted to one lakh rupeees.

Besides Ajmer and Masuda, the following Mahals and Paraganas were also identified in the topographical sheets of the area but their description was, however, not available (Fig. 2.2)

Jhak - It is located in the southern part of Sarkar Ajmer.

Arain - This paragana is situated to the east of Ajmer.

Bawal (? Borach) - Its location was found in the north-western part of the Sarkar.

Bahal (Barl) - It is situated on the northern bank of the Khari river, which bordered the sarkar in the south.

Bandar Sindri - This Paragana was located to the north-east of Ajmer.

Koshanpur (Kishanpur) - It is also one of the paraghanas of the Sarkar Ajmer and is situated on the southern bank of the river Saraswati near Pushkar.

Kherwah - This ancient village lies to the south west of the Ajmer city.

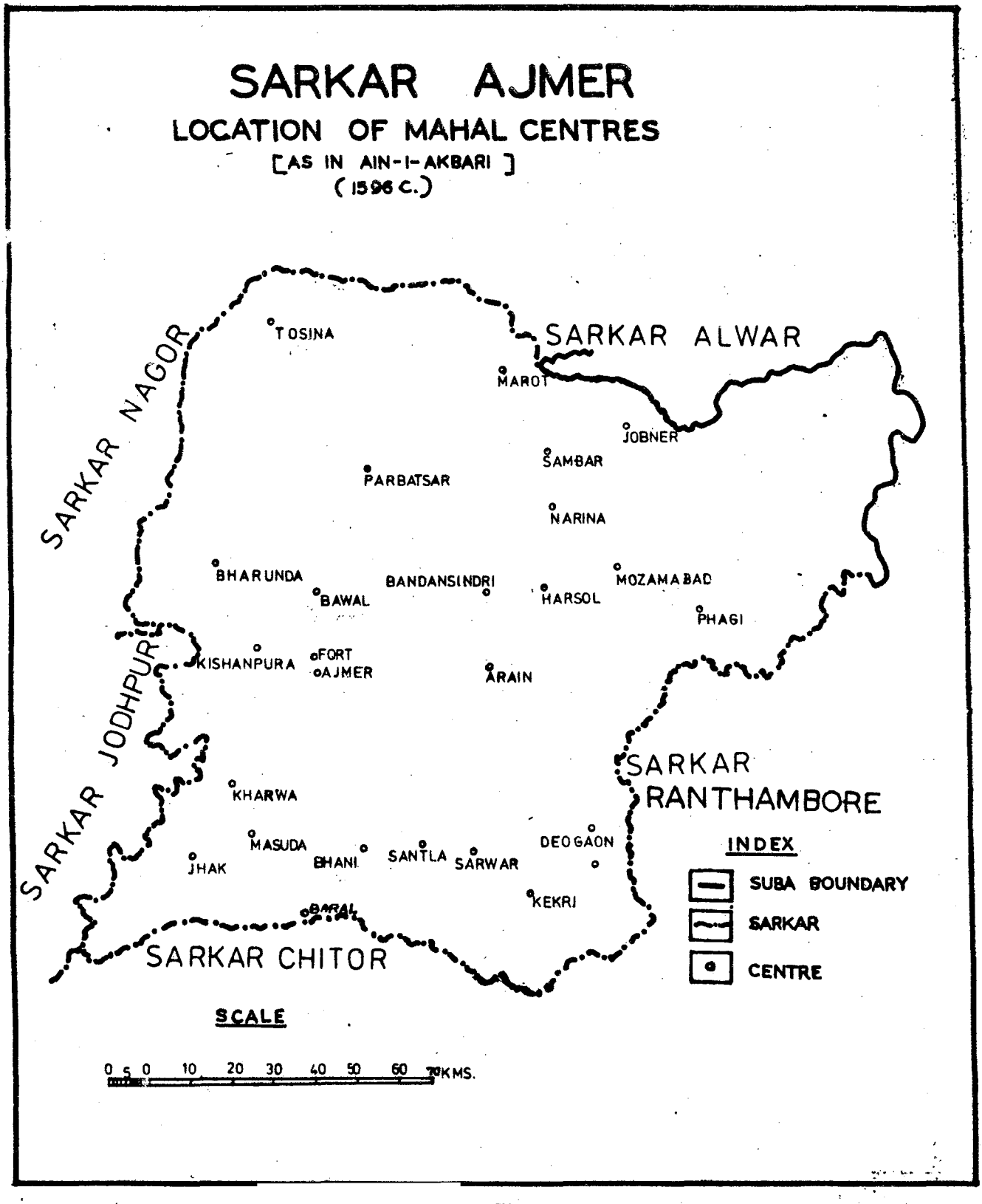
SARKAR AJMER
LOCATION OF MAHAL CENTRES
[AS IN AIN-I-AKBARI]
(1596 C.)
SARKAR NAGOR
SARKAR ALWAR
SARKAR JODHPUR
SARKAR RANTHAMBORE
SARKAR CHITOR
TOSINA
MAROT
JOBNER
SAMBAR
PARBATSAR
NARINA
BHARUNDA
BANDANSINDRI
MOZAMABAD
BAWAL
HARSOL
PHAGI
KISHANPURA
FORT AJMER
ARAIN
KHARWA
MASUDA
DEOGAON
JHAK
BHANI
SANTLA
SARWAR
KEKRI
BARAL
INDEX
SUBA BOUNDARY
SARKAR
CENTRE
SCALE
0 5 0 10 20 30 40 50 60 70 KMS.

FIG. 2.2

The area and revenue of various Paraghanas and Mahals, described above, has been shown in the following table (2.1):

TABLE 2.1

Paraghanas and Mahals of Ajmer Sarkar:

Name of Paraganas & Mahals	Bighas	Revenus D*4	Suyru-ghal D
Ajmer with District, its fort on a hill, one of the most important in India	795,335 1,135,095	6,214,731 122,562,97	-- 802,440
Arain	279,295	2,200,000	--
Bawal (? Borach)	81,914,11	600,000	--
Bahal (Barl)	155,22	435,664	15,674
Bandar Sindri	24,220	270,000	--
Jhak	49,065	1, 20,000	--
Koshan Pur (Kishanpur)	194,064	9,649,947	27,757
Kherwah 71,356	7,020,347	—	--
Masudbad (Masuda)	14,361	1,587,900	--

Source:- Ain-i-Akbari, Vol. II P. 273

2. (iv) The status of Ajmer remained unchanged, even after Akbar's death on October 15, 1605 A.D. Jahangir stayed at Ajmer for three years and built some beautiful monuments. Shahjahan also visited Ajmer frequently and he ordered for the 'erection of five marble pavillions and a marble parapet on the long embankment of Anasagar.[7]

7. D.G. Ajmer, p. 66

Ajmer remained important administrative centre during Aurangzeb's region, although no construction was witnessed in that period. In the post - Aurangzeb period, the continguity of the muslim rule at Ajmer was broken by the rulers of Jodhpur and Mewar and by the Marathas.

3. British Period:

It is interesting to mention here that the English ambassador Sir Thomas Roe called on Jahangir at Ajmer on January 10, 1616 A.D. The records reveal the fact that a few Europeans were residing at Ajmer at that time 'whose main task was to safeguard the trading interests of their countries.'[8]

3. (i) Infact, it was General D. Ochterlony, who occupied the city on 28th July 1818 from Daulat Rao Scindhia by a treaty. In the same year a treaty of friendship was concluded with the ruler of Kishangarh state (now forming a part of Ajmer district). After 1818, the region witnessed the peace and got rid of long battles and sieges.

"The history of Ajmer from 1818 is the history of its administration"[9]. Mr. Wieder, General Hall, Col, Dixon and other Britishers, who were appointed as Superintendents of Ajmer at Various points of time, did their best to improve the conditions of the people.

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8. Ibid, p. 64

9. Ibid, p. 82

3. (ii) The changing political mood of the country could be seen in the region also. In 1919 the 'Rajasthan seva Sangh' was founded by Vijay Singh Patik and Ram Narain Chaudhari at Wardha and its head Quarters were transferred to Ajmer in the following year. This organization made efforts in bringing political consiousness among the masses, but it had to be wound up in 1928, as its leaders were put behind the bars and the shamefull infighting within the organization led to the point of no return[10].

In the year of 1942, the region noticed the struggle for independence in full swing, Although Government tried its best to suppress the wave of 'Quit India movement' spreading in the region, by arresting the Satyagrahis, torturing the freedom fighters and imposing ban upon the various political & social activities, yet it could not achieve its target. The Britishers were compelled to quit eht country in August, 1947, and the region became independent.

Post Independence Period:

The Rajputana Agency was abolished in the August 1947, but the district remained under the central administration. On 26 January 1950, the district was merged with the union of Madhya Bharat and in 1951 it was accorded the status of Part 'C' state. Soon after the formation of the Rajasthan state, the Government of

10. D.G. Ajmer pp. 91 - 92.

Rajasthan extended its claim over Ajmer as it has been an integral part of Rajasthan from geographical, ethnological and linguistic point of view. The case was investigated by the state' Re-organization Commission which submitted its report in 1955 and recommended its merger with Rajasthan. The Government accepted the recommendations and the district was merged with Rajasthan on November 1, 1956. Since then it has been one of the 26 districts in the state with its headquarter at Ajmer.

CHAPTER - III

NATURAL ENVIRONMENT

1. Geology:-

The geological structure of the region consists of various formations of Pre-cambrian to the recent geological era. These formations include Archaean Granites and Gneisses to the Recent Alluvium. Among the prominent rock formations are granites, schists, Calc-gneisses and quartizites in the south east, gneisses and granites in the south west, and micaschists, limestones and quartzites in the central and northern parts.

It is interesting to bring out two typical facts which are evident from Fig. 3.1, showing geological formations of the area. Firstly - the geological structure of the area is comprised either by the rocks of the Pre-cambrian and the lower Palaeozoic era. Thus the middle and upper Palaeozoic and the Mesozoic eras are not represented atlall. Secondly, the longitudinal ranges of the Aravallis are composed of the older rocks, while the thick layers of recent alluvium cover the longitudinal Valleys.

1.1 Pre-Cambrian:

All the geological formations which came into existance before the Cambrian Period are collectively known as pre-cambrian. Archaean granites and gneisses, the rocks of the Delhi and Aravalli systems are the main constituents of the group of Pre-cambrian rocks (older than 600 million years). The formations belonging to

the Archaean era are considered as 'Basement Complex' by the geologists, and they are represented by coarse - grained pegmatites in the patches located in the south western and the east-central parts of the region. In Kishangarh area, mica, schists, beautiful blue sodalites and granet are quarried, and they are of vital economic importance.

The Delhi-system of cuddapah age (upper pre-cambrian) covers the whole central part of the Aravalli synclinorium (Ajmer-Merwara)[1]. Railo-limestones, quartzites, phyllites, slates etc. are the main rocktypes of the Alwar series (Delhi-system). They are exposed in the central part of the region particularly in the Ajmer Section, where the quartzite forms the highest peak (Taragarh) rising to the height of 1300' above the surrounding level.[2]

1.2 Cainozoic:

The remaining parts of the region are covered by the recent alluvium, composed of 'unconsolidated clays, silts and sands.[3] Thickness of the alluvium increases towards the north. These formations are of vital importance from the view-point of agriculture, but its self unconsolidated state of composition sometimes leads to extensive waste lands in the form of ravines.

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1. Wadia, D.N., Geology of India, (New Delhi; 1969) p.87
2. D.G. Ajmer. p.9
3. Dey, A.K., Geology of India, (New Delhi, 1968) p.148

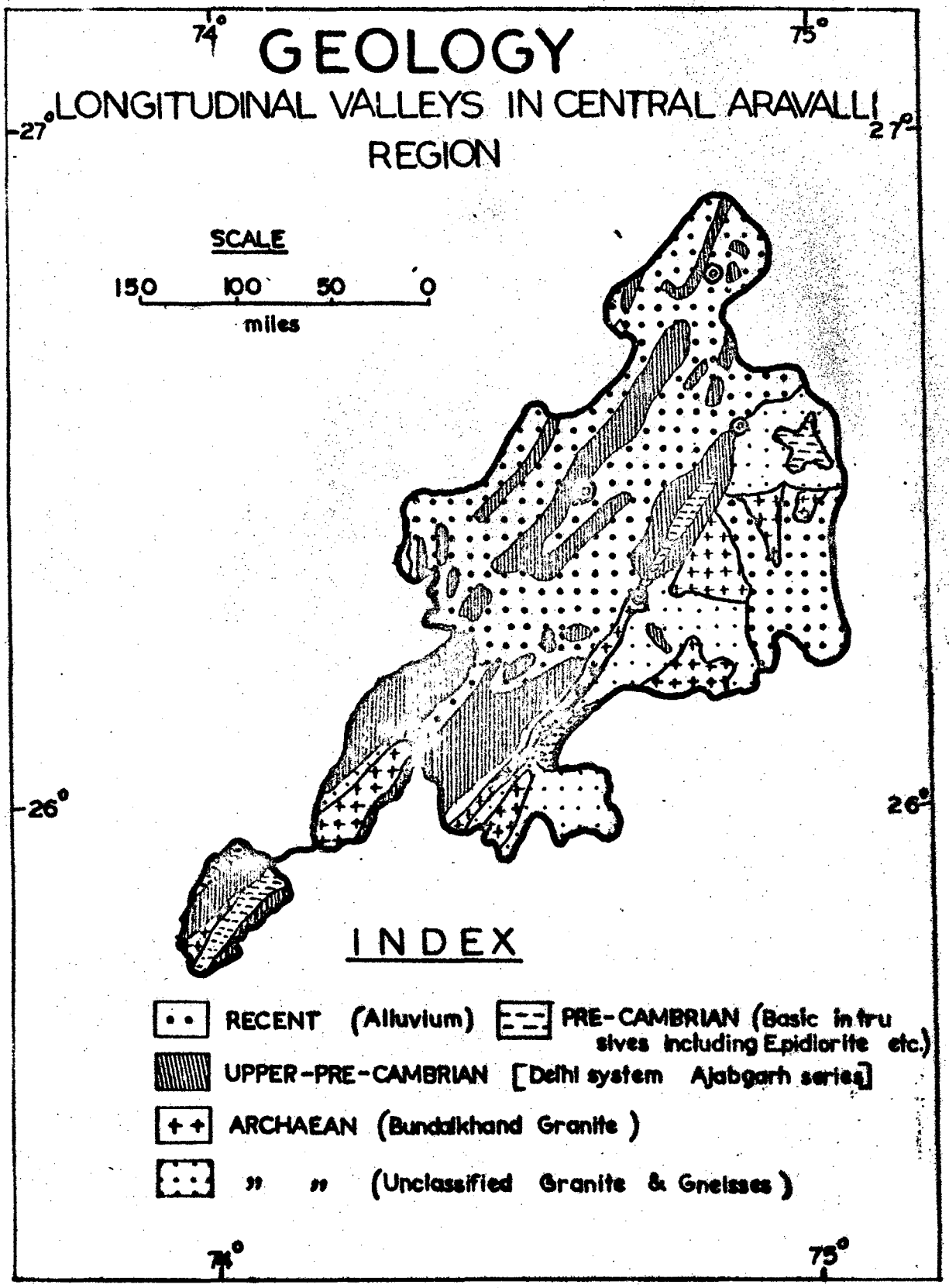

FIG. 3.1

SOURCE : GEOLOGICAL MAP OF INDIA, PUBLISHED BY SURVEY OF INDIA. (SIXTH EDITION — 1962)

2. Surface Features:

Three main features emerge out of the relief map (Fig. 3.2). They are: (i) hilly areas (ii) low lands and (iii) the undulating plateau within the hilly areas. The segments of the Aravalli range enter into the region in Todgarh Section in the south west and are visible upto Kishangarh in the north-east. The areas lying to the north-west and the south-east to the hill-system consitute the low lands.

2.1 The Aravalli range is the distinguishing relief feature in the region. It runs through the region in NE-SW direction and divides the region into two halves. The range attains the hight of 873m (2855') at Taragarh (Ajmer) in the region. The hills of Madar and Nagpahar (serpant hill) are the other higher parts of the range in the region. The range of hills between Ajmer and Nasirabad marks the Great Indian watershed.

The Aravalli range, however, does not have contiguity in whole of the region and wide gaps between two sections of the range are common. Between Ajmer hills and Beawar, the range is conspicuous by its absence for several miles but becomes visible near Beawar town and then it has continuity in the south upto the furthest part of the region. The highest height (934m) is attained at Goramji, 7 miles to the south-west of Todgarh. In the northern part also the range is visible near Kishangarh in the form of three parallel ridges with the highest peak

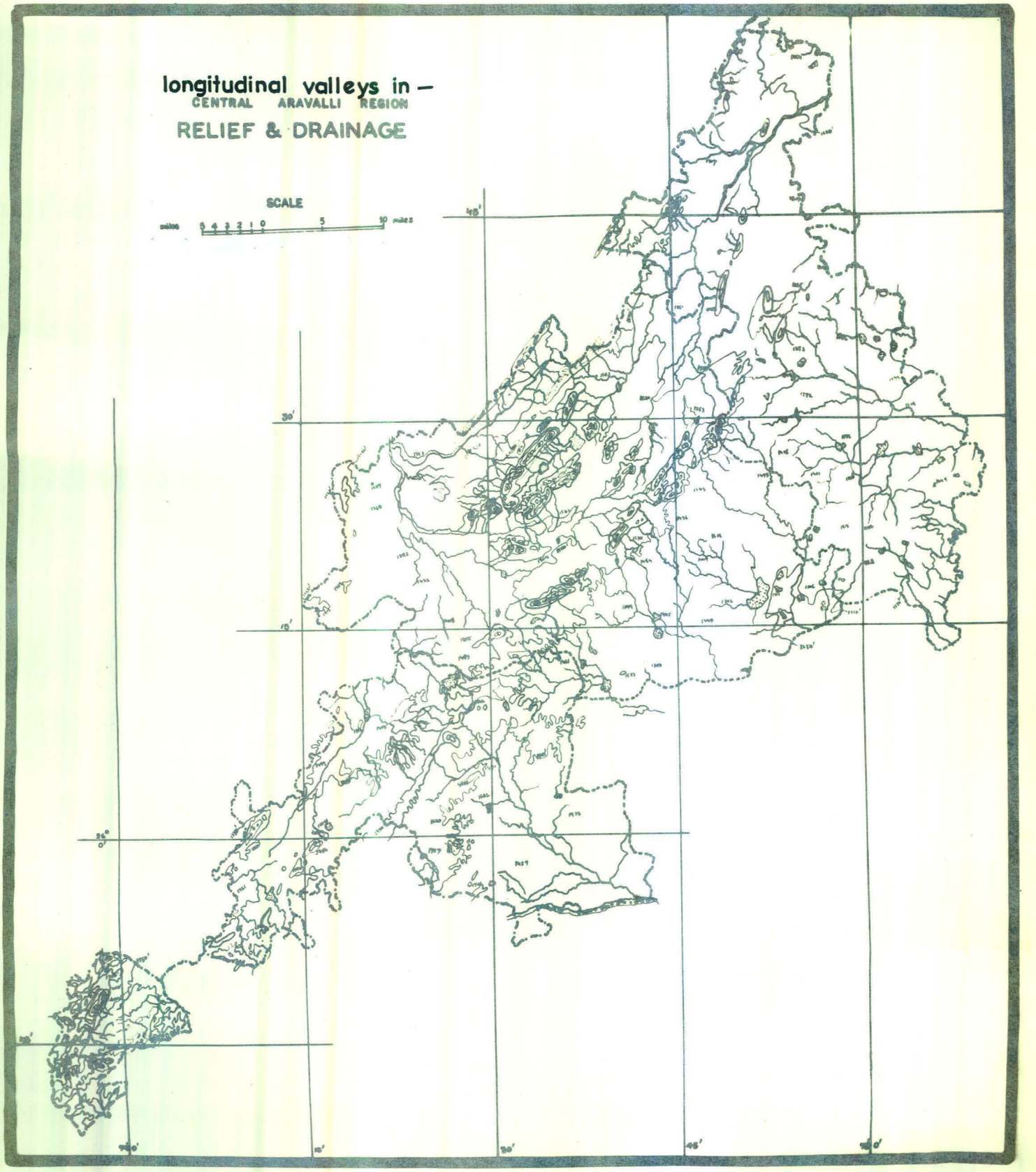
longitudinal valleys in –
CENTRAL ARAVALLI REGION
RELIEF & DRAINAGE
SCALE
miles 5 4 3 2 1 0 5 10 miles

FIG. 3.2

of 623m at Kishangarh.

2.2 The Ajmer plateau, on which the city of Ajmer stands, has an elevation of 625-800 metre and marks the highest point on the plain of India. This plateau is skirted by the Nagpahar in the west, the Madar hills in the north and Taragarh in the south. Three prominent man-made lakes, i.e. Anasagar, Bisla (visalsar) and Foy sagar, are also stretched over the parts of the plateau.

2.3 The low lying areas of the region are covered under the longitudinal valleys. The water shed divides the region into two drainage basins. While the areas lying to the west of the range have the Arabian sea drainage, the eastern part is drained by the tributaries of the Ganga system (Bay of Bengal drainage). It is to be noted here that some of the valleys have an elevation of 550 metre (1800'). The low lands containing fertile soil, are the chief citadals of agriculture in the region.

2.4 Passes:

There are four well known passes in the region, and all are located in the Beawar tehsil. The Barr pass on the western side is a constituent part of the National Highway from Agra to Ahmadabad. The Pakheria pass on the east leads to Masuda. The passes of Sheopura Ghata and Sura Ghata are located en route to Mewar. The links between Mewar and Marwar have remained through the Kachabali, Pipli, Undabari, Sarupa Ghata and Dewair passes

near Todgarh (Fig. 1.1). There are no passes worth near city of Ajmer except the narrow valleys through which the roads from Ajmer to Pushkar in the west, and Nasirabad in the south pass.

3. Drainage:-

3.1 Generalities:

3.11 The Aravalli range, passing through the region divides the drainage system into three clear cut basins (Fig. 3.2). The drainage lines to the west of the range flow towards the south-west and constitute upper Luni Basin (Arabian Sea Drainage), but the rains falling to the east go to the Bay of Bengal through the Ganges system. The northern part is drained by the rivulets which terminate in Sambhar lake (Inland Drainge Basin).

3.12 There is no important river in the whole region as it is situated on the elevated position marked by the Great Indian water.shed. The Khari is the most important stream beside the rivultes of Dai, Sagarmati, Sarswati and Rupnagar, The Khari stream rises near Deogarh (Udaipur district) and drains through the southern part of the region. The Sagarmati stream originates near the Bisla Tank (Ajmer)and after flowing through the Ajmer valley it turns northwards and meets Saraswati near Govindgarh. After the confluence of the two rivultes the channel is known as the Luni river which pours its waters into the Arabian Sea through the Rann of Kutch.

It may be noted here that all the streams of the region are seasonal in their character and get dried just after the rains.

3.13 Apart from the rivulets, the region has a fair number of lakes and tanks. The natural lakes at Puskhar and Budha Pushkar are well known owing to their religious importance. Another two natural lakes are situated at Sargaon and Karantia, but the artificial lakes, such as Anasagar, Bisla, Foysagar and Kishangarh tank are more important from the view point of agriculture and water supply. The first two lakes were constructed by the two Chauhan rulers i.e. Arnoraj and Bisaldev, of Ajmer. The third one was constructed by damming Bandi rivulet and was named after Mr. Foy, the supervisor of the work. It is the main source of drinking water supplied to Ajmer city. Other large tanks are situated at Dilwar, Jawaja, Balad and Ramsar and date back to the pre-British period.

3.2 Stream Analysis:

In the present section an attempt has been, made to identify the linear properties of the stream network in the region. This planimetric analysis - measure in a single plane of the stream segments is based on strahler's work in the field[4]. The study deals with the stream ordering and drainage density.

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4. Strahler, A.N. Physical Geography (1969) p. 481-91

3.13 Stream Ordering[5]:

First of all a heirarchy of stream orders has been identified in all the three drainage basins of the region. It was evident from the Fig. 3.3 that the streams attain only the fourth order in all the three basins.[6] The number of segments, however, varies at the lower orders. The highest number of the segments at every level is found in the Luni Basin, followed by the Banas Basin and Inland drainage (Table 3.1):

TABLE NO. 3.1

Results of stream ordering

(1)

Inland Drainage (Rupnagar Basin drainage)

Stream order	No. of Segments	% of total Setments		Bifurcation Ratio
1	2	3		4
I	82	78.1	95.2%	4.55
II	18	17.1		4.50
III	4	3.9	4.9	4.00
IV	1	0.9		
Total:	105	100%		4.35

5. It is to be mentioned here that the present stream analysis is based on the Quateer Inch Sheets of the region and unfolds only general features of the drainage network.

6. According to Strahler, "the first order stream indicates the uppermost channel - the finger tip, the confluence of the two develops a second order stream. The two second order streams give birth to a third order stream and so on. But when a lower order stream meets the higher one, the order of the latter remains the same." Strahler, op. cit. p. 483

(2)
Luni Basin (Arabian Sea Drainage)

1	2	3		4
I	156	72.6	94.5	3.3
II	47	21.9		4.3
III	11	5.1	5.5	
IV	1	0.4		11.0
Total:	215	100.00%		6.2

(3)
Banas Basin (Bay of Bengal Drainage)

1	2	3		4
I	136	78.2	96.0%	4.4
II	31	17.8		5.2
III	6	3.4	4%	3.0
IV	1	0.6		6.0
Total:	174	100.00%		5.3

The table reveals the following facts:
(i) Nearly three-fourths of the total segments are of the first order in all the three basins (ii) By adding the share of segments of the second order in the basins to the previous order, we find overwhelming dominance (nearly 95 per cent) of the first two orders which reflect the rudimentory nature of drainage network in the region (iii) The segments of the third and fourth orders

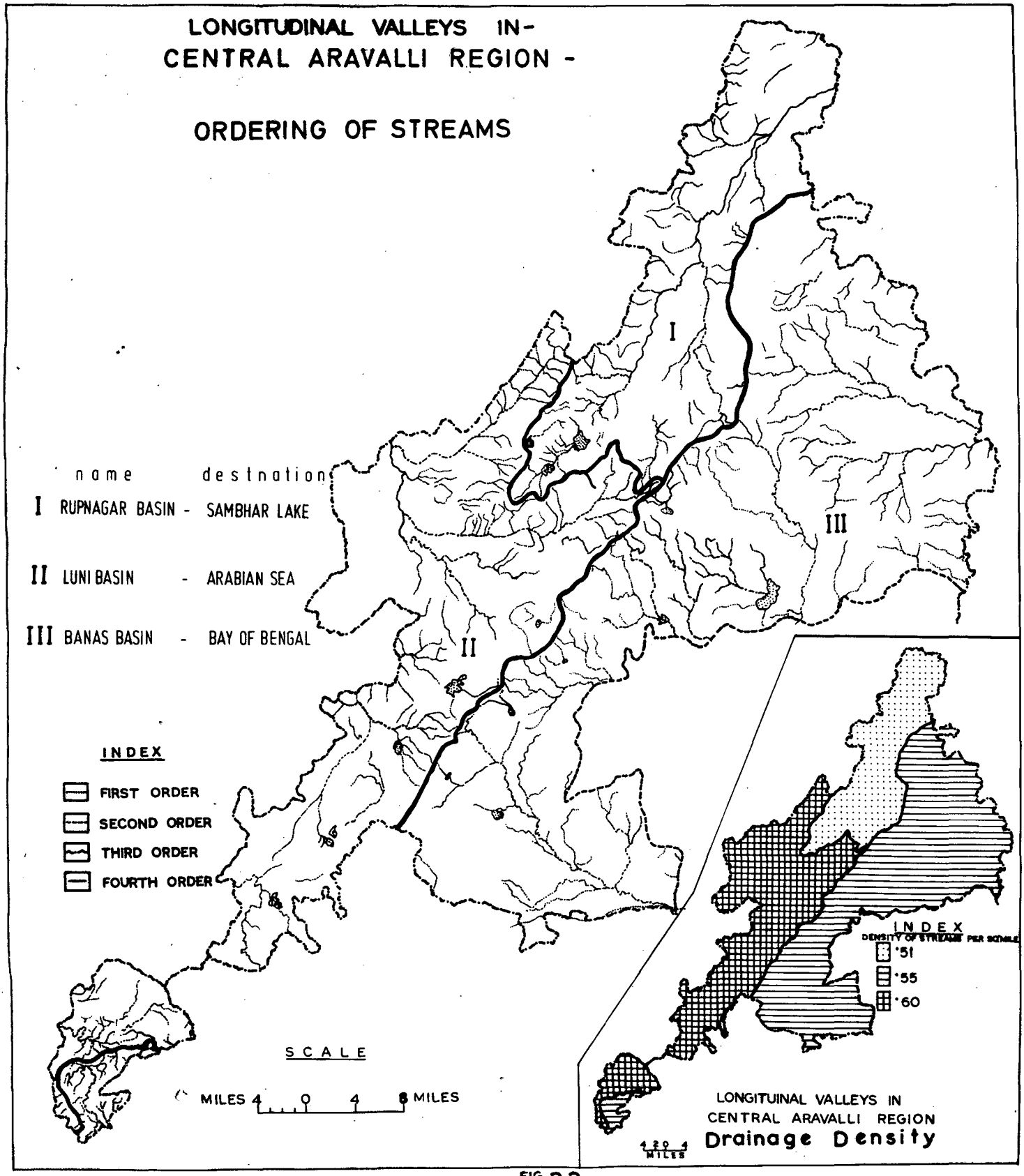
LONGITUDINAL VALLEYS IN-
CENTRAL ARAVALLI REGION -
ORDERING OF STREAMS
name
destnation
I RUPNAGAR BASIN - SAMBHAR LAKE
II LUNI BASIN - ARABIAN SEA
III BANAS BASIN - BAY OF BENGAL
I
II
III
INDEX
FIRST ORDER
SECOND ORDER
THIRD ORDER
FOURTH ORDER
SCALE
MILES 4 0 4 8 MILES
INDEX
DENSITY OF STREAMS PER SQ MILE
·51
·55
·60
LONGITUINAL VALLEYS IN
CENTRAL ARAVALLI REGION
Drainage Density
4 2 0 4
MILES

FIG. 3.3

contribute not more than 5.5 per cent in any case and it reflects insignificant role played by them in the regional stream network.

After identifying the stream order and their respective number of segments, the bifurcation ratio was computed.[7] Generally it is believed that in a river basin of uniform rock formations and climatic conditions, the ratio will remain constant from one order to the other. Table 3.1 shows that the average ratio in all the basins is more than 4. The ratio was low in the case of lower orders but was found as high as 11 between third and fourth order in the Luni Basin, which exibits the fact that the numbers of the third order segments is higher than it should have been. The variations, however, can be attributed to the generalized view which one possibly gets from the quarter inch sheets of the region.

3.22 Stream Lengths:

In this section the total length of the segments of each order, and their respective share in the total length of all the segments in the region were found out.

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7. The bifurcation ratio can be computed from the following formula:

$$Rb = \frac{Nu}{Nu+1}$$

Where Nu means number of segments of a given order. Thus the 'Rb' value denotes the ratio between the number of segments of a given order (Nu) Strahler, op. cit. p. 484.

The results, thus obtained, can be tabulated as follows· (Table 3.2):

TABLE NO. 3.2

Results of Stream Lenth Analysis

Stream Order	Length in Miles	% to the Total Stream Length
1	2	3
I	778.90	65.50
II	244.00	20.50
III	188.00	10.00
IV	47.00	4.00
Regional Total:	1187.90	100.00

The table seconds the facts obtained from the stream order analysis. The dominance of the first and the second orders is evident from the tabulated results. The first two orders contribute nearly 86 per cent to the regional total. Nearly one-seventh of the total length is shared by the third and the fourth order streams combined. These results represent the seasonal character of the streams which flow just after the rains and remain dry in most of the months.

3.23 Drainage Density:

In this simple exercise the drainage density for the three basins was calculated separately with the help of the following formula.

$$D = \frac{ELK}{AK}$$

Where D is drainage density in miles oer square mile of the area, ELK means total length of segments of all orders and Ak means total area of the basin. The results have been given below (Table 3.3):

TABLE NO. 3.3

Drainage Density (By Basins)

No.	Name of the Basin	Total Catchment area in sq. miles	Total Length of Streams in miles	Density per mile
1.	Rupnagar Basin (Inland Drainage)	432	220.9	0.51
2.	Luni Basin (Arabian Sea Drainage)	672	404.0	0.60
3.	Banas Basin (Bay of Bengal Drainage)	1020	563.0	0.55

The table reveals the fact that the highest drainage density (0.60) was observed in the Luni Basin, although the Banas Basin leads from the view point of the catchment area. But the density values for various basin did not vary substaintially, and it can be due to the same patterns of drainage network in all the basins of the region by and large.

4. Climate:

Climatically, the region lies in the transitional zone of the semi-arid west and the sub-humid east of the Indian subcontinent. The climate of the region is hot and dry in summer and cold in winter, along

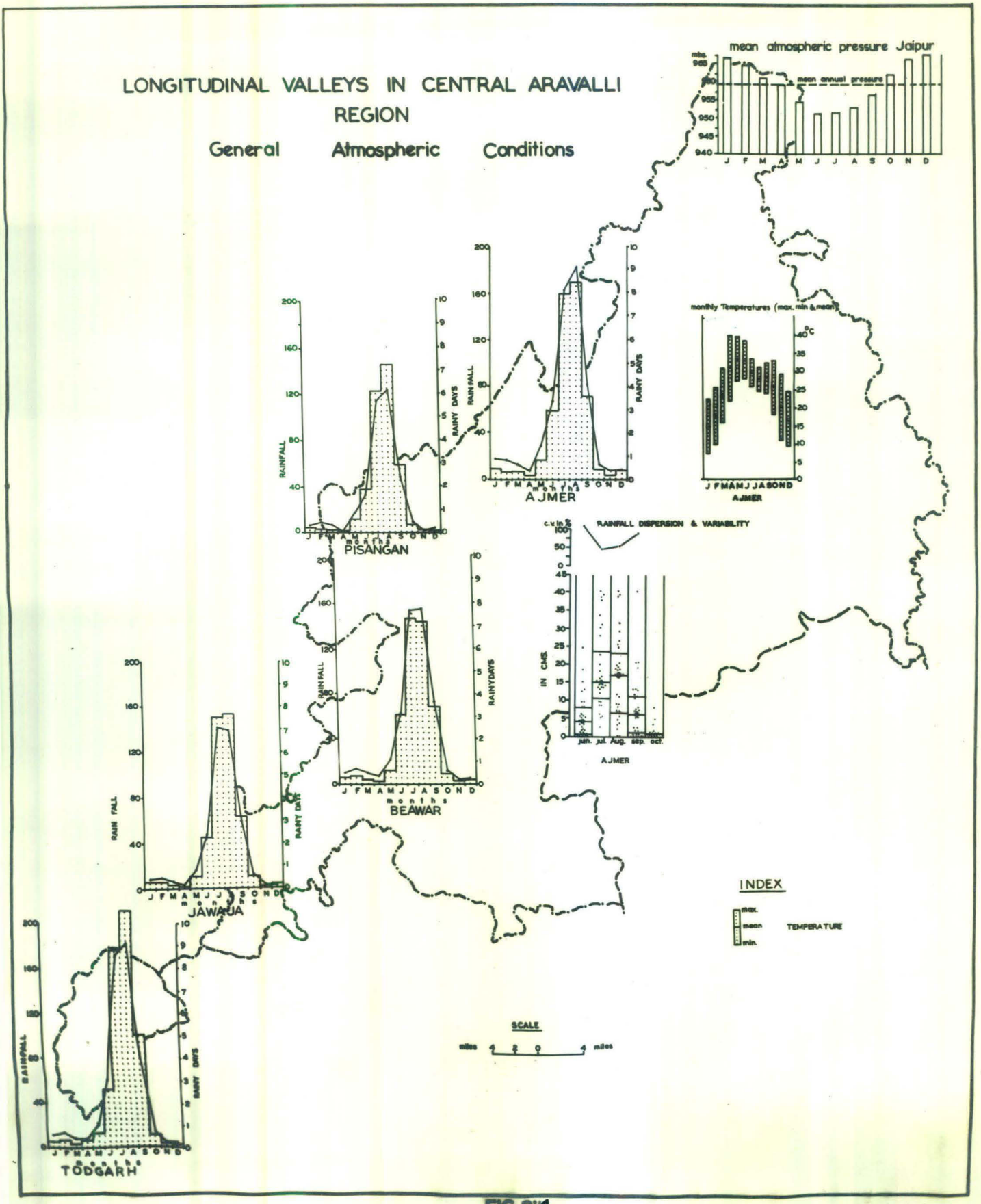
LONGITUDINAL VALLEYS IN CENTRAL ARAVALLI REGION
General Atmospheric Conditions
mean atmospheric pressure Jaipur
mean annual pressure
J F M A M J J A S O N D
monthly Temperatures (max. min & mean)
AJMER
RAINFALL DISPERSION & VARIABILITY
c.v. in %
IN CMS.
jun. jul. Aug. sep. oct.
AJMER
PISANGAN
AJMER
BEAWAR
JAWAJA
TODGARH
RAINFALL
RAINY DAYS
months
INDEX
max.
mean
min.
TEMPERATURE
SCALE
miles 4 2 0 4 miles

FIG. 3·4

with high variability of rainfall - both in space and time. These characteristics make the region 'semi arid type' according to the Koppen' system of classification of climates[8].

4.1 Generalities[9]

4.11 The region records extremes of climatic conditions, such as temperature; atmospheric pressure, precipitation, humidity etc. The mean annual temperature is 24.9°c with the extreme values is the months of January (14.75°c) and May (33.4°c). Mean atmospheric pressure also changes with temperature, although in negative direction. January and June are the months of the highest (966.6 mbs.) and the lowest (951.3 mbs.) pressure in the region respectively (Table 3.4).

4.12 The relative humidity is recorded as low as 25.5 per cent in the month of April and then increases upto 76.0 per cent, observable in the month of July - August. The semi-aridity of the climate is reflected by the rainfall. The region normally received 52.76 cm of rainfall and the number of rainy days is 26 in a year.

4.13 The lowest rainfall is recorded at Pisangan (39.9 cm) in the west, but Todgarh receives 59.2 cm of

8. Trewartha, G.T. 'Koppen's classification of climates' An Introduction of climate, (Tokyo, 1954) pp. 381-83; and Strahler, A.N., Physical Geography (New Delhi, 1971), pp. 224-5.

9. The present study of the various aspects of climate is based on the following records and memoirs of the-Indian Meteorological Department (I.M.D.): Climatic Tables of Observatories in India, (1931-60); 'Diurnal variation of Atmospheric Pressure in India, Memoirs (I.M.D.) Vol. XXXII (part I); and Monthly and Annual Normals of Rainfall and Number of Days (I.M.D.) p.127

TABLE NO: 3.4

Normals of Some Aspects of Climate

AJMER STATION

Months	Average Monthly Temperatures ($in^{o}c$)			Mean Atmospheric Pressure (in mbs)	Mean Wind speed (in Km/Hr).
	Max.	Min.	Mean		
1	2	3	4	5	6
January	22.2	7.3	14.75	966.6	2.6
February	25.3	9.9	17.60	964.6	3.5
March	30.7	15.7	23.20	961.9	5.3
April	39.9	21.9	30.90	959.4	3.4
May	39.5	27.3	33.40	954.5	11.1
June	38.1	27.7	32.90	951.3	12.2
July	33.2	25.6	29.40	951.5	10.1
August	30.9	24.3	27.60	952.9	8.5
September	32.1	23.7	27.90	956.6	6.9
October	32.9	17.8	25.35	961.9	3.4
November	28.9	10.9	19.90	966.3	1.9
December	24.4	7.7	16.05	967.5	1.9
Annual Average	31.5	18.3	24.90	959.6	6.2

Note: Date for Mean Atmospheric Pressure were recorded at Jaipur Station.

Sources: (i) Rajasthan District Gazettcers - Ajmer, pp. 24-25

(ii) 'Diurnal variation of Atmospheric Pressure in India', Memoirs I.M.D., Vol. XXXII, Part I.

rainfall annually. As the region has a monsoonal rhythm, the seasonal variations are likely to be observed. It is interesting to note that nearly 95 per cent of the total rainfall is received during June-September period, and the rainfall values does not exceed 1.5 cm in any of the remaining eight months (Oct. - May) in whole of the region (Table 3.5):

4.14 The direction and speed of the wind also change with the seasons. During winter they are north-westerly with an average speed of 3 km.per hour. But the winds become southwesterly during the summer season and are of great importance as they bring rains with them. The average wind speed goes upto 12 km per hour and sometimes they achieve the speed of 60 km per hour. Other phenomena, such as-hail, fog or squall are insignificant in the region. The only feature, which needs attention is the thunder which is recorded on an average of 29-days, mainly during May - September (Monsoon) period.

4.2 Weather Seasons:

Indian Meteorological Department divides the climatic year into four seasons. They are - (i) Winter season (Jan. - Feb.); (ii) Hot weather season (Mar. - May), (iii) South-west monsoon season (June - Sept.) and (iv) Post - monsoon period or the season of retreating monsoon (Oct. - Dec.)[10]. In this region, the weather,

10. I.M.D. Rainfall Atlas of India (Poona, 1971) p. 1-4

TABLE NO: 3.5

Monthly normals of Rainfall and Number of Rainy days

Stations	No. of Years	MONTHS Jan.	Feb.	Mar.	Apr.	May.	June.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total:
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
AJMER	50	9.7	6.9	6.1	3.3	16.0	59.4	159.0	168.7	72.9	9.4	3.3	5.3	520.0
		0.9	0.8	0.7	0.4	1.4	3.3	8.8	9.1	4.1	0.7	0.4	0.4	31.0
PISANGAN	50	4.3	3.8	2.3	1.3	10.9	38.1	123.9	145.3	59.7	5.6	1.5	1.8	398.5
		0.3	0.4	0.3	0.1	0.8	1.8	5.7	5.2	2.5	0.4	0.1	0.2	18.8
BEAWAR	50	5.6	6.1	4.6	2.8	12.5	61.2	147.1	144.0	69.1	9.4	2.3	3.8	468.5
		0.5	0.7	0.5	0.3	1.1	3.1	7.7	7.5	3.7	0.6	0.2	0.4	26.3
JAWAJA	50	5.3	5.3	3.8	2.0	10.4	45.5	151.9	154.7	64.0	10.7	1.3	2.0	456.9
		0.4	0.5	0.3	0.2	0.8	2.4	7.1	7.0	3.2	0.6	0.1	0.3	22.9
TODGARH	50	5.3	6.3	3.1	5.3	12.2	51.3	176.8	213.1	101.9	11.4	3.1	2.3	592.1
		0.6	0.7	0.4	0.3	0.1	3.0	8.6	9.1	4.2	0.7	0.2	0.2	29.0
Regional Average	Rain fall (in mm)	6.0	5.7	4.0	2.9	12.4	51.1	151.7	165.2	73.5	9.3	2.3	3.0	487.2
	No. of Rainy Days	0.5	0.6	0.4	0.3	0.1	2.7	7.6	7.8	3.5	0.6	0.2	0.3	25.6

Sources: (i) Monthly and Annual Normals of Rainfall and Number of Rainy Days (I.M.D.) p.127, and
(ii) Memoirs of I.M.D., Vol. XXXI, (part 3).

can, however, be studied under the following seasons:

1. Cold Weather season;
2. Hot Weather season; and
3. Seasons of General Rains.

4.21 Cold Weather Seasons

Weather starts cooling by the month of November with the mean of 19.9°c. It decreases further in December and January, the latter being the coldest month in region, the mean monthly temperature being 14.75°c (Max. 22.2°c and Min, 7.3°c). The nights of December and January are very cold and the temperature sometimes is recorded below frezing point[11]. Mornings are characterized by foggy and Misty weather which may sometimes continue upto mid-day.

Mean atmospheric pressure is usually high during the season (966 mcs.). The region receives a little rainfall from the norwesters. The amount varies between 9 mm to 20 mm and is received during the average rainydays of two. Although less than 2 per cent of the annual rainfall occurs during the season, yet it plays an important part in supporting the Rabi crops.

4.22 Hot Weather Season:

The temperature starts rising by the middle

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11. The Meteorological records conform 16th January 1935 as the coldest day in the history of Ajmer, when the temperature went down upto - 2.8°c.

of March and continues to rise throughout the months of April and May, the letter being the hottest month in the region.[12] The mean temperature during the season is recorded as 29.8'c (Max. 36.9° and Min. 22.7°c). The atmospheric pressure (954 mbs.) and relative humidity are low and invites dust storms from the west, locally known as Loo. The winds, coming from the west and south west blow very fast and sometimes attain the speed of 60 km per hour.

4.23 The Season of General Rains:

By the end of June the weather changes drastically. The region comes under the impact of the south-west monsoon regime. The weather starts cooling, the relative humidity rises upto 70 per cent and the 'burst of monsoon' a meteorological event of great importance, takes place.

Rains usually begin by the end of June, although they may be delayed as late as middle of July. July and August are the rainest months of the season with the highest consistency, but in the edge months of June and September, the rains are highly inconsistent. The region receives nearly 47 cm of rain fall on an average during the season, distributed over 24 rainy days.

The spatial distribution of the monthly rainfall and number of rainy days for the period 1901 - 1950

12. The 16th day of May 1912 is considered as the hottest day in the history of Ajmer.

reveals the following facts (Fig. 3.4):

(i) Maximum rainfall and number of rainy days are recorded at Todgarh while Pisangan records the lowest values (Table 3.5);

(ii) July and August are the rainest months in the region;

(iii) The month of August is the wettest month at all the stations, excepting Beawar where July replaces it;

(iv) The highest number of rainy days arealso observed in August but at Jawaja July records the highest number;

(v) Besides July and August, the edge months of June and September also receive significant amount of rainfall, but in the remaining 8 months (Oct. - May), it is insignificant from the view point of total amount received. An analysis of the rainfall dispersion and its variability[13] at Ajmer (for which the

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13. The Study of the dispersion of rainfall is based upon Crowe's method. All the terms, applied here, are after him; Crowe, P.R., "The Analysis of Rainfall Probability", Scottish Geographical Magazine, Vol. XLIX, (1963), p. 73-91.

The meaning of the terms used is as follows: Discontinuity of the highest (third) order=Upper quartile of one month is less than the Lower quartile of the other; Decrease of second order=Upper quartile of one month is less then the Median of the other and Median of the former is less than the Lower Quartile of the other; maximum = the value of the Upper Quartile qhich stops increasing at a point and starts decreasing.

were available) leads to the following results (Fig.3.4):

(i) The rainfall exhibits the discontinuity of the highest (third) order from June to July on the one hand, and from September to October on the other.

(ii) It is of the second order when we move from August to September.

(iii) The maximum is attained in the month of July.

(iv) The variability of rainfall is high in the end months i.e. June (109 per cent) and September (88 per cent).

(v) The variations in the rainfall are of lower order in the months of July (45) and August (53%).

5. Natural Vegetation:[14]

5.1 The thin vegetation cover over the region in mainly xerophytic in its character and the species are common to those of the semi-arid parts of the country. This situation can be attributed to the insufficient rainfall, poor soils and rampart ravages of the inhabitants living in the region. The extensive wood cutting (with the motive of immediate gains) and cattle grazing by the neighbouring villagers have aggravated the problem and needs special and immediate attention.

14. The present section on natural vegetation is based wholly upon the material available in D.G. Ajmer (pp. 10-16)

5.2 The forested area shared nearly 3 per cent of the total regional area in 1971. The spatial distribution of the share at the circle level (Fig. 3.5) reveals that it is higher only in the western part and its proportion is equal to or below regional mean in most of the cases. It is to be stated here that more than one-third area of Todgarh (extreme southwest) is under reserved forest. This forest range is well stocked with larger trees including excellent Dhokra (Anogeissus pendula) crop.

5.3 Besides Dhokra, the other important species in the region can be identified as Salar (Baseweilia serrate), Khejri (Prosopis spicigera), Khair (Acacia catachu), Ber (Zizyphus Jujuba), Pipal (Ficus rcligiosa), Timru (Diospyros melanoxylon), and Kumpta (Acacia rupestris).

5.4 No substaitial variations are observed in the spatial distribution of various species in the region, but some portions are devoid of particular species due to local environment. Thus, Bans (Dendroclamus strictus) is found on the higher slopes of Todgarh and Nagpahar hills, Kumpta is common on rocky hills and sand drifts, and Thor occupies the rocky hills of Ajmer area. The larger nalas (rivulets) generally are devoid of Dhak and Khajur (Phoenix sylvestries).

5.5 The occurance of various spcies in vertical

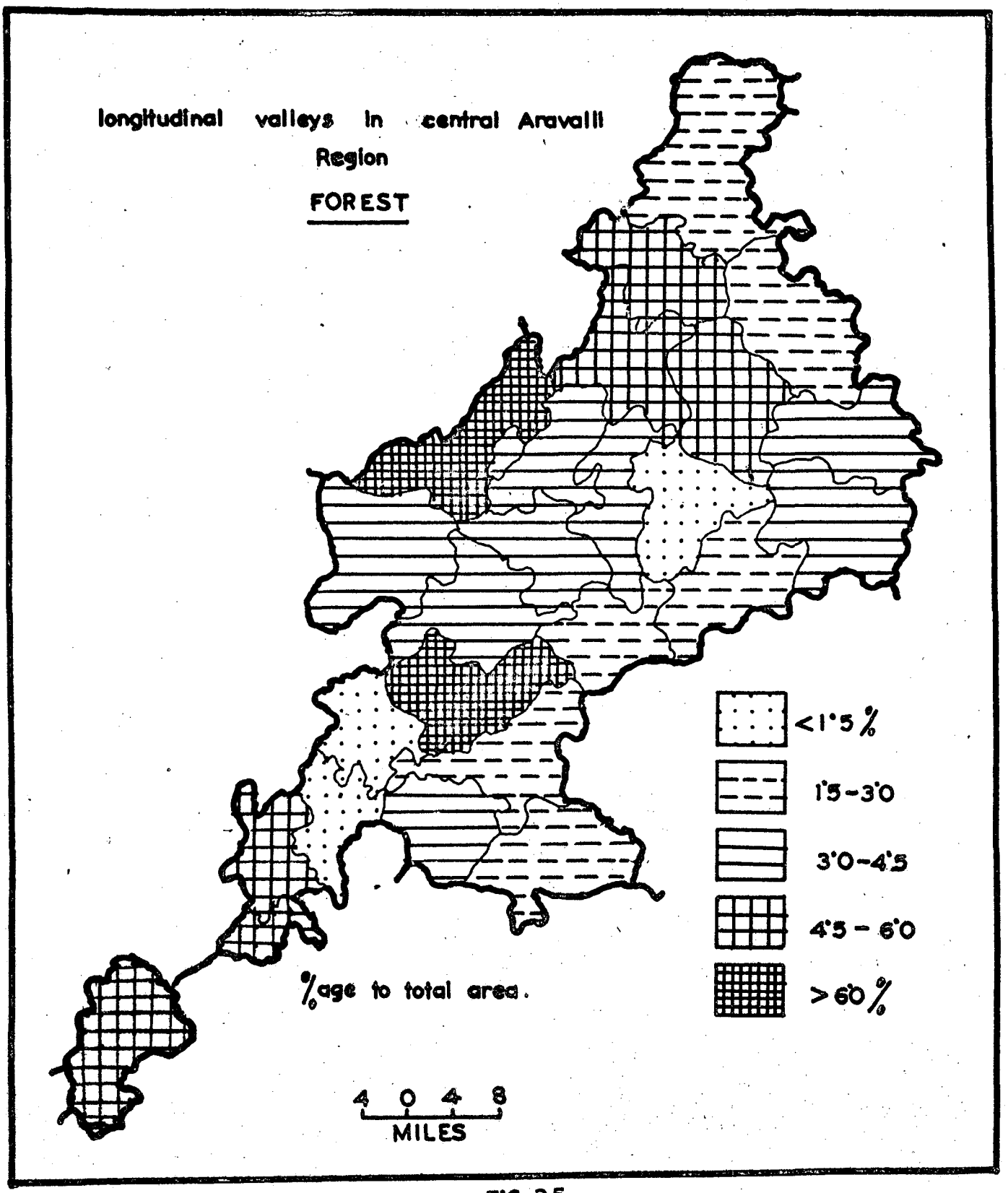

longitudinal valleys in central Aravalli Region
FOREST
<1·5 %
1·5-3·0
3·0-4·5
4·5 - 6·0
>6·0 %
%age to total area.
4 0 4 8
MILES

FIG. 3.5

direction, varies according to relief, rainfall and soil types. The existence of salar tree on the higher and steep slopes is common. The species like Dhokra and Kumpta occupy the middle slopes and lower ridges and the flat ground at the foot hills is covered under Ber, Aranja and Kakaira. The grasses generally occupy the flat lands, rivulets and lower slopes of the hills. They belong to Aristida species by and large, although better grasses, such as Cenchrus ciliaris, Schima marvosu, Chloris barbata, etc. also grow in certain areas.

6. Soil - Types:

In the present sub-section, a generalized picture has been presented, as no material worth regarding the classification and description of the soil groups in the region is available. The group of brown soils is dominant in the region and covers a greater part of the region.

In the central part, it is greyish in colour, but becomes yellowish in the southern part due to the parent rocks. The group is also represented in the circles of Kishangarh tehsil which have calcic contents. The cultivated soil is a 'natural mixture of one-thid stiff yellow loam and two-third sand consisting of disintegrated mica, schist and felspar'.[15] The patches of sandy and hilly soils can also be traced out in the

15. D.G. Ajmer, p.9

central and the western parts of the region.

Natural Regions:

The natural Regions have been identified by superimposing the four indicators i.e., Geology, drainage pattern, soils, and natural vegetation, discussed at length in the preceding sections. The four regions emerged with distinct characteristics are (i) Eastern plains, (ii) Western plains, (iii) Transitional belts & (iv) Aravalli hills.

(i) The Eastern plains which can be further identified into three subdivisions on the map, cover the circles of Ankodiya, Arain, Ramsar, Sreenagar, North eastern part of Derathoo, Bijainagar, Ramgarh, most of Masuda and whole of south eastern part of Todgarh. The plains belong to Recent Arehean period and are covered with yellowish brown and greyish brown soils. In whole of the region the drainage pattern is of Dendritic type the great Indian water divide runs through this region. The Drainage density in this region is 55 mile per sq. mile. The region has semi-arid shrub tree type of Natural Vegetation.

(ii) The Western plains, identified in two subdivisions on map, extend into the circles of Rupnagar, western part of Karkadi, Nothern part of Gagawana, Pushkar, Peesangan. They are formed of recent Pre cembrian geological structure and are covered mostly with sandy soils. The drainage density in this region is 51 & 60 mile per

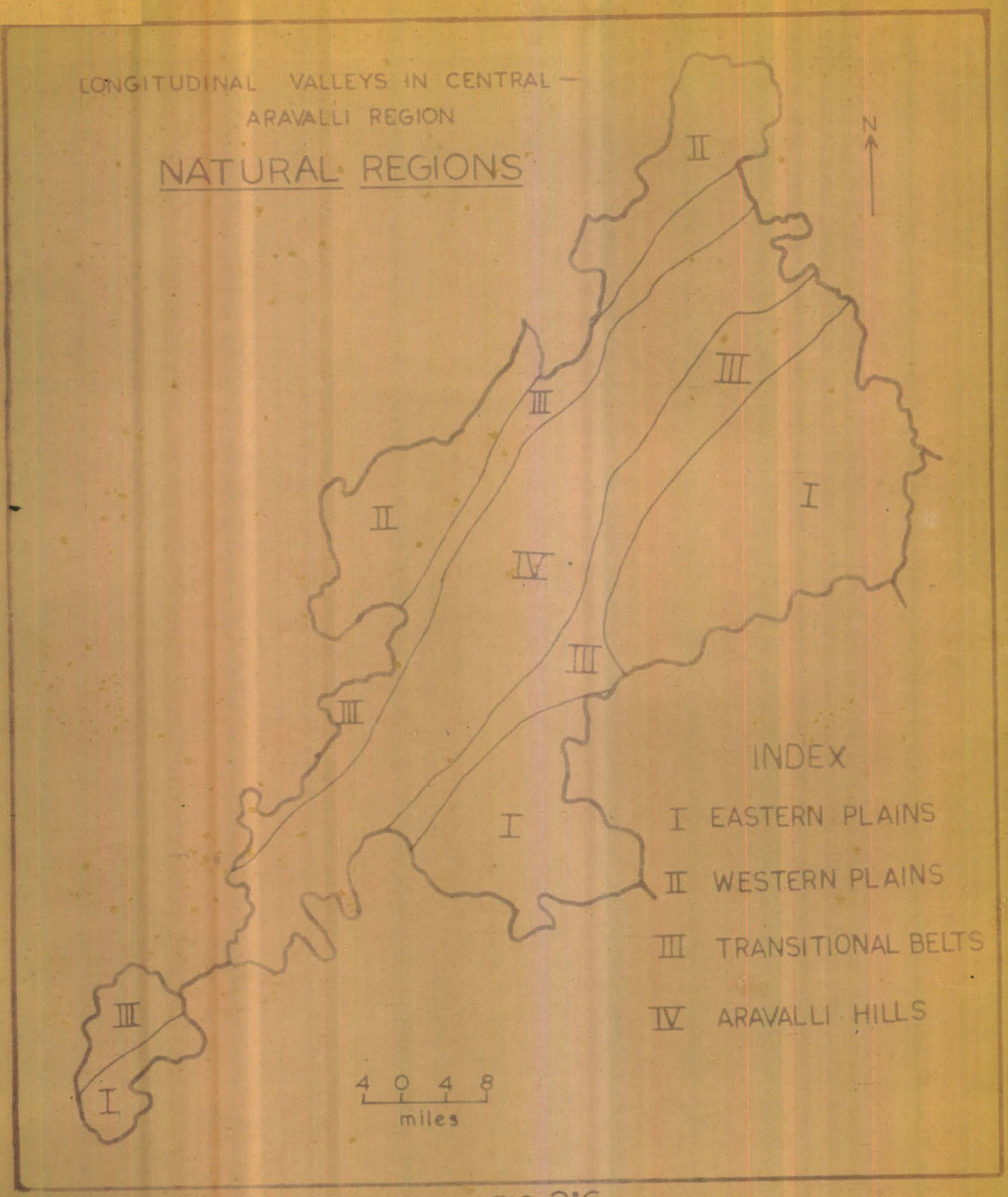

LONGITUDINAL VALLEYS IN CENTRAL ARAVALLI REGION
NATURAL REGIONS
N
INDEX
I EASTERN PLAINS
II WESTERN PLAINS
III TRANSITIONAL BELTS
IV ARAVALLI HILLS
4 0 4 8
miles

FIG. 3·6

sq. mile. The region has Desertic shrub type of Natural Vegetation.

(iii) Between the estern and the western plains one side and the Aravalli Hills on the other, extend the two transitional belts. The belt towards the east covers the circles of Bandar Sindhri, Kishangarh, Sreenagar, Ajmer II, Derathoo, Kherwa and some parts of Masuda and Ramgarh and that toward the west covers the circles of Rupnagar, Karkati, Gagawana, Ajmer I, Pushkar, Saradhana, Mangaliyawas, Peesangan, Kherwa, Nayanagar, Rajiyawas, Jawaja & Todgarh. The region is formed of recent and Pre-cambrian geological structure. The soils are greyish brown and yellowish brown in colour. The drainage density in this region is 51 to 60 mile per sq. mile. The region lies in the semi-arid shrub tree type of Natural Vegetation.

(iv) The Aravalli hills, which run approseimately in the middle of the region, extend into the circles of Karkadi (S.W. part), Gagawana, Ajmer I, Ajmer II, Saradhana, Mangaliyawas, Kherwa, Nayanagar, Masuda, Rajiyawas, Jawaja & Todgarh. They belong to recent Archaean & Pre-cambrian period and are characterized by greyish brown soils. The drainage density in this region is highest (60 mile per sq. mile). The region falls in the xerophytic three type of Natural Vegetation.

CHAPTER - IV

DEMOGRAPHIC STRUCTURE AND SOCIAL AMENITIES

The present study has been divided into two sections. Section A deals with some aspects of demographic structure in the region and section B takes into account the various social amenities available in the region at the village and the circle-level.

Section - A

DEMOGRAPHIC STRUCTURE:

The analysis of demographic structure is important in the study of regional structure. It helps us in assessing the human resources of a region on the one hand and in identifying their role in regional development on the other. With this view various aspects of demographic structure, such as - distribution, density and growth of population, density of the occupied residential houses and the households, sex-ratio, literacy rate, concentration of scheduled castes and tribes, have been studied in this section.

1. DISTRIBUTION OF POPULATION:

The population was distributed unevenly over the region in 1971 and sharp variations were observed spatially (Fig. 4.1). The valley of Ajmer constitutes the nucleus, with nearly one-half of the population of the region. Beawar town in the south and Kishangarh town in the north-east are the nuclei of second order.

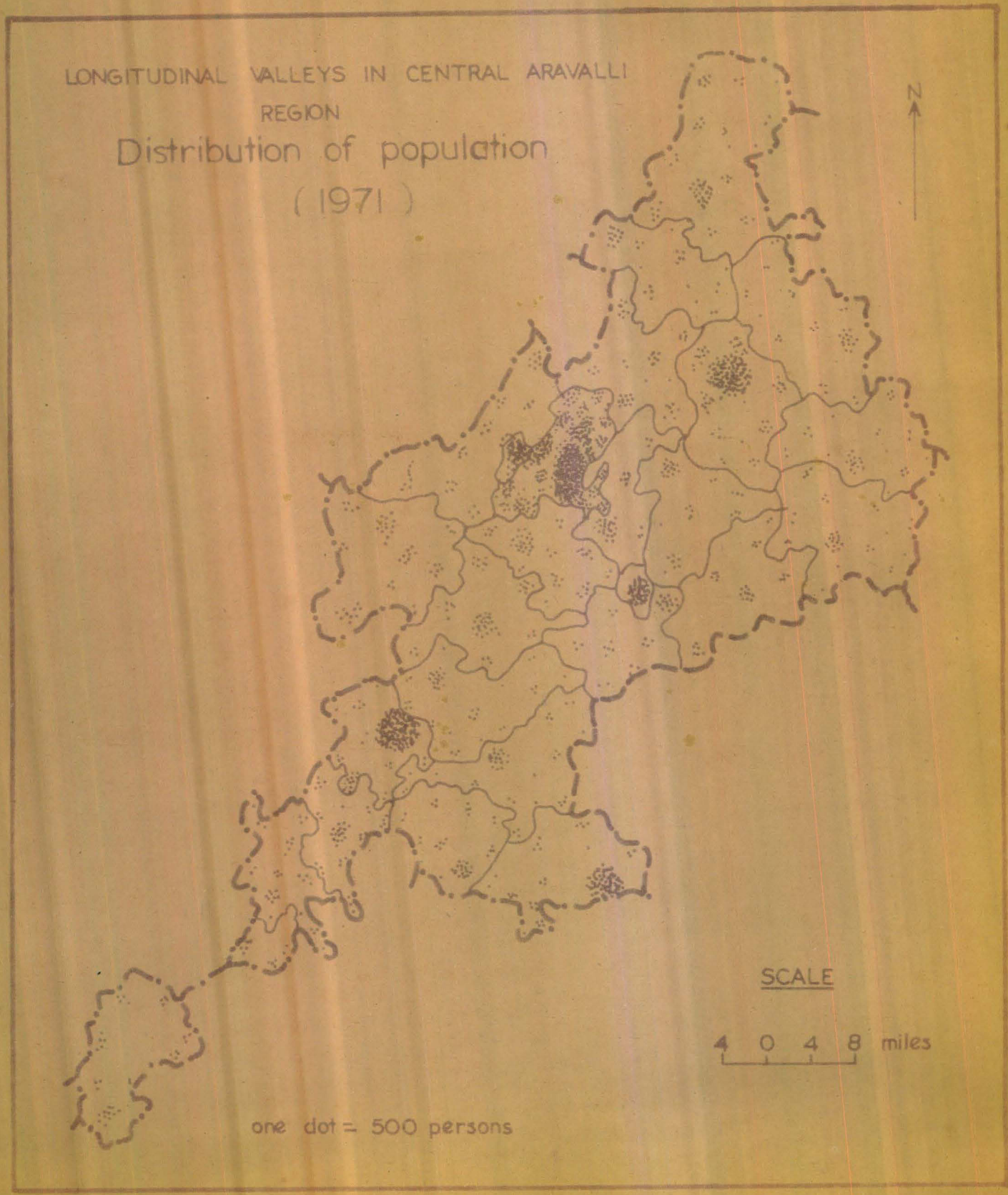

LONGITUDINAL VALLEYS IN CENTRAL ARAVALLI REGION
Distribution of population
(1971)
N
SCALE
4 0 4 8 miles
one dot = 500 persons

FIG. 4.1

In the remaining parts of the region, the population is sparsely distributed, although a few clusters can also be identified in the form of larger villages.

2. DENSITY OF POPULATION:

According to the 1971 census 909,021 persons were living in 695 settlements (rural, as well as, urban), and formed a general density of 428 persons per sq. mile 167.1 persons per square km. This figure was higher than the state' average (75 persons) but was equal to the national average (167.2 persons per square km.) The variations in the density at the circle-level were of high order and can be noted below (Fig. 4.2):

Areas with High density (2574 to 334 persons) are situated in the central part of the region and comprise of the circles of Ajmer I, Ajmer II, Saradhana and Kishangarh, along with Nayanagar and Rajiyawas circles of the southern part. The highest density was observed in the circles incorporating the urban centres of Beawar (Nayanagar) and Ajmer (Ajmer I), the values being 1,612 and 2,574 per square mile respectively.

Medium high density (334 to 255) occurs in Masuda, Ramgarh, Bijayanagar, Jawaja and Todgarh circles of the southern part, and Karkadi in the north. The circles situated in the western part have medium low values of density (255 to 207 persons per square mile).

The lower values (207 to 169 persons) are

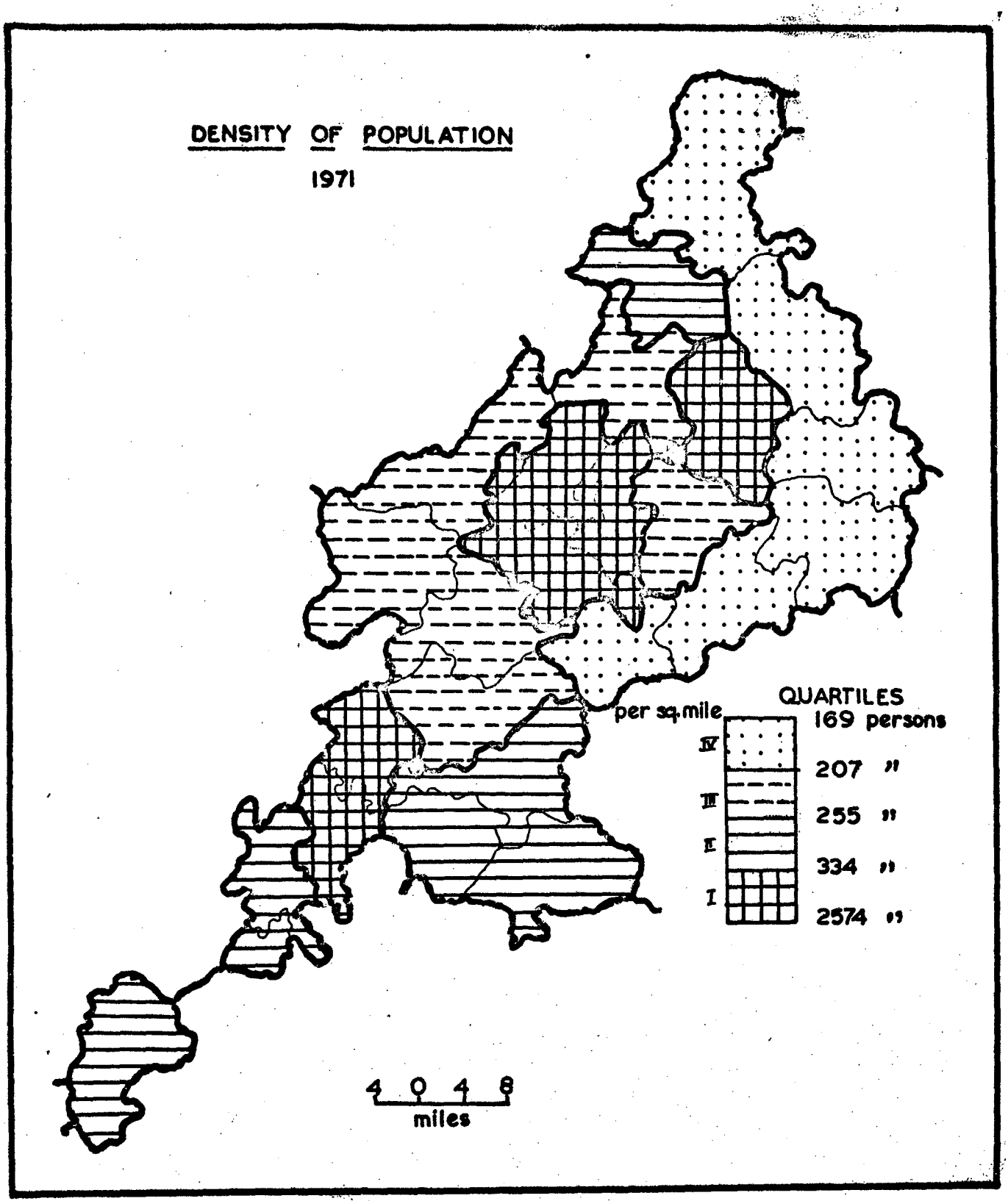

DENSITY OF POPULATION
1971
QUARTILES
per sq. mile
169 persons
IV
207 "
III
255 "
II
334 "
I
2574 "
4 0 4 8
miles

FIG. 4.2

observed in the circles of the eastern periphery of the region, constituted by Rupnagar, Bandar Sindri, Ankodiya, Arain, Ramsar and Deratoo circles.

Thus, three division can be identified from the maps showing distribution and density of population in the region (Fig. 4.1 and 4.2). The central zone, which extends from Kishangarh to Beawar, has high concentration of the population, but the zones, lying to the west and to the east of it, have lower concentration of population.

3. GROWTH OF POPULATION:

The total population of the region increased from 657,492 persons in 1951 to 9,08,984 persons[1] in 1971. The percentage increase during the period was nearly 17. While the population incresed by 17.98 per cent in 1951-61 decade it was slightly low (17.19) during 1961-71 period (Table no. 4.1).

TABLE NO. 4.1

GROWTH OF POPULATION 1951-71(BY TEHSILS)

S.NO:	TEHSILS	TOTAL POPULATION 1951	1961	1971	PERCENTAGE GROWTH 1951-61	1961-71
1.	Ajmer	377,579	448,782	511,809	18.86	14.04
2.	Kishangarh	105,767	122,357	157,954	15.69	29.09
3.	Beawar	174,146	204,439	239,221	17.40	17.01
	Region	657,492	775,578	908,984	17.98	17.19

1. It is to be stated here that the total population of the region was 9,08,984 person according to the tehsil-level data but the addition of village level data gives a higher number of 9,09,021 persons as stated earlier.

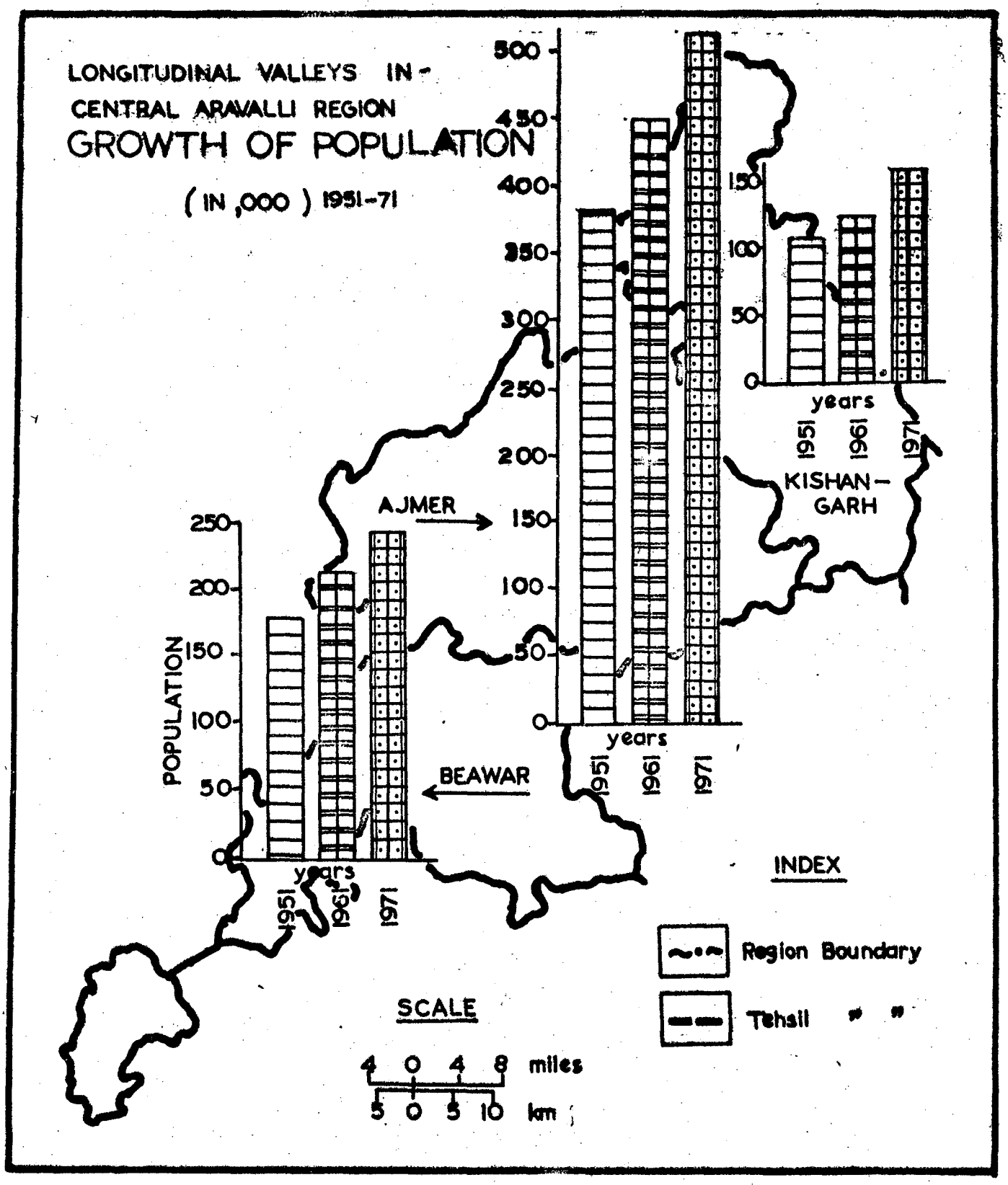

LONGITUDINAL VALLEYS IN -
CENTRAL ARAVALLI REGION
GROWTH OF POPULATION
(IN ,000) 1951-71
AJMER
BEAWAR
KISHAN-GARH
POPULATION
years
1951
1961
1971
INDEX
Region Boundary
Tehsil
SCALE
4 0 4 8 miles
5 0 5 10 km

FIG. 4.3

The table reveals that Ajmer tehsil contributes more than one-half to the total population at every point of time. Its population increased from 3,77,579 (1951) to 5,11,809 in 1971. This accounted for 18.86 (1951-61) and 14.04 (1961-71) per cent increase in the total population of the tehsil.

Beawar tehsil stands second from the viewpoint of population. The percentage growth has been in accordance to the regional average. While the population increased by 17.4 per cent during the 1951-61 period, it was 17.19 per cent during the last decade. Kishangarh tehsil has shared nearly one-sixth of the total population. It observed low increase (15.69%) during 1951-61, but it was as high as 29.09 per cent in 1961-71 decade (Fig.4.3)

4. RESIDENTIAL HOUSES AND HOUSEHOLDS:

The study of occupied residential houses and houselholds reveals the following salient features (Table No.4.2):

(i) The density of occupied residential houses and the households per square mile is found identical, density values for both the variables being the same by and large.

(ii) High density of both the variables is observed only in the circles incorporating the urban centres. While the density of residential houses in Kishangarh, Ajmer I and Nayanagar (Beawar) was 100,450

TABLE NO: 4.2

ASPECTS OF DEMOGRAPHY, 1971

Sr. No:	Circles	Various Densities(per sq. mile) Population	Occupied Residential Houses	Households	Sex Ration (Females per 1000 males).	Literated Educated Persons (Percentage)	No. Persons per Occupied Residential House:	Household
1.	2	3	4	5	6	7	8	9
1.	Rupnagar	179	30	31	904	11.63	6	6
2.	Karkadi	274	43	44	884	13.02	6	6
3.	Kishangarh	564	100	105	843	35.38	6	5
4.	Bandar Sindhri	175	28	29	903	13.49	6	6
5.	Ankadiya	169	26	27	920	12.34	6	6
6.	Arain	178	29	30	920	12.96	6	6
7.	Ajmer I	2574	450	463	879	55.75	6	6
8.	Ajmer II	335	56	59	885	19.00	6	6
9.	Pushkar	253	46	47	906	16.36	6	5
10.	Peesangal	232	40	41	921	17.42	6	6
11.	Mangaliyawas	253	46	48	933	19.11	5	5
12.	Saradhana	364	64	70	927	18.27	6	5
13.	Sreenagar	210	38	39	943	13.83	6	5
14.	Derathoo	203	34	34	943	18.27	6	6
15.	Ramsar	203	35	36	951	16.90	6	6
16.	Gagawana	254	42	44	903	15.95	6	6
17.	Bijainagar	333	52	63	901	25.59	6	5
18.	Ramgarh	277	50	52	965	11.49	6	5
19.	Masuda	257	46	46	922	18.30	6	6
20.	Kherwa	233	38	39	929	13.79	6	6
21.	Nayanagar	1612	312	319	906	63.11	5	5
22.	Rajiyawas	462	95	97	992	18.36	5	5
23.	Jawaja	316	66	67	1001	19.59	5	5
24.	Todgarh	324	68	69	1063	23.87	5	5
Regional Average:		428	76	78	905	35.68	6	5

Source: District Census Handbook - Ajmer (1971), pp.6-36
(Rural Primary Census Abstract)

and 312 per square mile respectively. It shows high congesion of houses, as well as, households in the urban centres.

(iii) As we go away from the centre the densities show decreasing trends.

The computation of the persons per occupied residential house and the household reveals idential numbers on the one hand and negligible intra-regional variations on the other. In most of the circles the number of persons per house is 6 and the same figure holds in case of persons per household (Table No.4.2).

5. SEX-RATIO:

The average number of female per thousand male in 1971 was 905 in the region and it varied from 943 in Kishangarh to 1063 in the case of Todgarh circle in the south (Fig. 4.4). The sex-ratio is high (1063 to 943) in the circle of the southern and east-central parts. Medium high (943 to 920) ratio is observed in the central part comprised by Sreenagar, Saradhana, Mangliyawas, Peesangan, Kherwa and Masuda circles.

The ratio of female per thousand male is medium low (920 to 903) in the circles of Rupnagar, Ankodiya, Arain, Gagawana and Pushkar in the north and Nayanagar in the south. The lower sex-ratio (903 to 843) is observed in Ajmer I, Ajmer II, Kishangar, Bandar-Sindri, and Karkadi in the north and Bijayanagar in the

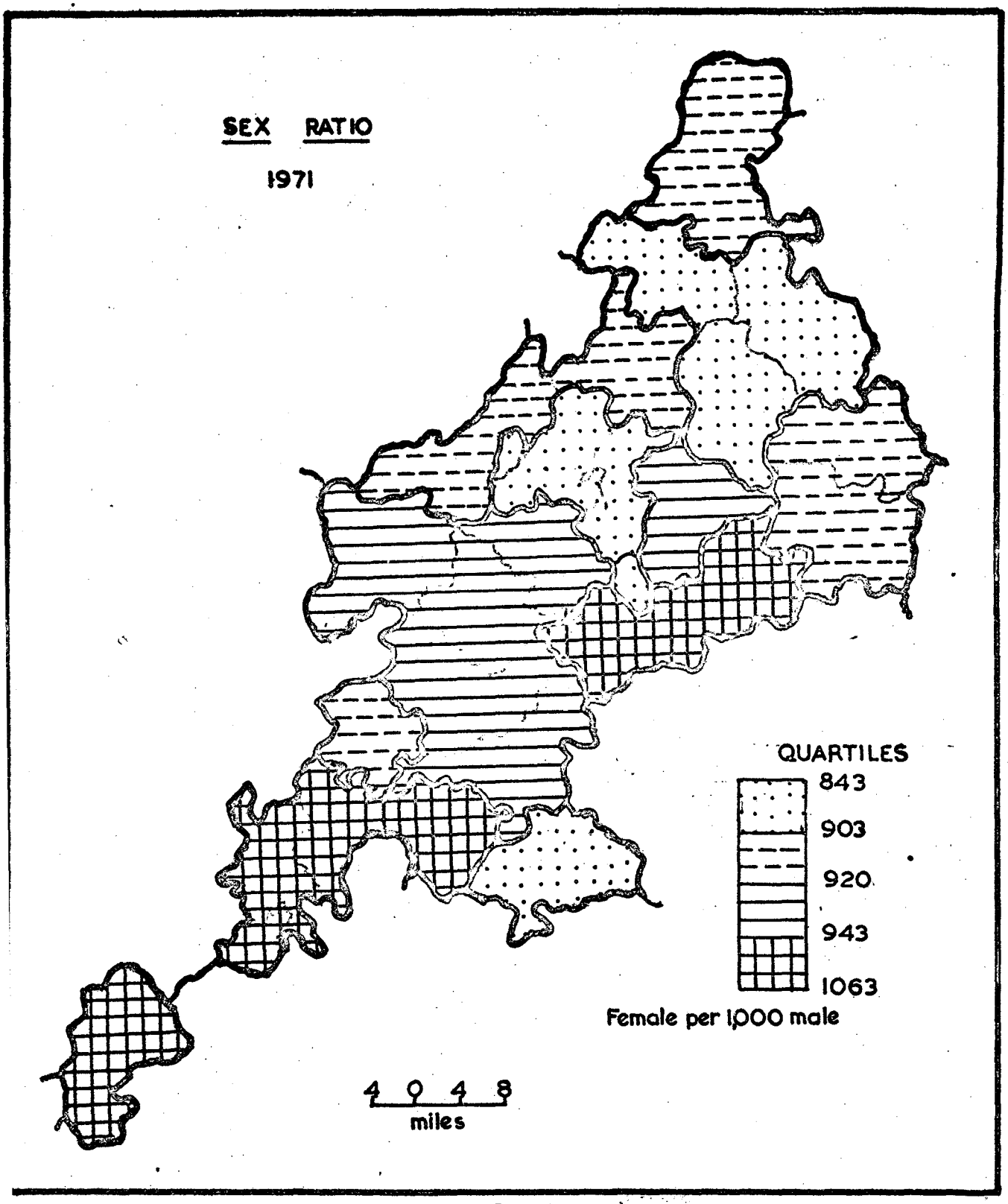

SEX RATIO
1971
QUARTILES
843
903
920
943
1063
Female per 1,000 male
4 0 4 8
miles

FIG. 4.4

south. Thus, average to below average sex ratio is found in the central and the northern parts of the region.

6. LITERACY RATE:

The literacy rate i.e., the proportion of literate and educated persons to the total oopulation was 35.68 per cent in the region in 1971. This percentage share was fairly high in comparison to the state (19.07%) and national average (29.34%). But there are marked variations within region. For example the literacy rate varies in Ramgarh 11.49% to 55.75% in Ajmer I at the circle-level, situation is very alarming as all but two circles have the literacy rate below the regional average i.e., 35.68 per cent.

Fig. 4.5 shows higher literacy rate (63.11 to 19.59) in the circles of Nayanagar, Jawaja, Todgarh and Bijayanagar in the south, and Ajmer I and Kishangarh circles in the north. The literacy rate is medium high (19.59 to 17.82) in the circles of the central (Ajmer II, Saradhana, Mangliyawas, Deratoo) and the souther (Masuda and Rajiyawas) parts.

The proportion of the literated persons is below median (17.82) in the circles of the northern part exclusivel. While medium high rate (17.82 to 13.64 per cent) is observed in Gagawana, Pushkar, Peesangan, Kherwa, Ramsar and Sreenagar circles, it is recorded low (13.64 to 11.49) in an elongated belt in the north-east along with Ramgarh circles in the south.

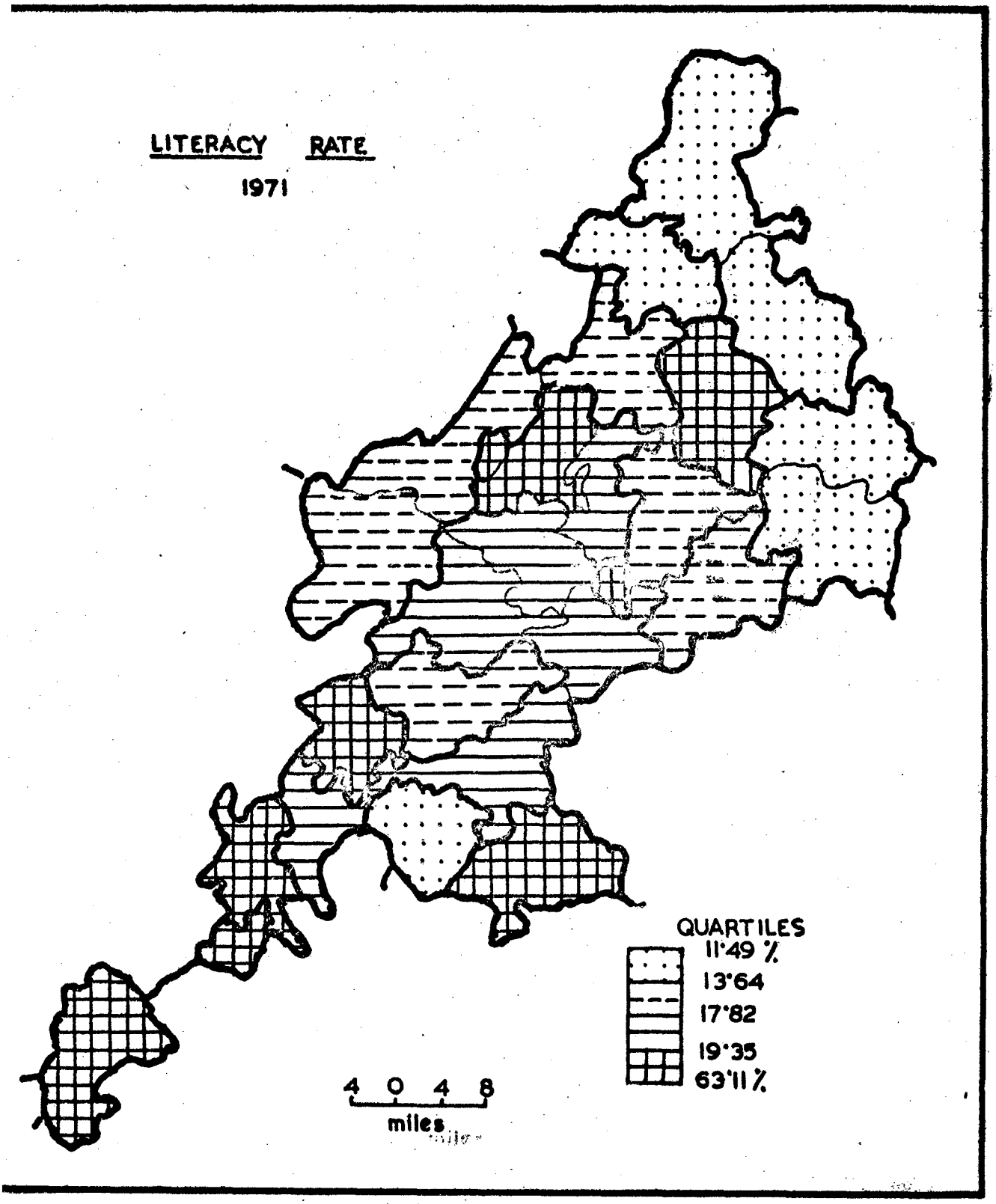

LITERACY RATE
1971
QUARTILES
11·49 %
13·64
17·82
19·35
63·11 %
4 0 4 8
miles

FIG-4.5

It is necessary to mention here that although literacy rate was found high in the region most of the circles had lower literacy rate. The figure shows that only Nayanagar (63.11 per cent) and Ajmer I (55.75) had the literacy rate higher than the regional average. This typical situation can be attributed to very high literacy rate found in the urban centres of Beawar and Ajmer, which constitute nearly one-half of the total population.

7. SCHEDULED CASTE AND TRIBES:

Caste-system has been considered a typical aspect of the traditional India and reflects the stratification in the Indian Society. This system has not only attracted sociologists but its importance has also been recognized by the regional scientists, as it plays significant role in the development process in a region. Here, only depressed castes and tribes, which have been scheduled in the Indian constitution (Article 341), have been considered, as (i) the census provides the necessary date for only this scheduled population, and (ii) they constitute generally socially deprived and economically backward sections of the society. Their spatial distribution patterns have been taken into account in order to investigate the role played by them in generating under-development in the region under study(Table no.4.3)

7.1 SCHEDULED CASTE POPULATION:

In 1971 census 1,05,904 persons of the region were enumerated as scheduled caste and they constituted

TABLE NO: 4.3

ASPECTS OF THE SCHEDULED POPULATION, 1971

Sr. No:	Circles	Scheduled Caste Population:			Scheduled Tribe Population:			Levels of Social Backwardness (S.T + S.C) Population
		Density Per Sq. mile	% to total Papulation	Location Quetiont	Density Per Sq. mile.	% to total Population:	Location Quetiont	
1.	2	3	4	5	6	7	8	9
1.	Rupnagar	40	22.13	1,33	0.53	0.30	0.37	22.43
2.	Karkadi	55	19.94	1.20	--	--	--	19.94
3.	Kishangarh	88	15.66	0.94	5.00	0.94	1.17	16.60
4.	Bandar Sindhri	39	22.19	1.33	0.28	0.17	0.21	22.36
5.	Ankodiya	35	20.85	1.25	9.00	1.02	1.27	21.87
6.	Arain	35	19.42	1.16	0.06	3.42	4.27	22.84
7.	Ajmer I	468	18.20	1.09	6.00	0.25	0.31	18.45
8.	Ajmer II	46	13.68	0.82	--	--	--	13.68
9.	Pushkar	47	1851	1.11	--	--	--	18.51
10.	Peesangar	41	17.73	1.06	0.32	0.14	0.17	17.87
11.	Mangaliyawas	39	15.47	0.93	4.00	1.61	2.01	43.37
12.	Saradhana	53	14.64	0.88	0.72	0.20	0.25	61.86
13.	Sreenagar	32	15.31	0.92	0.56	0.27	0.33	15.58
14.	Derathoo	34	16.71	1.00	3.00	1.49	1.86	18.20
15.	Ramsar	25	12.50	0.75	9.00	4.19	5.23	16.69
16.	Gagawana	39	15.32	0.92	0.20	0.08	0.10	15.40
17.	Bijanagar	48	14.40	0.86	13.00	3.97	4.96	18.37
18.	Ramgarh	25	9. 03	0.54	8.00	2.89	3.61	11.92
19.	Masuda	36	14.11	0.85	10.00	4.01	5.01	18.12
20.	Kherwa	23	9.89	0.59	4.00	1.86	2.32	11.75
21.	Nayanagar	270	16.76	1.00	0.00	0.05	0.06	16.87
22.	Rajiyawas	50	10.76	0.64	1.00	0.24	0.30	11.00
23.	Jawaja	42	13.18	0.79	2.00	0.45	0.56	13.63
24.	Todgarh	30	9.22	0.55	5.00	1.57	1.96	10.79
	Regional Average:	71	16.60	1.00	9.43	0.80	1.00	1.99

Source: District Census Handbook - Ajmer (1971), pp. 6-36 (Rural Primay Census Abstract).

16.6 per cent of the total regional population. The distribution of scheduled caste population works out to 71 persons per square mile. In order to find out spatial variations the density at the circle level was computed and plotted on the figure (4.6). The main features can be noted as follows:

7.11 DENSITY

The density of the scheduled caste population was high in the central part of the region. The circles which incorporated the urban centres of Kishangarh, Beawar and Ajmer showed very high density, the values being 88, 270 and 468 persons per square mile respectively.

Relatively high density (40 to 48) was observed mainly in the circles of western fringe, stretched over Rupnagar, Pushkar, Peesangan and Ajmer II, along with Jawaja and Bijayanagar in the south. The density values were found below median in the central and the southern parts. While relatively low (35 to 39) density was found in Bandar, Sindri, Ankodiya, Arain, Gagawana, Mangliyawas and Masuda circles, the density was low (23 to 34) in Sreenagar, Ramsar, Deratoo, Kherwa, Ramgarh and Todgarh in the south.

In brief, the density of scheduled caste population has been found to be higher in areas where Urban population and Urban centres are move in number.

7.12 CONCENTRATION:

The scheduled caste population contributed

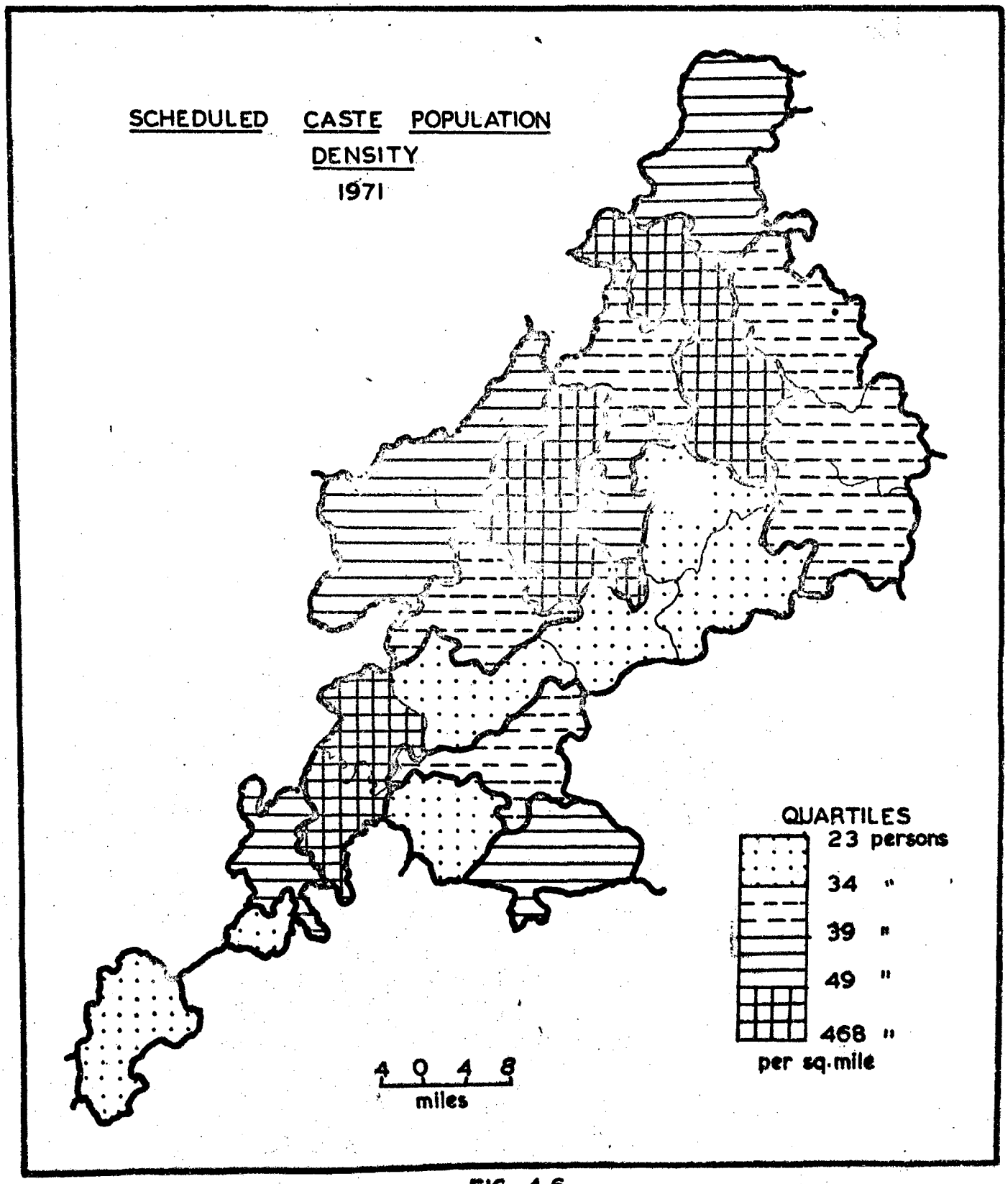

SCHEDULED CASTE POPULATION
DENSITY
1971
QUARTILES
23 persons
34 "
39 "
49 "
468 "
per sq.mile
4 0 4 8
miles

FIG. 4.6

16.6 per cent to the total population in 1971. This proportion was found varying substaintially at the circle level (Fig. 4.7). The higher share was observed in the northern part which incorporated the circles of Rupnagar, Karkadi, Bandar Sindri, Ankodiya, Arain and Pushkar. Relatively high percentage values were found in Kishangar, Ajmer,I Peesangan, Mangliyawas, Deratoo and Nayanagar circles, situated in the central part.

The lower proportion of the scheduled caste population was observed in the circles of the central and southern parts exclusively. While Gagawana, Ajmer II, Sreenagar, Saradhana, Masuda and Bijayanagar circles had relatively low percentage (13.43 to 15.40), the percentage share was found low (73.43 to 9.03) in Ramsarh, Kherwa, Ramgarh, Jawaja, Todgarh and Rajiyawas circles in the south.

The relative concentration[2] of the scheduled caste population has also been computed at the circle level. The map (inset - 4.7) reveals the fact that the circles of the northern part had higher concentration,

---

2. The relative concentration of the scheduled caste population was computed from the following formula:

$$\text{Location Quotient} = \frac{Si/Pi}{Sr/Pr}$$

Where the alphabets S and P denote the number of scheduled caste population and the total population respectively; and the suffix i and r mean a circle and the region respectively. Thus, the location quotient value will give an idea about the concentration of the scheduled caste population in the regional (context).

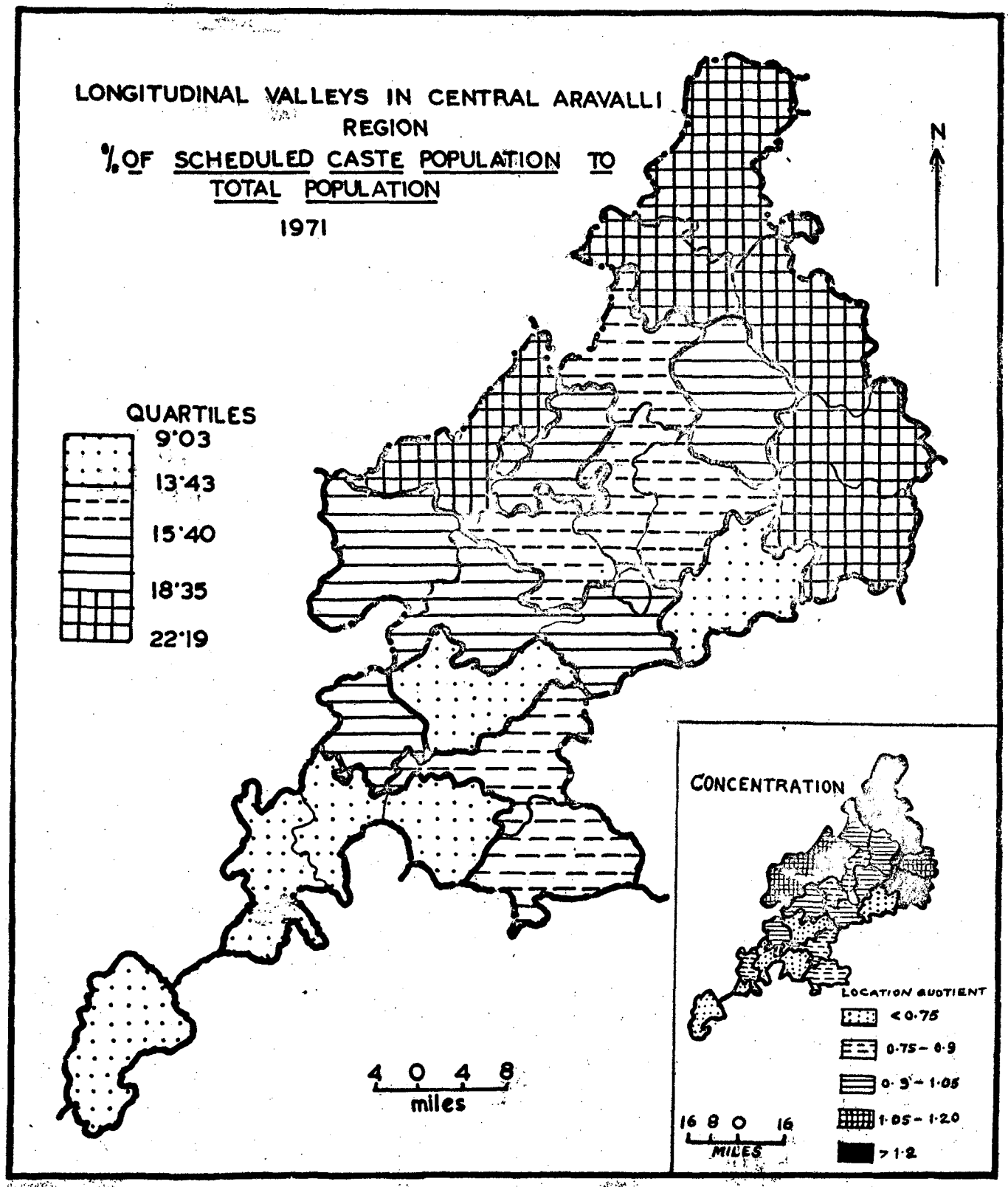

LONGITUDINAL VALLEYS IN CENTRAL ARAVALLI REGION
% OF SCHEDULED CASTE POPULATION TO TOTAL POPULATION
1971
N
QUARTILES
9·03
13·43
15·40
18·35
22·19
4 0 4 8
miles
CONCENTRATION
LOCATION QUOTIENT
< 0·75
0·75 – 0·9
0·9 – 1·05
1·05 – 1·20
> 1·2
16 8 0 16
MILES

FIG. 4.7

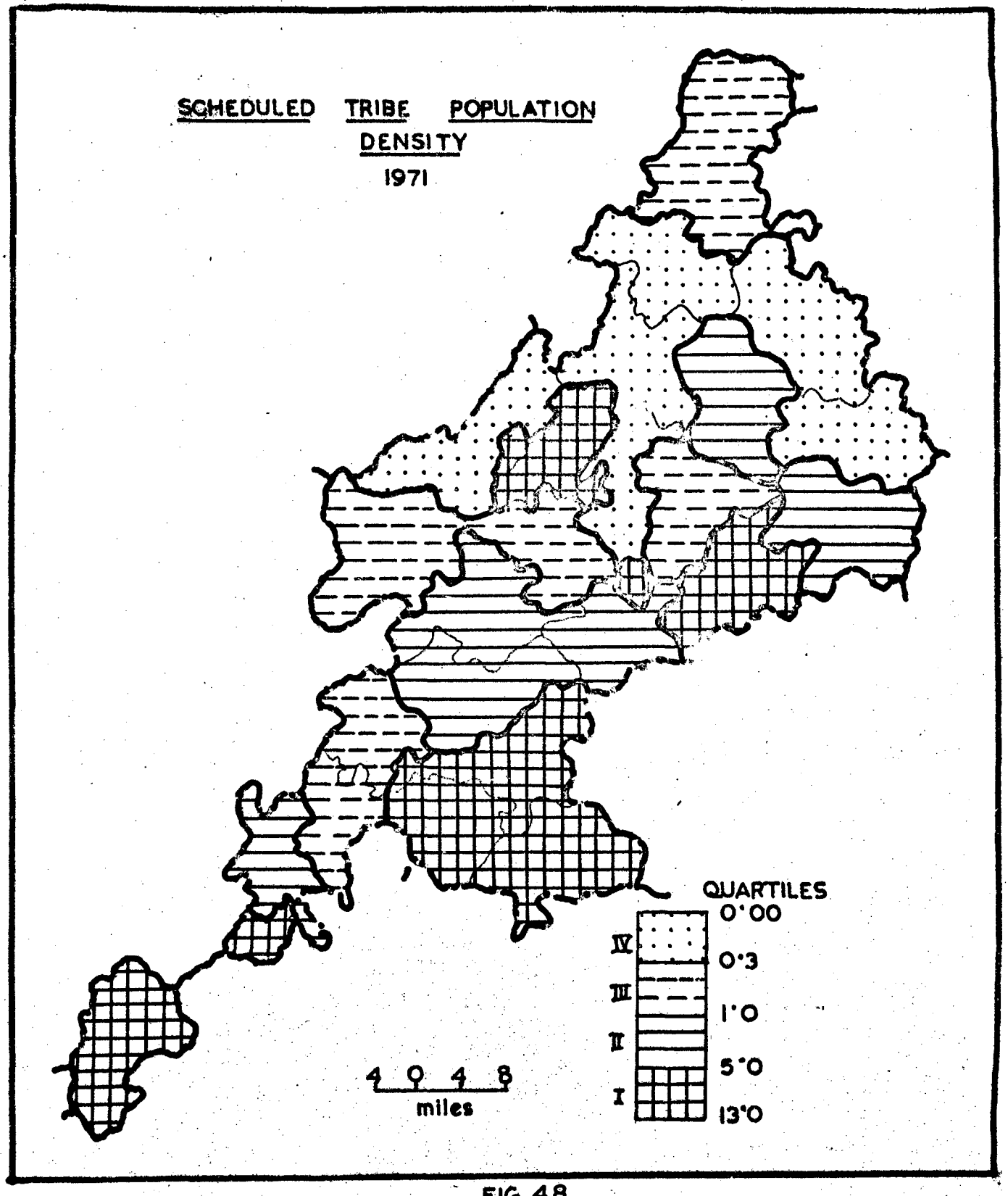

SCHEDULED TRIBE POPULATION
DENSITY
1971
QUARTILES
0·00
IV
0·3
III
1·0
II
5·0
I
13·0
4 0 4 8
miles

FIG. 4.8

but the location quotient values were below the regional average in the southern part.

It is interesting to note that the maps, showing the density (Fig. 4.6) and proportion (Fig.4.7) of the scheduled caste population, have positive correlation of only lower order, but the maps, showing proportion and concentration of the scheduled castes are identical.

7.2 SCHEDULED TRIBE POPULATION:

According to the 1971 census, only 7,291 persons belonged to the scheduled tribes in the region. This accounted for only 0.8 per cent of the regional population and a density of only 3 persons per square mile. The variations, as observed in the density and proportion of the scheduled tribe population at the circle-level can be highlighted as follows:

7.21 DENSITY:

High density of the scheduled tribe population was observed in the southern part incorporating Masuda, Ramgarh, Bijayanagar and Todgarh circles, along with Ajmer I and Ramsar in the centre. But the density figures could not go above 13 persons per square mile (Fig.4.8) in any case.

Relatively high density (2 to 5) was observed in the central and the eastern parts. The lower values were observed exclusively in the circles of the northern and the central part. In most of these circles less

than 1 person, belonging to the scheduled tribe, was found on an average which could be considered as negligible.

7.22 PROPORTION AND CONCENTRATION:

The proportion of the scheduled tribe population was obserbed to be high (1.73 to 4.19 per cent) in the south-eastern part, comprised by Bijayanagar, Ramgarh, Masuda, Kherwa, along with Arain and Ramsar circles in the north. Relatively high values (1.73 to 0.37) were found in the circles adjecent to the south-eastern part (Fig. 4.9).

The circles of the central and the northern parts had lower percentage values and were included in the third or the fourth quartile. In most of the circles the proportion was even below 0.25 per cent and could be considered as negligible.

Relative concentration of the scheduled tribe population, at the circle level reveals the same patterns, as observed in the previous study. While the concentration was found high in the circles of the south-eastern part, the location quotient values were below the regional average in the circles of the north-western part. The values varied from nil (Kerkadi, Puskar and Ajmer II circles) to 5.0 and above in the circles of Masuda and Ramgarh.

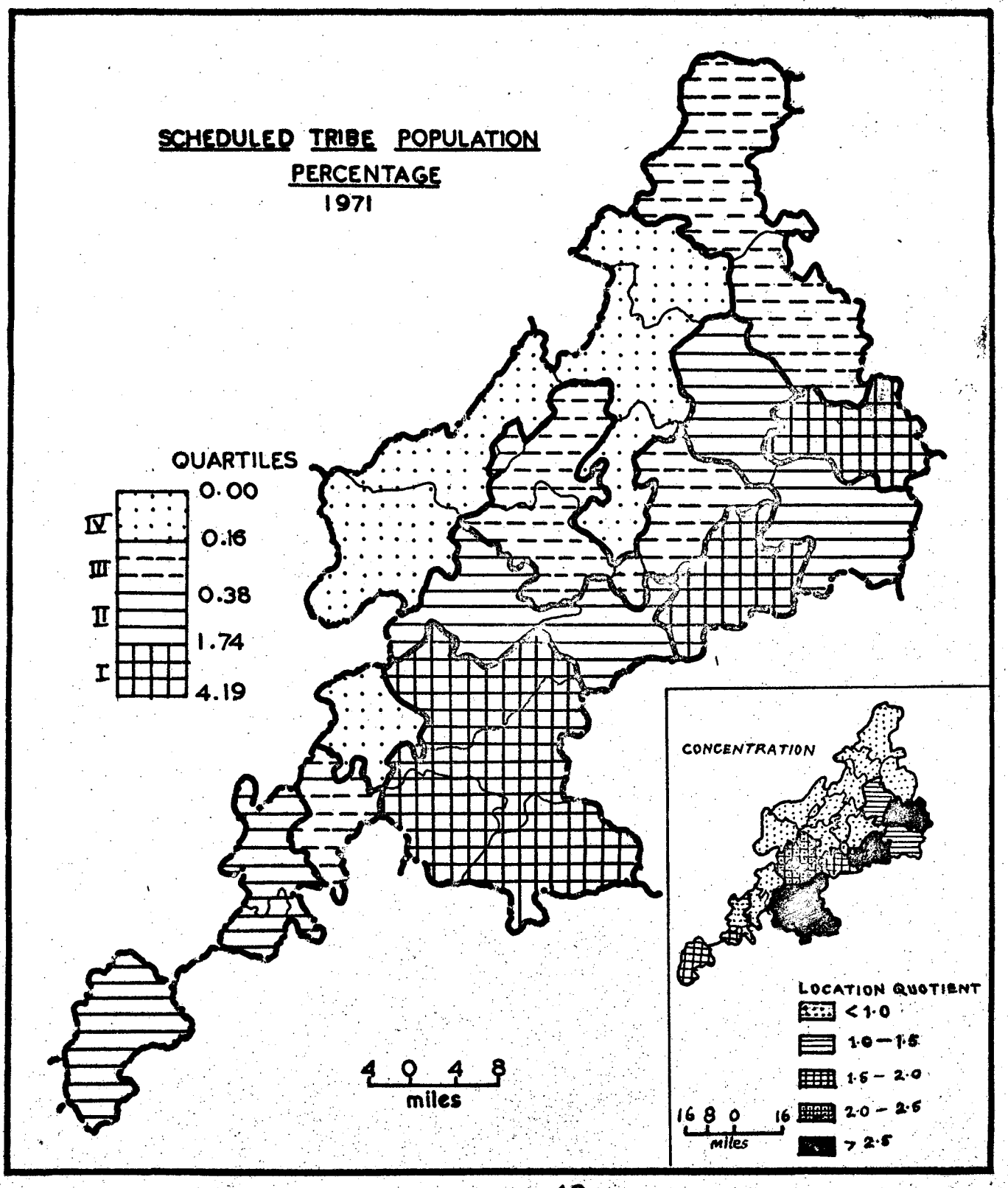

SCHEDULED TRIBE POPULATION
PERCENTAGE
1971
QUARTILES
IV
III
II
I
0.00
0.16
0.38
1.74
4.19
4 0 4 8
miles
CONCENTRATION
LOCATION QUOTIENT
< 1·0
1·0 — 1·5
1·5 — 2·0
2·0 — 2·5
> 2·5
16 8 0 16
miles

FIG. 4.9

8. LEVELS OF SOCIAL BACKWARDNESS:

After highlighting the main features of the distribution of the scheduled castes and tribes population, it was considered worthwhile to identify various levels of social backwardness in the region. To achieve this aim the proportion of the scheduled population[3] was computed at the circle-level and the values were depicted on the figure (4.10). The salient - features, as observed in the figure, can be described as follows:

(1) High level of social backwardness (18.48 to 22.84%) was found in the northern part, which incorporated the circles of Rupnagar, Kerkadi, Bandar Sindri, Arain, Ankodiya (Kishangarh tehsil) and Pushkar (Ajmer).

(2) Relatively high proportion of the scheduled population (18.48 to 16.95) could be seen in the circles of the central part. Ajmer I, Peesangan, Mangliyawas, Deratoo (Ajmer tehsil), Masuda and Bijayanagar (Beawar) circles were included in this second quartile.

(3) The level of social backwardness was relatively low (13.76 to 16.95 per cent) in the central part, constituted by Kishangarh (Kishangarh

---

3. The levels of social backwardness have been identified from the following method:

$$\frac{\text{Population of the scheduled castes \& tribes in a circle}}{\text{Total population in a circle}} \times \frac{100}{1}$$

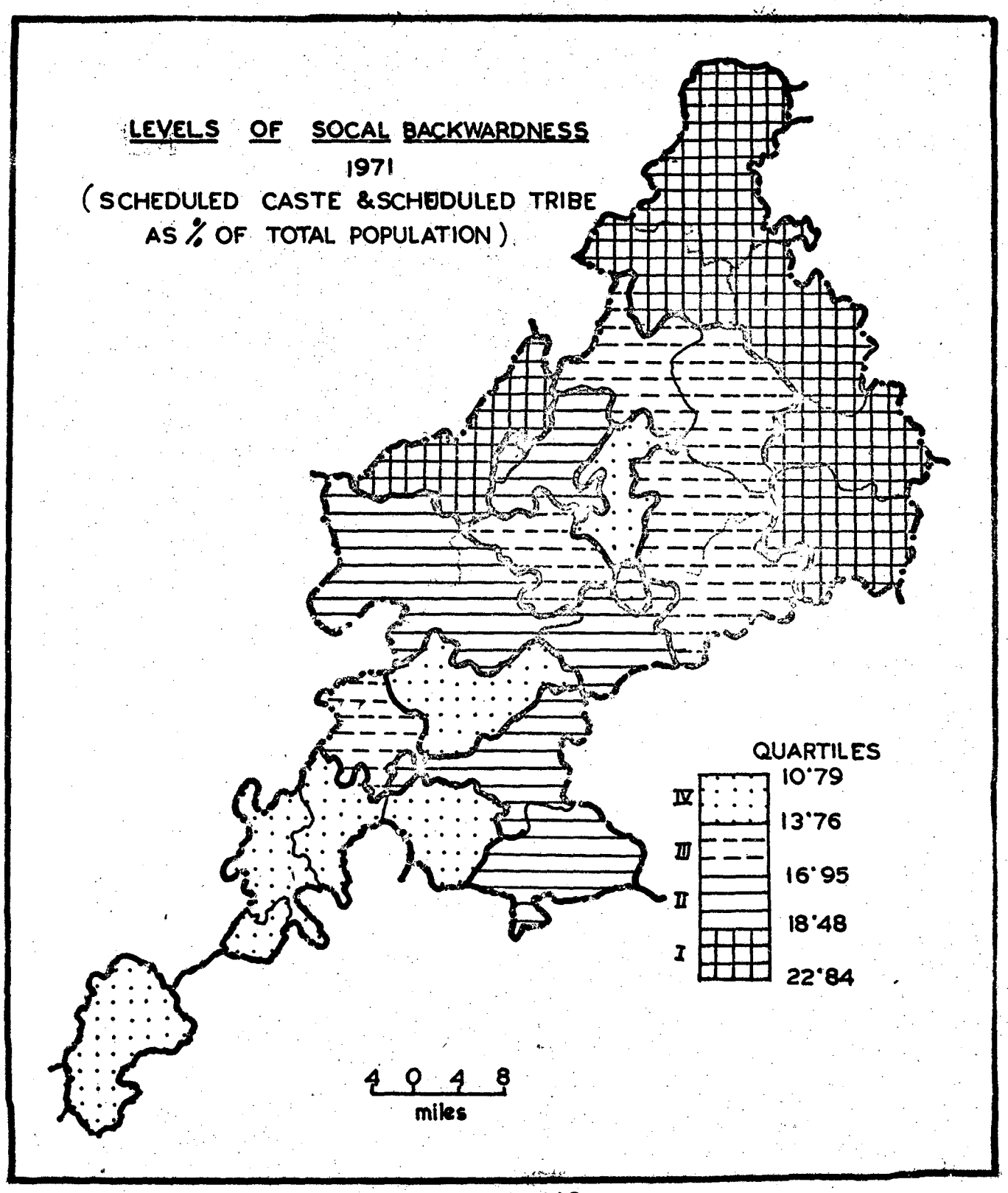

LEVELS OF SOCAL BACKWARDNESS
1971
(SCHEDULED CASTE &SCHEDULED TRIBE
AS % OF TOTAL POPULATION)
QUARTILES
IV
III
II
I
10·79
13·76
16·95
18·48
22·84
4 0 4 8
miles

FIG. 4.10

tehsil), Gagwana, Sreenagar Ramsar and Saradhana (Ajmer) circles, besides Nayanagar (Beawar) circle in the south.

(4) The lower percentage values were observable in the southern part. This quartile included Kherwa, Ramgarh, Rajiyawas, Jawaja and Todgarh (Beawar tehsil) circles, along with Ajmer II (Ajmer) circle.

Thus, we find higher level of social backwardness in the northern part and as we go in the south the proportion of the scheduled population to the total population decreases substaintially. Another point, which needs to be mentioned here, is that high positive correlation can be observed between the proportion of scheduled caste population and the proportion of the socially deprived population. It is obvious, as the proportion of the scheduled tribe population has insignificant saying in the region.

SECTION - B

SOCIAL AMENITIES:

In the present section, an attempt has been made to assess the spatial distribution of various social amenities and their intra - regional variations. The amenities, taken into account, are as follows:-

1. EDUCATIONAL: This includes the distribution of primary, Middle and Secondary/Higher Secondary Schools and Colleges;

Longitudinal valleys in Central Aravalli Region

AVAILABILITY OF SOCIAL AMENITIES (1971-72)

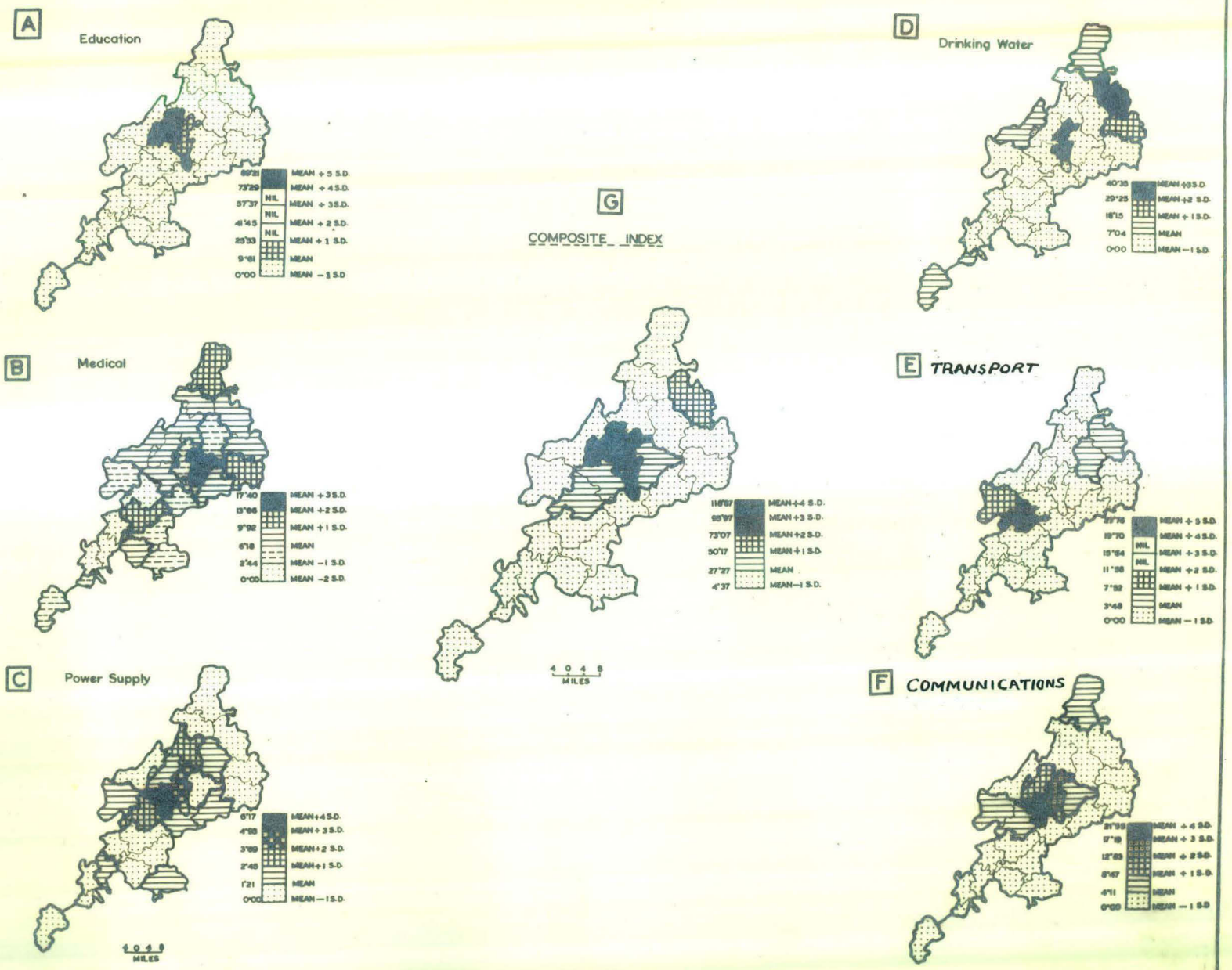


FIG. 4.11

2. MEDICAL: Under medical facilities, the existance of Hospitals, Dispensaries, Centres of Family - Planning, Maternity and Child Welfare, and Health have been analysed;

3. POWER SUPPLY: It takes into account the number of electrified villages;

4. DRINKING WATER:

The different sources of drinking water like Tap, Well, Tank, Tubewell, Rivers etc. are included under this head;

5. TRANSPORT: The transport facilities include the existence of Railways/Railway Stations, and Pucca and Kutcha roads;

6. COMMUNICATION: This incorporates the presence of post office, Telegraph Office and Telephone Office.

For analysis of concentration of these amenities at the circle-level, location-quotient technique[4] was

---

4. The present study is based on the data available in the District Census Handbook (Ajmer.) After identifying the respective villages of various circles, their share in the total villages were computed. This method can be expressed mathematically as follows:

$$\text{Location Quotien} = \frac{Vic}{Vir} \div \frac{Tc}{Tr}$$

Where Vi means number of villages having 'i' facility; T means total number of villages; and the alphabets c and r represent circle and the region respectively.

The location-quotient values were added together and the index for a particular set of amenities, was worked out. To get the aggregate (composite) index, the values of all the indices were added together. Thus, these indices exibit the concentration of various social amenities in regional context.

used and the values were plotted on the maps. For identifying various levels of development based on these amenities an aggregate (composite) index was worked out. The intra-regional variations, as observed in the indices for various sets, as well as, the composite one, are described in the following text (Table No. 4.4).

1. EDUCATIONAL:

The region has the educational facilities of different orders ranging from primary schools to Higher Secondary School, besides 10 colleges. While the number of primary schools was 530, the figures for Middle and Secondary/Higher Secondary Schools were 72 and 74 respectively. The salient features, as observed in the index incorporating all these academic institutions (Fig. 4.11-A) can be noted below:

Ajmer I has the highest number of educational institutions, the respective number of Primary, Middle and Secondary/Higher Secondary Schools being 130, 26 and 39 along with 7 colleges. This institutions contributed nearly 70, 50, 35 and 25 per cent to the respective regional totals. The index value for educational facilities is 79.10, as high as mean & four standard deviation. Ajmer II ranks second in terms of educational facilities with index-value at 15.43. The other circles have a

TABLE NO: 4.4

Indices of Various Social Amenities, 1971

S.No.	Land Revenue Inspector Circles	Educational I	Medical II	Power Supply III	Drinking Water IV	Communications V	P&T Services VI	Composite Index I to IV
1	2	3	4	5	6	7	8	9
1.	Rupnagar	1.50	11.00	.20	7.90	.99	5.31	26.90
2.	Karkadi	2.25	7.33	---	1.99	1.13	2.20	12.70
3.	Kishangarh	9.61	3.33	1.40	2.38	5.97	1.98	24.67
4.	Bandar Sindhri	3.23	7.33	.26	40.35	4.03	2.26	57.46
5.	Ankodiya	1.10	11.16	--	3.24	1.37	1.18	18.05
6.	Arain	1.16	8.83	--	5.09	1.22	4.90	21.20
7.	Ajmer I	79.10	6.66	1.73	3.35	1.91	11.29	104.04
8.	Ajmer II	15.43	5.00	4.13	39.72	2.95	13.89	81.12
9.	Pushkar	2.16	7.66	.53	8.39	2.91	1.78	23.43
10.	Peesangan	2.69	3.33	1.66	2.88	8.56	5.15	24.27
11.	Mangliyawas	2.35	1.33	3.13	1.54	20.67	5.31	34.33
12.	Saradhana	3.98	8.00	5.00	1.98	7.26	17.90	44.12
13.	Sreenagar	2.11	15.82	.33	2.48	1.81	7.75	30.30
14.	Derathoo	1.13	2.66	1.60	1.08	1.98	1.00	9.45
15.	Ramsar	1.08	6.66	.80	.72	1.57	.93	11.76
16.	Gagawana	1.86	6.66	3.00	1.70	1.33	1.84	18.66
17.	Bijainagar	2.08	4.50	1.66	5.50	1.95	1.00	16.69
18.	Ramgarh	1.25	9.00	.20	2.56	1.20	.56	14.77
19.	Masuda	1.71	3.33	.13	1.24	1.81	3.09	11.31
20.	Kherwa	1.17	10.90	.73	2.33	2.66	.68	18.56
21.	Nayanagar	3.87	.99	.80	3.31	2.78	2.68	14.43
22.	Rajiyawas	1.76	.83	1.33	.79	2.46	.62	7.70
23.	Jawaja	.86	1.49	.53	1.09	2.64	1.76	8.37
24.	Todgarh	2.19	4.50	--	7.41	2.46	3.75	20.31
Regional Mean		9.61	6.18	1.21	7.04	3.48	4.11	27.27

Source: District Census Handbook - Ajmer (1971), pp. 6-36 (Village Directory).

value below 9.61 (below the mean). The figure indicate that the educational facilities are highly centralized in and award Ajmer city.

2. MEDICAL:

According to the 1971 census, there were 26 Hospitals and 47 Dispensaries. The Centres of Family-Planning. Maternity and Child Welfare and Health amounted to 17, 14 and 10 respectively. The intra-regional variations can be described in the following lines (Fig. 4.11-B).

(i) The index of medical facilities is found low (below 2.44 L.Q) in the southern part, incorporating Jawaja, Rajiyawas, Nayanagar and Mangliyawas.

(ii) The values are relatively low (6.18 to 2.44) in the circles of the southern and the central parts the circles being Todgarh, Bijayanagar, Masuda, Deratoo, Peesangan, Ajmer I and Kishangarh.

(iii) The index is relatively high (9.92 to 6.18) in the central part, covering Sardhana Pushkar, Ajmer II, Gagawana, Karkadi, Bandar Sindri, Arain and Ramsar circles, along with Ramgarh in the south.

(iv) Higher index-values are observed in the northern circles along with Kherwa in the south. The highest value was recorded in Sreenagar circle (15.82 L.Q) followed by Ankodiya and Rupnagar (13.66 to 9.92).

3. POWER SUPPLY:

Nearly 15 per cent of the total villages in the

region were reported as electrified in 1971. The proportion of these villages at the circle-level showed substantial variations and can be depicted below (Fig.4.11-C).

(i) The percentage share of the electrified villages is low (below 1.21) in the north-eastern and the southern parts. While Rupnagar, Karkadi, Bandar Sindri, Arain Ankodiya and Sreenagar circles constituted an elongated belt in the north, the circles of Kherwa, Nayanagar, Masuda and Ramgarh formed a compact zone in the south. Todgarh and Jawaja circles also have these values.

(ii) The proportion of electrified villages is relatively high (1.21 to 4.13 L.Q) in the circles of Kishangarh, Ramsar, Deratoo, Peesangan and Ajmer II in the centre, and Rajiyawas and Bijayanagar in the south.

(iii) The share of electrified villages is higher in Gagawara Mangliyawas (L.Q 2.45 to 3.69), Ajmer I (4.13) and Saradhana (5.00).

Thus, the higher index values were found concentrated in the central part of the region and they were recorded decreasing towards the peripheries.

4. DRINKING WATER:

Well, Tank, River, Tube-well and Tap are the main sources of drinking water in the region. The concentration of these sources was computed at the circle-level and the distribution was depicted on (Fig. 4.11 D). The salient features can be noted as follows:

(i) Wells and tanks are the main sources in the region and the number of villages having facilities of taps, tube-wells and other sources are insignificant.

(ii) The figure shows that all the circles of Beawar (except Todgarh) and Ajmer (except Ajmer I and Pushkar) tehsils, along with Karkadi, Kishangarh and Ankodiya circles of Kishangarh tehsil have lower index-values of water supply. It means that all but six circles of the region have values below mean (L.Q. 7.04).

(iii) Moderately high (7.04 to 18.15) concentration of the sources of drinking water is found in Rupnagar, Pushkar and Todgarh circles.

(iv) Higher index-values are observed in Arain (25.09), Ajmer I (39.72) and Bandar Sindri (40.35). The higher index-value in Bandar Sindri circle can be attributed to the fact that it derived drinking water mainly from other sources (not named) and its share in the regional total was very high and thus affected whole index substantially.

5. TRANSPORT:

Roads, Pucca as well as Kutcha and railways are the main lines of communication in the region. While 26 settlements were linked with railway lines, the rest of the settlements were either linked with roads or had no transport line. Substantial variations have been observed at the circle-level. 20 out of 24 circles have the index values below the regional mean (L.Q. 3.48). The

circle having higher values were identified as Bandar-Sindri and Kishangarh in the north east, and Pushkar and Mangliyawas circles in the west-central part. While the values were below mean + two standard deviation in the first three circles but it was as high as 20.67(mean + four standard deviation) in the case of Mangliyawas (Fig. 4.11 E).

6. COMMUNICATION:

The region has a fairly large number of villages with postal facilities. Nearly 34 per cent of the total villages have post offices, but the telegraph and telephone services are available in only 10 and 24 settlements respectively. The intra-regional variations in the distribution of communication facilities[5] can be depicted as follows (Fig. 4.11 F).

The index of communication services is observed low (below mean i.e. 4.11) in a almost whole region except the west - central part. Thus, all the circles of Beawar and Kishangarh (except Rupnagar circle) tehsils and Pushkar, Gagawana, Ramsar, Deratoo and Kherwa circles of Ajmer tehsil are included in this class.

Relatively high (4.11 to 8.47) values are observed in Peesangan, Mangliyawas and Sreenagar circles

5. It is interesting to note here that in the census report (Ajmer) the Kutcha, as well as Pucca, roads and railways have been described under the head of 'communication' facilities and the facilities of post office, telegraph and telephone offices are shown in 'Post and Telegraphs' services.

in the centre and Rupnagar in the north.

The concentration is found higher in Ajmer I (11.29), Ajmer II (13.89) and Saradhana (17.9) circles in the central part.

Levels of Regional Development: Based on Social Facilities:

After highlighting the salient features of the distribution of various social amenities, it was thought diserable to composite the values for all these sets of amenities and then see the spatial patterns of this composite index to identify the levels of regional development on this basis (Fig. 4.11 (G)). The spatial variations, as observed in the figure, can be highlighted below:

(i) The general distribution patterns of the values reveal the fact that the central part, comprised by the circles of Ajmer I, Ajmer II, Sreenagar, Saradhana and Mangliyawas has the higher values of the composite index, the values being as high as 81.12 (Ajmer II) and 104.04 (Ajmer I). This exhibits the higher concentration of social facilities in this part.

(ii) All the circles of Beawar and Kishangarh (except Bandar Sindri) tehsils and some circles of Ajmer such as - Peesangan, Pushkar, Gagawana, Ramsar, Deratoo and Kherwa, have the index-values below the regional mean i.e. 27.27. These parts, thus, have lower levels of development of social amenities.

(iii) The credit of the higher index in Bandar

Sindri circle goes to the index of drinking water facilities. The other social facilities are of lower orders in the circle.

In general, the concentration of various social facilities is observed to be high in and around urban centres. The circle incorporating Ajmer city enjoys the maximum of the social facilities available to the region (composite index being L.Q. 104.04) and the intensity decreases as we move away from the city. Firstly it decreases gradually to the immediate circles and then sharply towards the peripheries where the aggregate (composite) index is below the regional mean i.e. 27.27.

CHAPTER V

ECONOMIC STRUCTURE

The study of the economic structure of a region constitutes an integral and important part of the regional structure. The assessment of the structure, existing in the region, helps much in preparing the development programme for the region. The main components of the economic structure, incorporated in this study, are the work force and its structure - workers engaged in primary, secondary and tertiary activities, and the analysis of general, as well as, agricultural land use patterns in the region. While section A deals with the occupational structure of the work force, the patterns of land use has been analysed in Section B.

SECTION - B

OCCUPATIONAL STRUCTURE, 1971:

In this section a detailed account of the work force engaged in various economic activities has been presented. The main emphasis has been given on the workers engaged in various activities in general, and agricultural activities in particular. In the end, an account of dependency ratio has been dealt with.

1. Work Force and its Structure:

1.1 Total Work Force -

According to 1971 census, 303,693 persons were reported as workers and they constituted exactly one-third (33.4 per cent) of the total population in

TABLE NO: 5.1

Work Force and Its Structure, 1971

(in percentage)

Sr. No:	L.R.I. Circles	% of Workers in Primary Sec.	% of Workers in Sec. Sector	% of Workers in Tertiary Sec.	% of Workers in Sec. & Tertiary Sector	% of Total Agr. Workers	Agr. Labours as % to Agr. Workers.	Agr. labourers to total cultivators	Location of Agr. Labour to total cultivators.
1.	2.	3.	4.	5.	6.	7.	8.	9	10.
1.	Rupnagar	86.30	5.10	8.60	13.70	78.46	11.87	13.46	0.80
2.	Karkadi	86.75	4.07	9.14	13.21	81.96	14.90	17.91	1.05
3.	Kishangarh	29.13	33.97	36.86	70.83	26.97	12.68	14.52	8.87
4.	Bandar Sindhri	90.03	2.94	6.98	9.92	82.51	8.02	8.72	0.52
5.	Ankodiya	92.19	4.18	3.58	7.76	80.68	6.41	6.85	0.41
6.	Arain	92.03	2.85	5.11	7.96	83.01	8.59	9.40	0.56
7.	Ajmer I	9.68	18.30	71.99	90.29	8.27	28.42	39.70	2.37
8.	Ajmer II	77.77	5.96	16.27	22.23	73.41	22.69	29.36	1.75
9.	Pushkar	80.61	9.93	9.96	19.39	75.23	25.92	34.99	2.09
10.	Peesangan	83.61	6.21	10.17	16.38	77.23	26.16	33.62	2.01
11.	Mangaliyawas	88.80	4.51	6.69	11.20	80.76	16.42	19.64	1.17
12.	Sardhana	80.05	6.98	12.97	19.95	71.16	17.99	21.93	1.31
13.	Sreenagar	87.34	4.38	8.27	12.65	75.21	19.17	23.72	1.42
14.	Derathoo	87.38	5.41	7.17	12.58	79.29	19.49	24.20	1.44
15.	Ramsar	87.47	5.39	7.13	12.52	66.95	16.15	19.25	1.15
16.	Gagawana	84.39	7.25	8.37	15.62	77.72	21.46	27.33	1.63
17.	Bijainagar	78.46	7.29	14.25	21.54	76.35	17.30	20.92	1.25
18.	Ramgarh	94.79	2.87	2.33	5.20	87.86	3.59	3.72	0.22
19.	Masuda	87.97	4.69	2.34	12.03	79.31	6.24	6.66	0.40
20.	Kherwa	90.94	3.14	5.93	9.07	84.52	12.22	13.92	0.83
21.	Nayanagar	29.33	33.76	36.91	70.61	27.76	14.30	16.69	1.00
22.	Rajiyawas	86.10	8.03	5.86	13.89	82.42	11.93	13.54	0.81
23.	Jawaja	92.20	3.14	4.66	7.80	87.31	3.95	4.11	0.25
24.	Todgarh	90.38	2.73	6.89	9.62	88.71	1.92	1.95	0.12
	Regional Average:	57.76	12.76	29.48	42.24	52.90	14.35	16.75	1.00

Source: District Census Handbook - Ajmer (1971), pp. 6-36 (Rural Primary Census Abstract)

in the region. Fig. 5.1 (A) shows that the proportion of the work force in the total population varies from one-fourth (26.3 per cent) to a little less than one-half (48.04%) at the circle level. Generally, circles having higher share of the work force are located in the sothern part. Mangliyawas, Kherwa, Bijainagar, Todgarh, Sreenagar and Ramgarh (48.04 per cent) circles are included in the first quartile (48.04 to 42.66 per cent). Relatively high shares (42.66 to 37.62) can be seen in Jawaja, Masuda, Peesangan, Saradhana, Ajmer II and Ramsar circles in the southern and the central parts (Table No. 5.1).

The percentage share of the workers is found below median (37.62%) in the circles of the northern part, by and large. While the northern zone, in corporating Rupnagar, Karkadi, Gegawana, Bandar Sindri circles has relatively low values (37.62 to 34.43%) the proportions was low (34.43 to 26.31%) in the circles of Pushkar, Ajmer I, Kishangarh, Arain and Deratoo in the central part, along with Nayanagar circles in the south. Thus, one can identify three distinctive sub-regions situated in the north, centre and the south. Secondly, all the circles incorporating urban centres have very low share of various economic activities.

1.2 Workers in Primary Sector -

The census figures show that only 57.8 per cent of the total workers are engaged in primary acti-

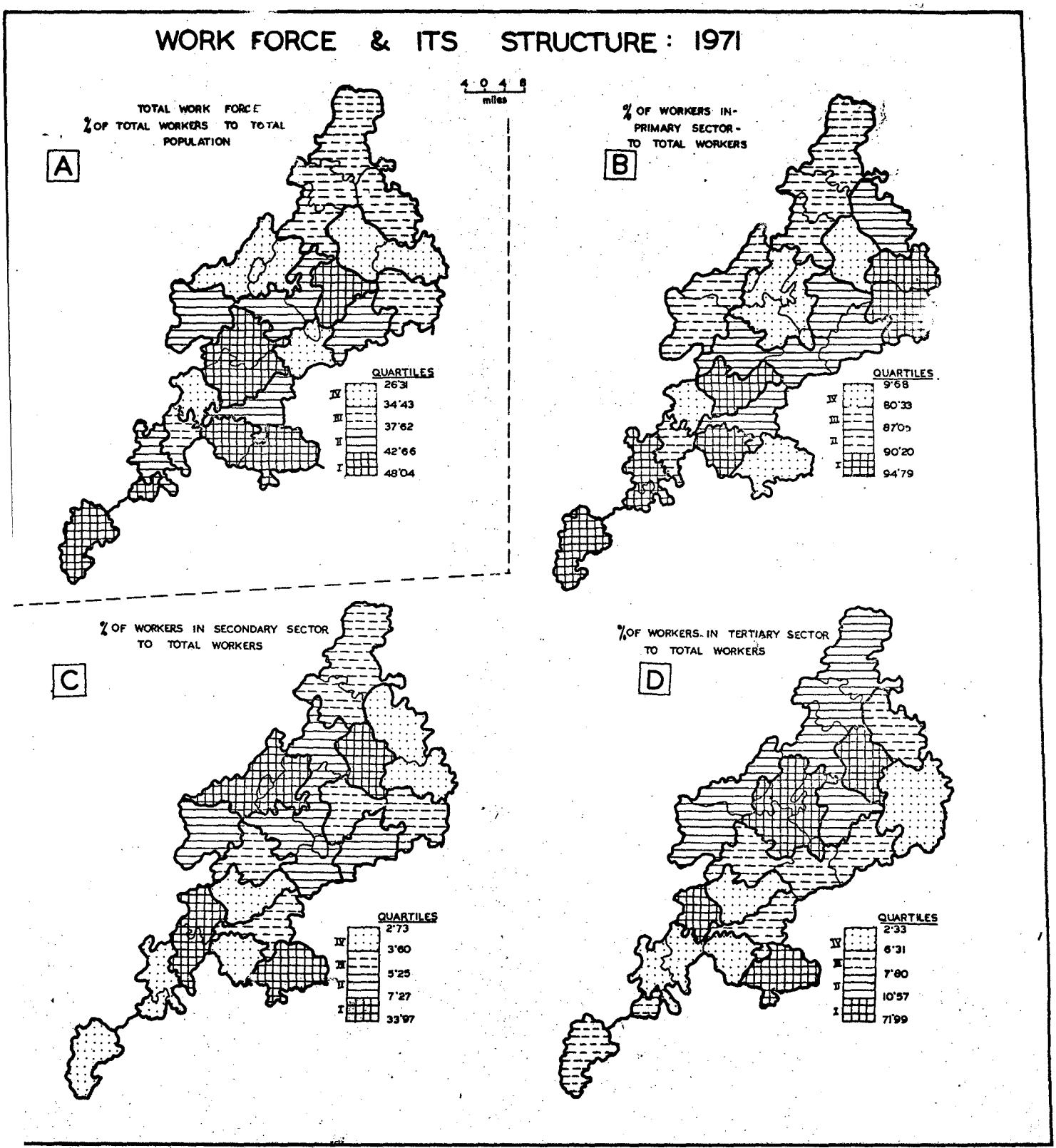

WORK FORCE & ITS STRUCTURE : 1971
4 0 4 8
miles
TOTAL WORK FORCE
% OF TOTAL WORKERS TO TOTAL POPULATION
A
QUARTILES
IV 26'31
III 34'43
II 37'62
I 42'66
48'04
% OF WORKERS IN-PRIMARY SECTOR- TO TOTAL WORKERS
B
QUARTILES
IV 9'68
III 80'33
II 87'05
I 90'20
94'79
% OF WORKERS IN SECONDARY SECTOR TO TOTAL WORKERS
C
QUARTILES
IV 2'73
III 3'60
II 5'25
I 7'27
33'97
%OF WORKERS IN TERTIARY SECTOR TO TOTAL WORKERS
D
QUARTILES
IV 2'33
III 6'31
II 7'60
I 10'57
71'99

FIG. 5.1

vities but one finds sharp variations in the share at the circle level. While only 9.7 per cent of the total workers were engaged in primary activities in Ajmer I circle, their share was computed as high as 94.8 per cent in the case of Ramgarh circle (Table no. 5.1).

Three sub-regions with varying shares can easily be identified from the Fig. 5.1(B). The north-western part, consisting of Rupnagar, Karkadi, Gagawana, Pushkar and Peesangan circles, has the percentage shares ranging between median (87.05%) to uppar quartile (90.20%). The central part represents the values of the lowest quartile (80.33 to 9.68 per cent). Its outliers can be identified as Nayanagar and Bijainagar circles in the south. The rest of the circles posses the values above the median, and they constitute an elongated belt in NE - SW direction.

One typical fact, which comes out in the study is that 21 out of 24 circles have 77.7 per cent of the total workers in primary sector, yet the regional average does not exceed 58 per cent. This anomaly can be attributed to the lower shares in urban centres i.e., Ajmer, Beawar and Kishangarh, where more than two-thirds of the regional population residing.

1.3 Workers in Secondary Sector -

Entirely different picture is observed at this stage from the previous one (Fig. 5.1 C). The percentage

share of the workers in secondary sector has been computed as 12.26 in the region. At the circle level it varies from 2.73% (Todgarh) to 33.97 per cent (Kishangarh). The proportion of the workers in secondary sector is observed higher (above 5.25%) in the central part except Sreenagar circle (34.38%). Nayanagar, Rajiyawas and Bijayanagar circles can be treated as its outliers in the south. The remaining two zones covering the circles of the north-eastern and the southern parts, exibit lower value (below median i.e., 5.25) of the workers is secondary sector.

1.4 Workers in Tertiary Sector -

According to the census, nearly one-third(29.5%) of the total workers were engaged in tertiary activities in the region. Table no. 5.1 reveals some interesting facts regarding the circle wise distribution of workers engaged in tertiary sector: (i) All but three circles have the percentage shares less than 10 per cent and in most of them it is even below 10 per cent, (ii) the extreme values are observed in Ajmer I and Ramgarh circles where 71.99 and 2.33 per cent of the total workers are engaged in tertiary activities, (iii) the higher regional average is due to very high shares observed in the circles of Ajmer I (Ajmer city), Kishangarh and Nayanagar (Beawar).

Three zones of the circles having similiar values can be traced out from the Fig. 5.1(D). The

TABLE NO: 5.2

Occupational Structure, 1971

(Percentage to total workers)

Sr. No:	L.R.I. Circles Name:	Cultivators	Agr. Labourers.	Livestock Forestry etc.	Mining Quarrying	Household Industry	Other than Household Industry	Construction	Trade & Commerce	Transportage & Communication	Other Services
1	2	3	4	5	6	7	8	9	10	11	12
1.	Rupnagar	69.15	9.31	7.84	--	3.45	1.30	0.35	2.07	0.71	5.82
2.	Karkadi	69.75	12.21	4.79	--	2.44	1.24	0.39	1.12	0.42	7.60
3.	Kishangarh	23.55	3.42	2.06	0.10	3.44	28.14	2.39	11.87	4.80	20.19
4.	Bandar Sindhri	75.83	6.62	7.52	--	2.04	0.72	0.18	1.65	1.34	3.99
5.	Ankodiya	75.51	5.17	11.42	0.09	2.84	1.34	--	1.20	0.20	2.18
6.	Arain	75.88	7.13	9.02	--	2.47	0.35	--	1.63	0.19	3.29
7.	Ajmer I	5.92	2.35	1.19	0.22	4.49	10.43	3.38	17.11	21.81	33.07
8.	Ajmer II	56.75	16.66	4.08	0.28	2.60	2.16	1.20	1.96	3.29	11.02
9.	Pushkar	55.73	19.50	5.38	--	7.75	1.09	1.09	2.47	1.95	5.04
10.	Peesangan	57.80	19.43	6.29	0.09	4.20	1.51	0.50	3.34	0.57	6.26
11.	Mangaliyawas	67.50	13.26	7.44	0.60	3.29	0.60	0.62	2.15	1.46	3.08
12.	Saradhana	58.36	12.80	8.39	0.50	3.85	1.10	2.03	1.85	5.03	6.09
13.	Sreenagar	60.79	14.42	10.68	1.45	2.40	1.59	0.39	2.18	0.71	5.38
14.	Derathooo	63.84	15.45	8.09	--	3.02	1.17	1.22	1.89	2.06	3.22
15.	Ramsar	55.39	10.66	19.65	1.77	3.93	0.83	0.63	2.63	0.72	3.78
16.	Gagawana	61.04	16.68	6.33	0.34	3.49	3.19	0.57	2.02	1.21	5.14
17.	Bijainagar	63.14	13.21	2.11	--	3.36	2.94	0.99	6.05	1.81	6.39
18.	Ramgarh	84.71	3.15	6.81	0.12	1.57	1.30	--	0.44	0.26	1.63
19.	Masuda	74.36	4.95	8.66	--	3.35	0.78	0.56	1.91	0.46	4.97
20.	Kherwa	74.19	10.33	6.42	--	2.22	0.62	0.30	0.52	0.90	4.51
21.	Nayanagar	23.79	3.97	1.51	0.06	5.82	25.64	2.30	16.24	4.96	15.71
22.	Rajiyawas	72.59	9.83	3.10	0.58	2.94	4.49	0.60	0.92	0.51	4.43
23.	Jawaja	83.86	--	4.55	0.34	2.40	0.40	0.34	0.82	0.13	3.71
24.	Todgarh	87.01	1.70	1.47	0.20	1.74	0.86	0.13	1.55	0.28	5.06
	Regional Average	45.31	7.59	4.61	0.25	3.77	7.39	1.60	7.88	7.29	14.31

Source: District Census Handbook - Ajmer (1971), pp. 6-36(Rural Primary Census Abstract).

north-western zone exibits the values of second quartile 7.8 to 10.57 per cent). The south-eastern zone represents the shar below median (7.8 per cent). But the central part, with its outliers in Nayanagar and Bijainagar circles, shows very high values. Thus, higher concentration of the workers in tertiary sector is found in urban circles, and as one moves away from them, the percentage share decreases sharply. (Map No. 5.1 - B & 5.1 - D).

2. Workers in Primary Activities:

2.1 Agricultural Workers -

The number of agricultural workers (cultivators and agricultural labourers) was reported as 160,656, which contributed 52.9 per cent to the total working population. Much variations are observed in the share at the circle-level (Fig. 5.3 A). In most of the circles, the share of the agricultural workers in more than 70 per cent, the highest share being 88.7 per cent (Todgarh).

Generally, higher proportion (82.7 per cent) is observed in the southern part incorporating Todgarh, Jawaja, Rajiwas, Ramgarh and Kherwa circles. Relatively high values (82.5 to 78.9%) are seen in the circles of Masuda, Deratoo, Mangliyawas in the south and Karkadi, Bandar Sindri and Ankodiya in the north. Relatively low share (78.9 to 74.3%) is found in the western fringe and the central part exibits very low values (below 74.3%), the lowest being 8.27 per cent in the case of Ajmer city.

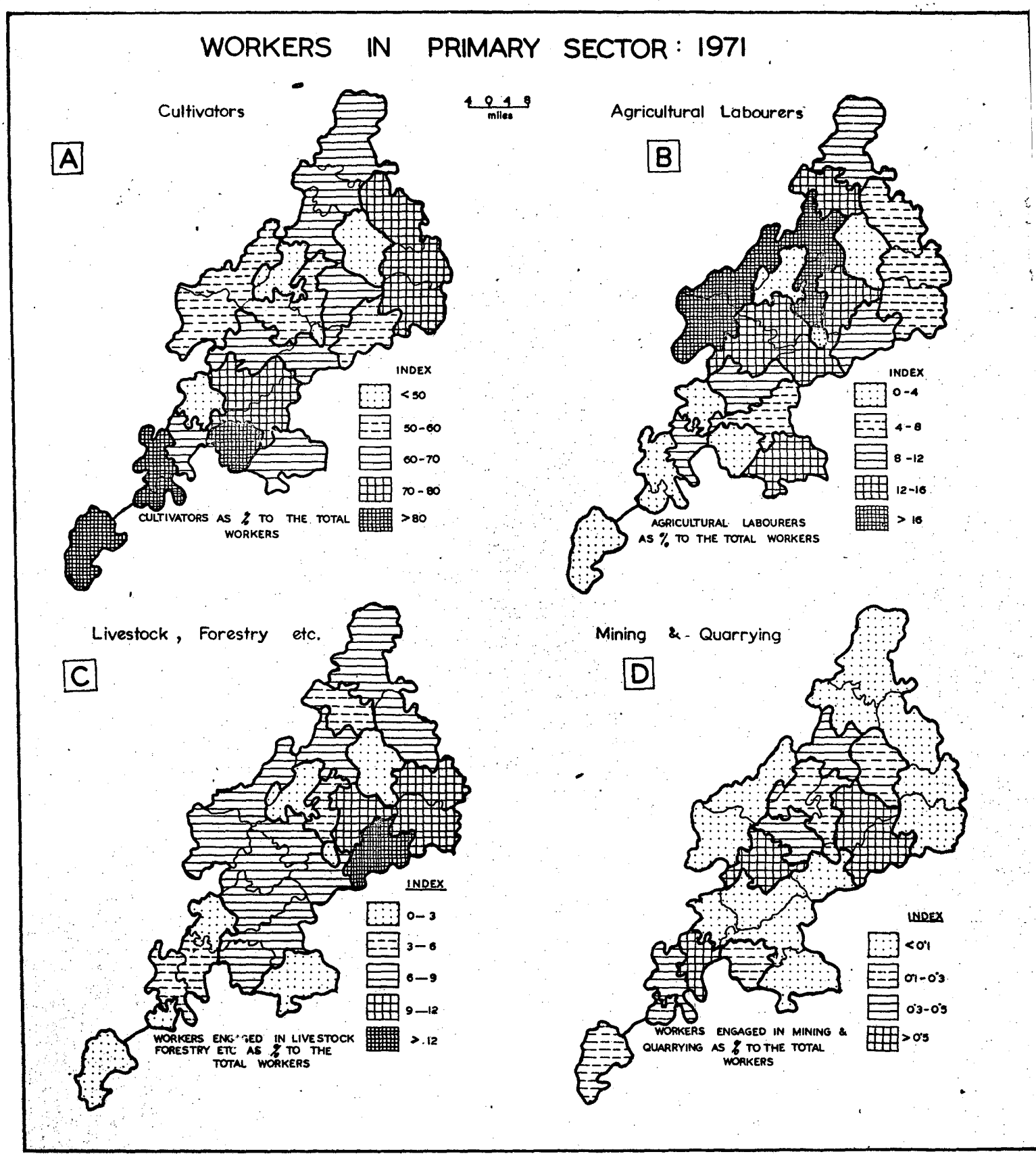

WORKERS IN PRIMARY SECTOR : 1971
A
Cultivators
4 0 4 8
miles
INDEX
< 50
50-60
60-70
70-80
>80
CULTIVATORS AS % TO THE TOTAL WORKERS
B
Agricultural Labourers
INDEX
0-4
4-8
8-12
12-16
> 16
AGRICULTURAL LABOURERS AS % TO THE TOTAL WORKERS
C
Livestock , Forestry etc.
INDEX
0—3
3—6
6—9
9—12
>.12
WORKERS ENGAGED IN LIVESTOCK FORESTRY ETC AS % TO THE TOTAL WORKERS
D
Mining & Quarrying
INDEX
<0·1
0·1-0·3
0·3-0·5
>0·5
WORKERS ENGAGED IN MINING & QUARRYING AS % TO THE TOTAL WORKERS

FIG. 5.2

2.2 Cultivators -

A number of 137,596 workers were enumirated as cultivators in 1971 census, and they contributed 45.3 per cent to total work force in the region. At the circle level, higher variations in the percentage shares can easily be traced out. In most of the circles, cultivators share more than 60 per cent of the total working populations, but in the circles of Ajmer I, Kishangarh and Nayanagar (Beawar) their proportion is observed below 25 per cent. Their higher concentration is found in Beawar tehsil in the south and Kishangar tehsil in the north with exceptions (Fig. 5.2 A). The lower values are observed mainly in the circles of the central part. The percentage values has varied from 5.92 in Ajmer I circle to 87.01 in the case of Todgarh in the south (Table No. 5.2).

2.2 Agricultural Labourers -

2.21 7.59 per cent of the total working population was reported as agricultural labourers in 1971. The higher proportion (above 16%) of agricultural labourers is observed in the western circles such as Peesangan, Pushkar, Gagawana and Ajmer II and relatively high shares (12 to 16%) are also found in the circles adjcent to them). The average values (8 to 12%) and below them are concentrated in the north-eastern and the southern parts (Fig. 5.2 B). The share of agriculture labourers varies from 1.7 per cent in Todgarh to 19.5 per cent in Pushkar

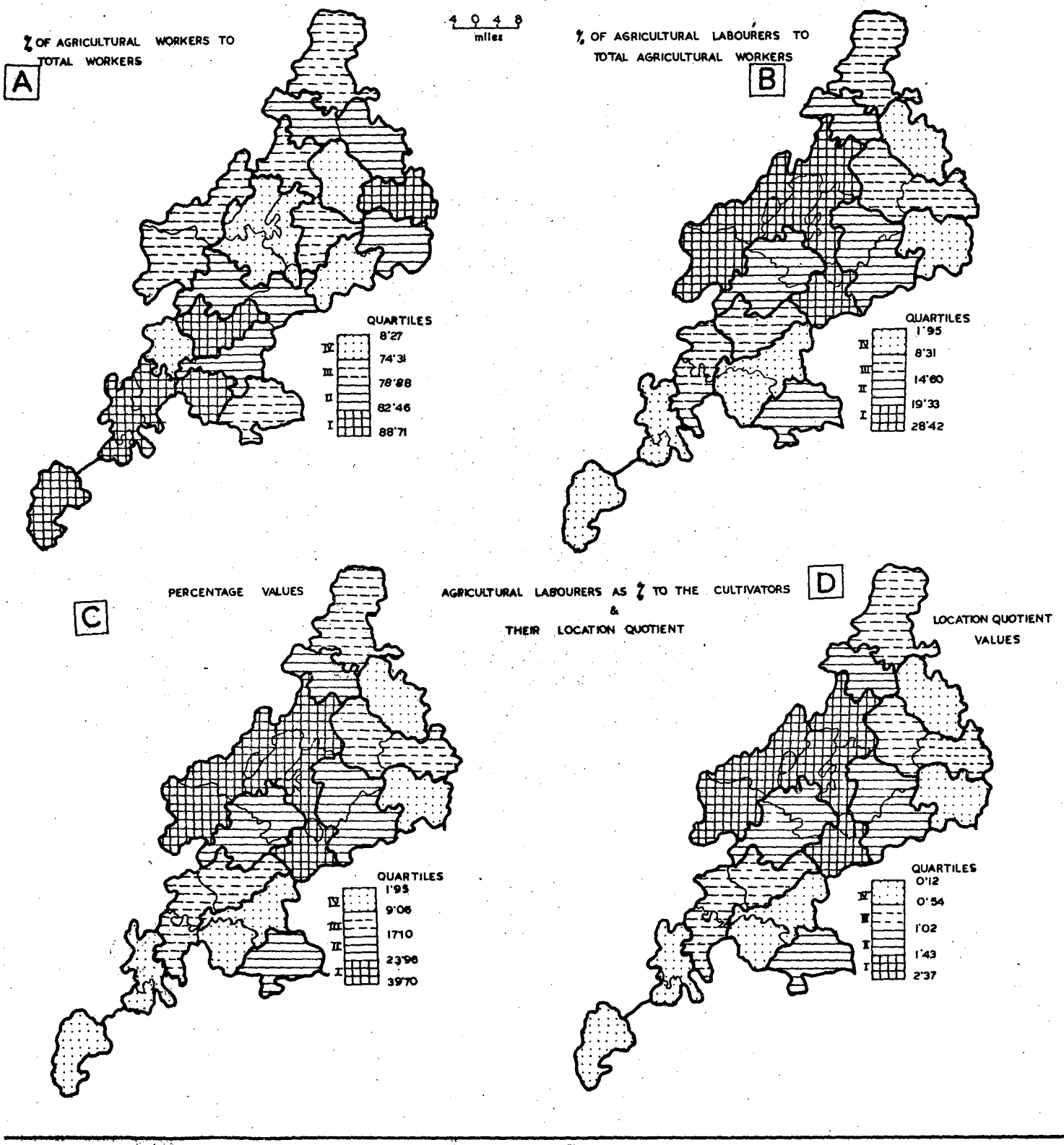

AGRICULTURAL WORKERS : 1971
4 0 4 8
miles
A
% OF AGRICULTURAL WORKERS TO TOTAL WORKERS
QUARTILES
IV 8'27
III 74'31
II 78'88
I 82'46
88'71
B
% OF AGRICULTURAL LABOURERS TO TOTAL AGRICULTURAL WORKERS
QUARTILES
IV 1'95
III 8'31
II 14'60
I 19'33
28'42
C
PERCENTAGE VALUES
QUARTILES
IV 1'95
III 9'06
II 17'10
I 23'96
39'70
D
AGRICULTURAL LABOURERS AS % TO THE CULTIVATORS & THEIR LOCATION QUOTIENT
LOCATION QUOTIENT VALUES
QUARTILES
IV 0'12
III 0'54
II 1'02
I 1'43
2'37

FIG. 5.3

circle.

2.22 The share of agricultural labourers in the agricultural workers was calculated as 14.35 per cent. The share of the agricultural labourers is high (28.4 to 19.3%) in the central part, covering peesangan, Pushkar, Ajmer I, Gagawana, Ajmer II and Deratoo circles. The areas lying to the north and south of it exibit lower (below median i.e., 14.6%) values (Fig. 5.3 B). The percentage share has varied from 1.95 (Todgarh) to 28.42 (Ajmer I). The inverse relationshio between the distribution of agricultural workers and agricultural labourers (Fig. 5.3 - A and B) reveals that the latter has minor saying in total agricultural workers in comparision to the cultivators.

2.23 The proportion of agricultural labourers to the cultivators was found 16.75 per cent, but the distribution pattern is just identical with the previous one. The higher proportion is observed in the central part (above median i.e., 17.1%) and the remaining parts have the values below median (Fig. 5.3 C). The high position relationship wit the distribution at the previous level can be attributed to the higher share of the cultivators (85.65%) in the total agricultural work force.

2.24 Agricultural labourers are defined as either land less labourers or having insiginificant acreage. The concentration of these workers to the cultivators gives

an idea about the level of agricultural (development in a region. The higher concentration (L.Q method) of the workers in the western circles show that either the land holding are larger in the area, or the landlords themselves do not practise the agricultural activities and so the labourers are engaged for the purpose. In Ajmer I circle the concentration is two and half times higher that the regional average. But in most of the circles the values are below the median (1.02 L.Q) or are nearer to it (Fig. 5.3 D).

2.3 Workers in Livestock and Forestry -

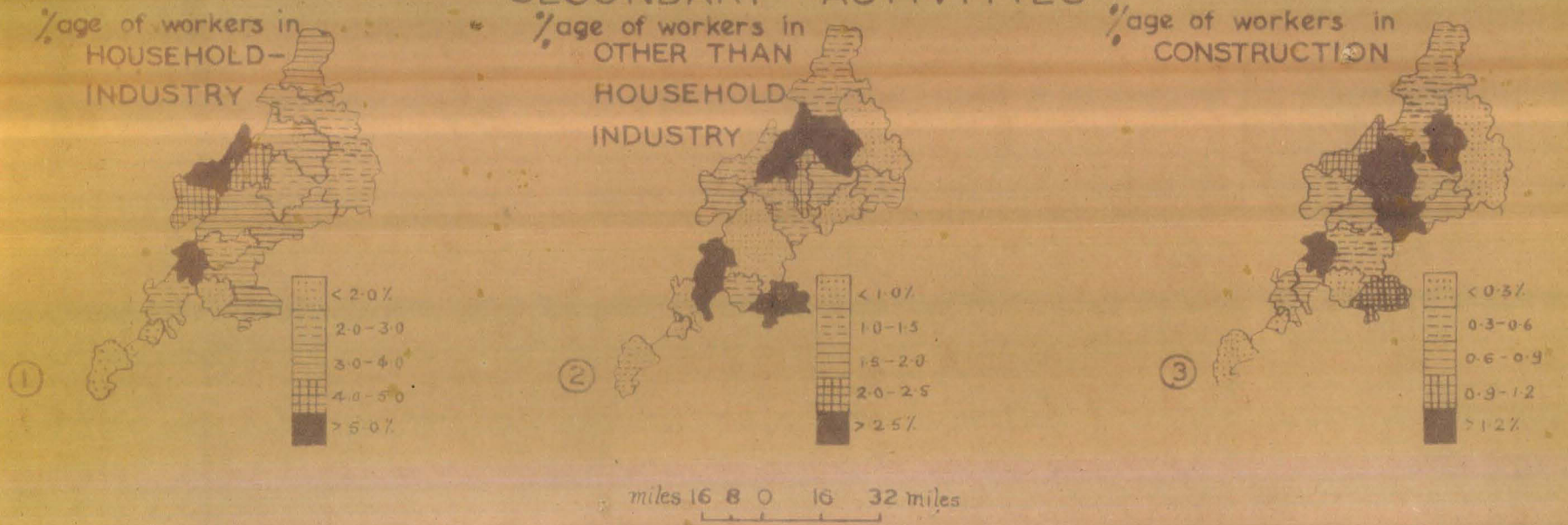
A force of 14,002 workers was engaged in livestock, forestry etc., and it shared 4.61 per cent of the total work force in 1971. Generally, they have similar distribution pattern, although their share is found varying from 1.19 (Ajmer I) to 19.65 per cent (Ramsar). The higher proportion can be observed in the east-central part, comprised by Ramsar, Ankodiya, Arain and Sreenagar circle (Fig. 5.2 C). The share is found low (below 6%) in the central (Ajmer I and II, Rajiyawas, Nayanagar and Bijayanagar) parts.

2.4 Workers in Mining and Quarrying -

According to 1971 census only 758 persons were engaged in the activities, like mining, quarrying etc. and they contributed negligible proportion (0.25%) to the total work force in the region. In the central

OCCUPATIONAL STRUCTURE : 1971

(A) SECONDARY ACTIVITIES



(B) TERTIARY ACTIVITIES

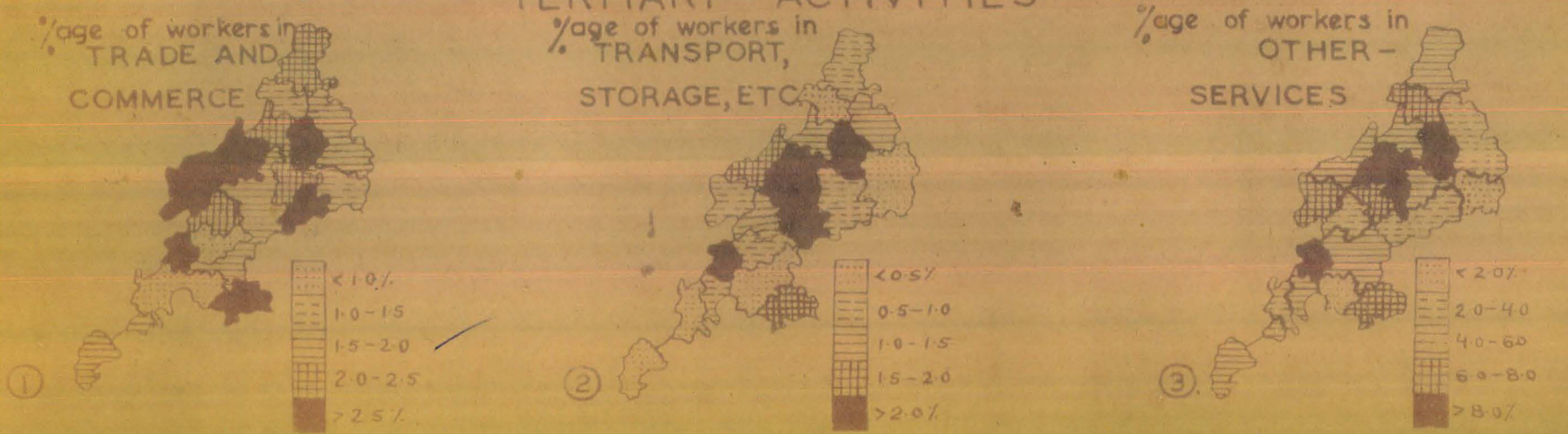


FIG. 5.4

part, they have their major concentration, but it does not exceed 1.8 per cent in any case. Remaining circle have totally insignificant (less than 0.1%) proportions of these workers (Fig. 5.3 D). This distribution pattern reveals that mining and quarrying activities are not practised on the significant scale in the region.

3. Workers in Secondary Activities:

3.1 Household Industry -

The number of workers engaged in household industries was reported as 11,445 which shared 3.77 per cent of the total working population of the region. The higher proportion (above 40%) of these workers is found in the western fringe comprised by Pushkar (7.75%), Peesangan, Ajmer I and Nayanagar (5.8%) circles. Average share of the workers is household industries can be seen in the central part and it decreases as one moves away from the centre towards the east and the south (Fig. 5.4) (A-1)).

3.2 Other than Household Industry -

According to 1971 census, 7.4 per cent of the total workers (22,444) were engaged in the industries other than household. Two zones of higher concentration are visible in Fig. 5.4 (A-2). The highest share is observed in the central part comprising Kishangarh (28.1%) and Ajmer I (10.4) circles. The second zone covers Nayanagar (25.6) and Bijayanagar (4.5) circles in the south. It is interesting to note that all but three

TABLE NO: 5.3

Work-Force and Its Structure, 1971

(In percentage)

Code No:	Circles Name:	Total Work Force:	Primary Sector:	Secondary Sector:	Tertiary Sector:	Secondary & Tertiary Sector:	Agricultural Workers:	Ariculturral Laborers as % to Agricultural Workers	% of Agricultural Labourers to total cultivators	Location Quetiont of Agricultural Labourers to total cultivators	Non-workers:	Dependency Ratio:
1	2	3	4	5	6	7	8	9	10	11	12	11
1	Rupnagar	36.12	86.30	5.10	8.60	13.70	78.46	11.87	13.46	0.80	63.88	1.76
2.	Karkadi	35.05	86.75	4.07	9.14	13.21	81.96	14.90	17.51	1.05	64.95	1.85
3.	Kishangarh	30.42	29.13	33.97	36.86	70.83	26.97	12.68	14.52	0.87	69.50	2.28
4.	Bandar Sindhri	34.53	90.03	2.94	6.98	9.92	82.51	8.02	8.72	0.52	65.47	1.89
5.	Ankodiya	37.29	92.19	4.18	3.58	7.76	80.68	6.41	6.85	0.41	62.71	1.68
6.	Arain	31.81	92.03	2.85	5.11	7.96	83.01	8.59	9.40	0.56	68.19	2.14
7.	Ajmer I	26.13	9.68	18.30	71.99	90.29	8.27	28.42	39.70	2.37	73.87	2.82
8.	Ajmer II	39.09	77.77	5.96	16.27	22.23	73.41	22.69	29.36	1.75	60.91	1.55
9.	Pushkar	33.93	80.61	9.93	9.46	19.39	75.23	25.92	34.99	2.09	66.07	1.94
10.	Peesangar	37.94	83.61	6.21	10.17	16.38	77.23	25.16	33.62	2.01	62.06	1.63
11.	Mangalayawas	43.37	88.80	4.51	6.69	11.20	80.76	16.42	19.64	1.17	56.63	1.30
12.	Saradhana	38.14	80.05	6.98	12.97	19.95	71.16	17.99	21.93	1.31	61.86	1.62
13.	Sreenagar	42.95	87.34	4.38	8.27	12.65	75.21	19.17	23.72	1.42	57.05	1.32
14.	Derathoo	34.33	87.38	5.41	7.17	12.58	79.29	19.49	24.20	1.44	65.67	1.91
15.	Ramsar	42.54	87.47	5.39	7.13	12.52	66.05	16.15	19.25	1.15	57.46	1.35
16.	Gagawana	35.85	84.39	7.25	8.37	15.62	77.72	21.46	27.33	1.63	64.15	1.78
17.	Bijainagar	42.78	78.46	7.29	14.25	21.54	76.35	17.30	20.92	1.25	57.22	1.33
18.	Ramgarh	48.04	94.79	2.87	2.33	5.20	87.86	3.59	3.72	0.22	51.96	1.08
19.	Masuda	40.81	87.97	4.69	7.34	12.03	79.31	6.24	6.66	0.40	59.19	1.45
20.	Kherwa	46.38	90.94	3.14	5.93	9.07	84.52	12.22	13.92	0.83	53.62	1.15
21.	Nayanagar	31.19	29.33	33.76	36.91	70.67	27.76	14.30	16.69	1.00	68.81	2.20
22.	Rajayawas	36.98	86.10	8.03	5.86	13.89	82.42	11.93	13.54	0.81	63.02	1.70
23.	Jawaja	41.47	92.20	3.14	4.66	7.80	87.31	3.95	4.11	0.25	58.53	1.41
24.	Todgarh	43.10	90.38	2.73	6.89	9.62	88.71	1.92	1.95	0.12	56.90	1.32
	Regional Average:	33.40	57.76	12.76	29.48	42.24	52.90	14.35	16.75	1.00	66.60	1.99

Source: District Census Handbook - Ajmer (1971), pp. 6-36 (Rural Primary Census Abstract).

circles have lower percentage values (below average i.e., 7.4%). This reflects very high concentration of the workers in Kishangarh, Ajmer I and Nayanagar. This result can be attributed to the location of the industries like cotton textiles, machine tools, locoworkership etc., at Kishangarh, Beawar and Ajmer city.

3.3 Construction -

Only 4,857 workers were engaged in construction, works in 1971 and they contributed 1.6 per cent to the total work force. At the circle-level the percentage share of the workers in construction shows high variations, the extreme values being 0.13 (Todgarh) and 3.38 (Ajmer I). Fig. 5.4 (A-z) revels that higher proportions are observed in the circles of the central part, by and large, and the most of the circles have values below the regional average (Table no. 5.2).

4. Workers in Tertiary Activities :

4.1 Trade and Commerce -

In 1971, 23935 workers were engaged in trade and commerce and they constituted nearly 7.2 per cent of the total work force the region. Fig. 5.4 (B-1) suggests that the circles, having higher percentages, are located in the central part. But the table (5.2) reveals that only three circles i.e., Ajmer I (17.1%), Kishangarh (11.9) and Nayanagar (16.2) have higher values than the regional average, and in the remaining 21 circles the proportion of the workers in trade and commerce is

insignificant.

4.2 Transport, Storage etc., -

The proportion and distribution of the workers engaged in transport, storage etc. is more or less the same as observed in the previous one. Fig. 5.4(B-2) exibits higher percentage shares in the central part, incorporting Ajmer I, Ajmer II, Kishangarh, Saradhana and Deratoo circles, along with Nayanagar in the south. But the table (5.2) reveals that only the circle of Ajmer I one-fifth (21.8%) of its total work force engaged in the activities like transport, storage etc.

4.3 Other services -

According to 1971 census, nearly one-seventh (43,448 persons) of the total working population was engaged in other services. But at the circle-level same picture comes out. Table no. 5.2 reveals that the highest share of the work force engaged in other services is found in Ajmer I (33.1%), followed by Kishangarh (20.2) and Nayanagar (15.7). Rest of the circles have lower values than the regional average (14.3%). Fig. 5.4(B-3) supports the above mentioned facts. Ajmer II, Karkadi, Saradhana, Peesangan and Bijayanagar are the other circles where significant proportions of the workers are engaged in other services.

6. Dependency Ratio :

Before concluding the analysis of the occupa-

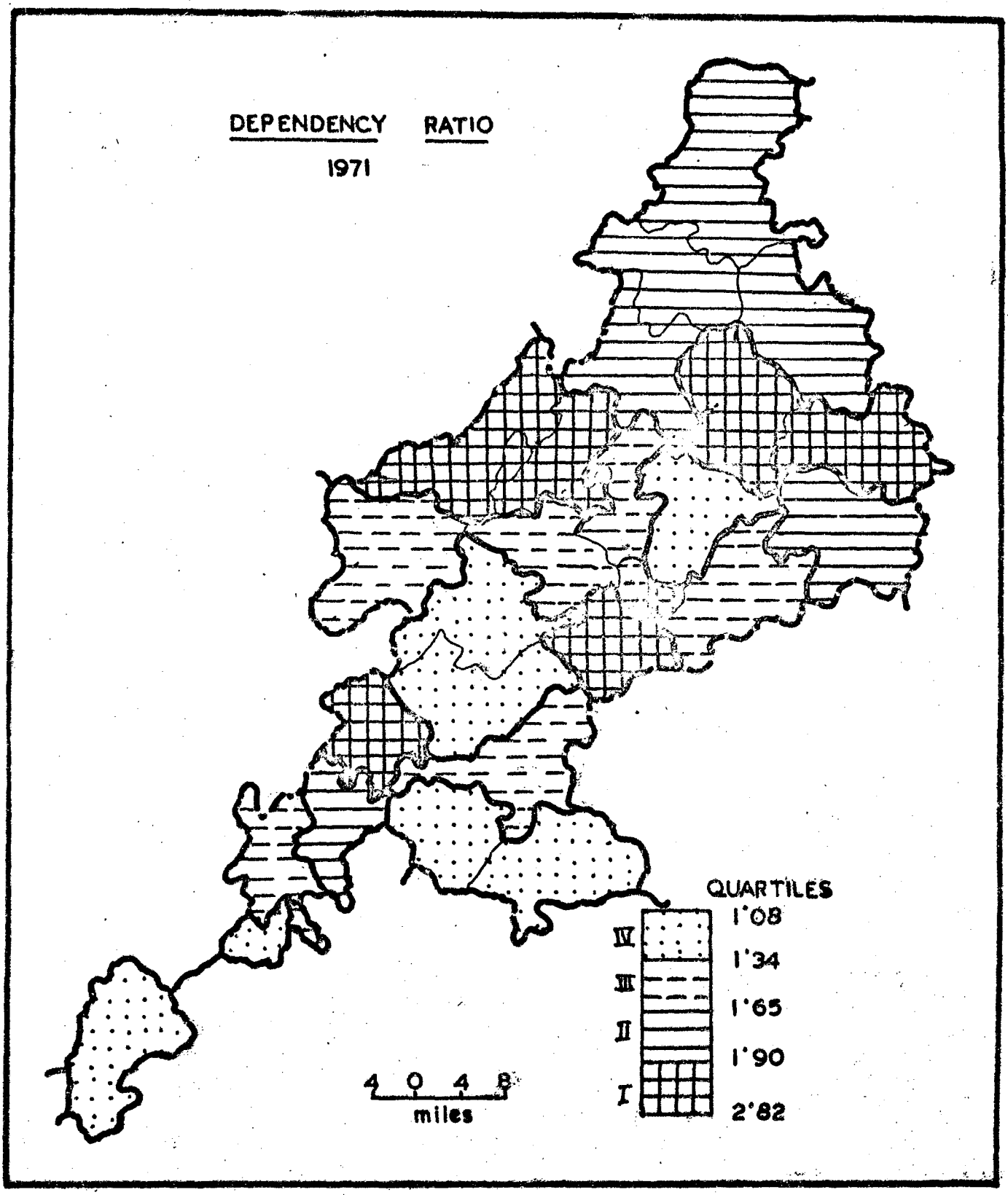

DEPENDENCY RATIO
1971
QUARTILES
IV 1·08
III 1·34
II 1·65
I 1·90
2·82
4 0 4 8
miles

FIG. 5.5

tional structure, it will be worthwhile to through depen-dency ratio, which represents the number of dependents (non-workers) per worker in the region. According to 1971 census, the ratio between the workers and non-workers was 1:1.99 (33.3: 66.4 in percentages) the absolute numbers being 303,693 and 605,328 respectively.

Three zones with similiar dependency ratio can be demarcated in the region. The central part, incorpo-rating Pushkar, Ajmer I, Kishangarh, Arain and Deratoo circles, exibits higher values of the dependents (2.82 to 1.90). The northern Ankodiya circles, shows relatively high (1.90 to 1.65) dependency ratio. The rest of the circles of the southern and the central parts have the values below the median (1.65). Thus, one finds higher number of dependents in the northern circles in comparison to their southern counter parts (Fig. 5.5).

In brief, the salient features, as observed in the study of the occupational structure, can be depicted as follows:

(i) Higher proportion of the total work force is found in the circles of the southern part and it decreases as one moves towards the north. This is because of the high percentage of workers engaged in agriculture in the southern region, where family-labour is utilized in the field. The proportions of the workers in secondary and tertiary sectors is high in the

central part, because of the presence of a number of urban centres which provide opportunity for non-agricultural activities,

(ii) The agricultural workers in general and the cultivators in particular have higher concentration in the southern circles, but the proportion and concentration of the agricultural labourers is high in the western circles,

(iii) In the eastern plains, limestock, forestry etc. are carried on extensively because of the forest resources and the facilities available for randing,

(iv) the percentage shares of the workers, engaged in various secondary and tertiary activities, are observed high mainly in the circles of the central part,

(v) Ajmer I, Kishangarh and Beawar circles are the citedals of the various secondary and tertiary activities in the region, and rest of circles have generally lower values than the regional average; and

(vi) the lower dependency ratio is observed in the southern circles and its intensity increases as one moved towards the north.

SECTION - B

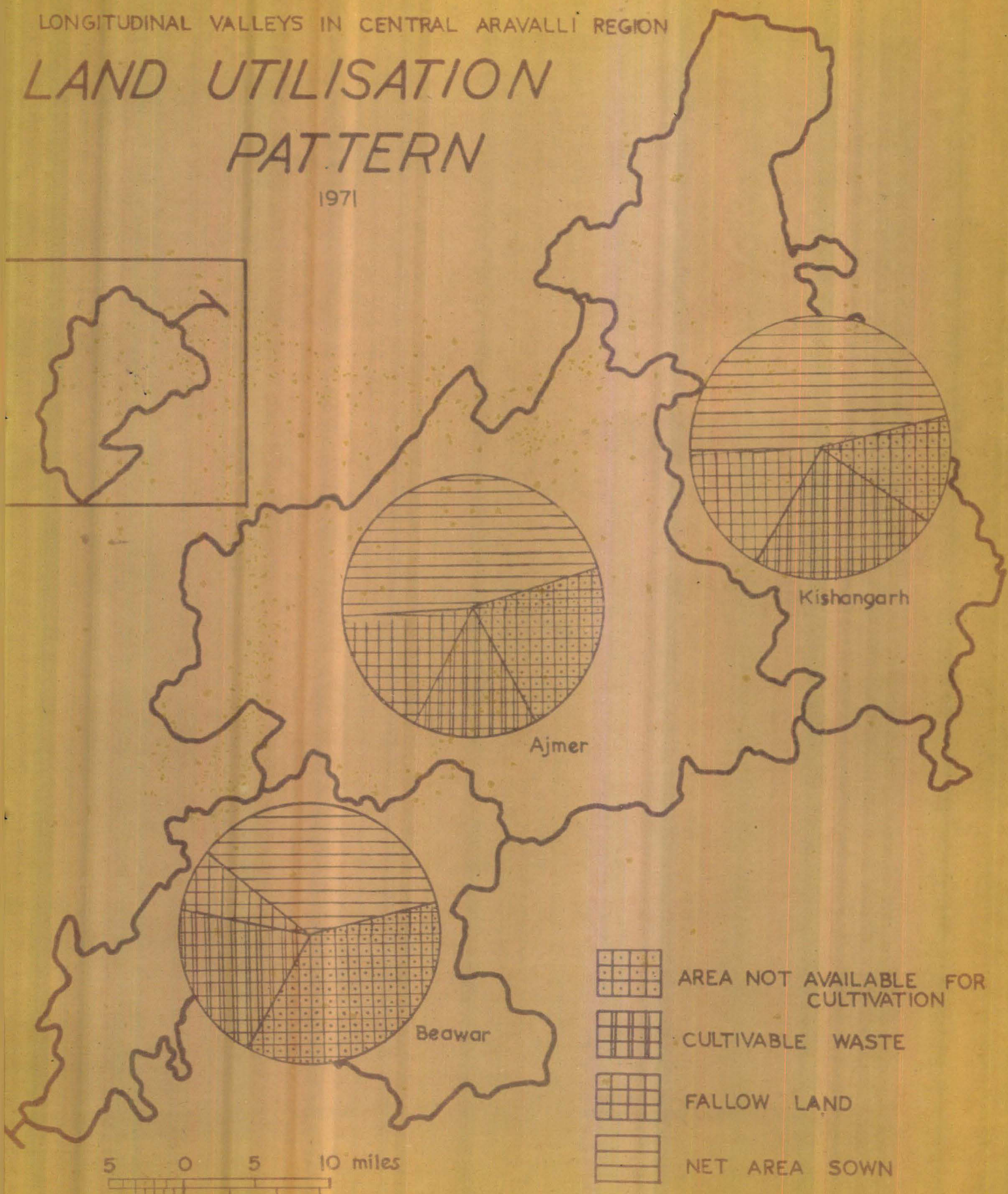
LAND-USE PATTERNS, 1971 :

The longtudinal valleys in the central Aravalli

LONGITUDINAL VALLEYS IN CENTRAL ARAVALLI REGION

LAND UTILISATION PATTERN

1971



regional, like other parts of Rajasthan, have basically as agrarian economy. Nearly 53 per cent of the total population is dependent on agriculture for livelihood. It is, therefore, necessary to understand the land use patterns of the region in details before launching any development project for the region. The present exercise analyses the patterns of general, as well as, agricultural land use, as observed in the region in 1971.

1. General Land Use, 1971:

The present study is based on the data copied out from the Census Handbook (Ajmer).[1] The data have been classified into the following four groups:

(i) Area not available for cultivation, which includes area under forests, roads and railways, settlements hills etc.

(ii) Culturable Waste;

(iii) Fallow Land (Current, as well as other than current); and

(iv) Cultivated area or Net Area Sown.

1.1 Land Use patterns (By tehsils);

The prominent features of the general land use at the tehsils level can be noted below (Table no.5).

(i) Area not available for cultivation

---

1. See -"Village Directory", District Census Handbook - Ajmer (1971), pp. 6-36

contributes nearly two-fifths to the total geographical area in Beawar tehsil, but its percentage share in Ajmer and Kishangar tehsils in 23.9 and 13.8 per cent respectively.

TABLE 5.4

Land-Use Patterns, 1971

(By Tehsils)

S. No:	Tehsil	Total Geographical Area:	Area not Available for Cultivation	Culturable waste	Fallow Land:	Net Sown Area:
1.	Ajmer	5,58,441 (100.00)	1,33,614 (24.92)	87,073 (15.59)	80,057 (14.34)	2,57,697 (46.15)
2.	Beawar	3,58,499 (100.00)	1,35,495 (37.80)	71,047 (19.81)	27,057 (7.15)	1,24,900 (34.84)
3.	Kishangarh	4,12,662 (100.00)	57,119 (13.83)	98,069 (23.77)	65,101 (15.78)	1,92,373 (46.62)
	Region					
	Acres	1,329,602	3,36,228	2,56,189	1,72,215	5,74,970
	%	(100.00)	(25.06)	(19.16)	(12.95)	(42.83)

(2) The culturable waste lands share nearly one-sixth of the total area, but it Varies from 23.8 per cent in Kishangarh to 15.6 per cent in the case of Ajmer tehsil (Fig. 5.6):

(3) Fallow land constitutes nearly one-seventh part of the total geograohical area in the northern tehsils i.e., Kishangarh (15.8%) and Ajmer (14.3 per

cent), but it acquires less significant proportion (7.6%) in the south(Beawar tehsil).

(4) The percentage share of the net area sown varies between 46 and 35. While each of the Kishangarh and Ajmer Tehsils has 46 per cent of the total area put to agriculture, the proportion of the cultivated area was reported nearly one-third (35%) in Beawar tehsil.

1.2 Land Use Patterns (By Circles):

1.21 Area not available for cultivation -

Areas covered under the hills, forests settlements, roads, railways etc; have been incorporated in this category. They constitute one-fourth (25.06%) of the total geographical area in the region. At the circle-level, higher share of the category is observed in the southern part. Todgarh, Jawaja, Rajiyawas, Ramgarh, Nayanagar, Masuda and Kherwa circles in the south and Sardhana, Ajmer II and Sreenagar Circles in the centre have more than 20 per cent of the total geographical area, which is not available for cultivation (Fig. 5.7 B).

Lower percentage share of this category can be observed in the circles of the northern part. While Rupnagar, Karkadi, Gagawana, Pushkar, Peesangan,

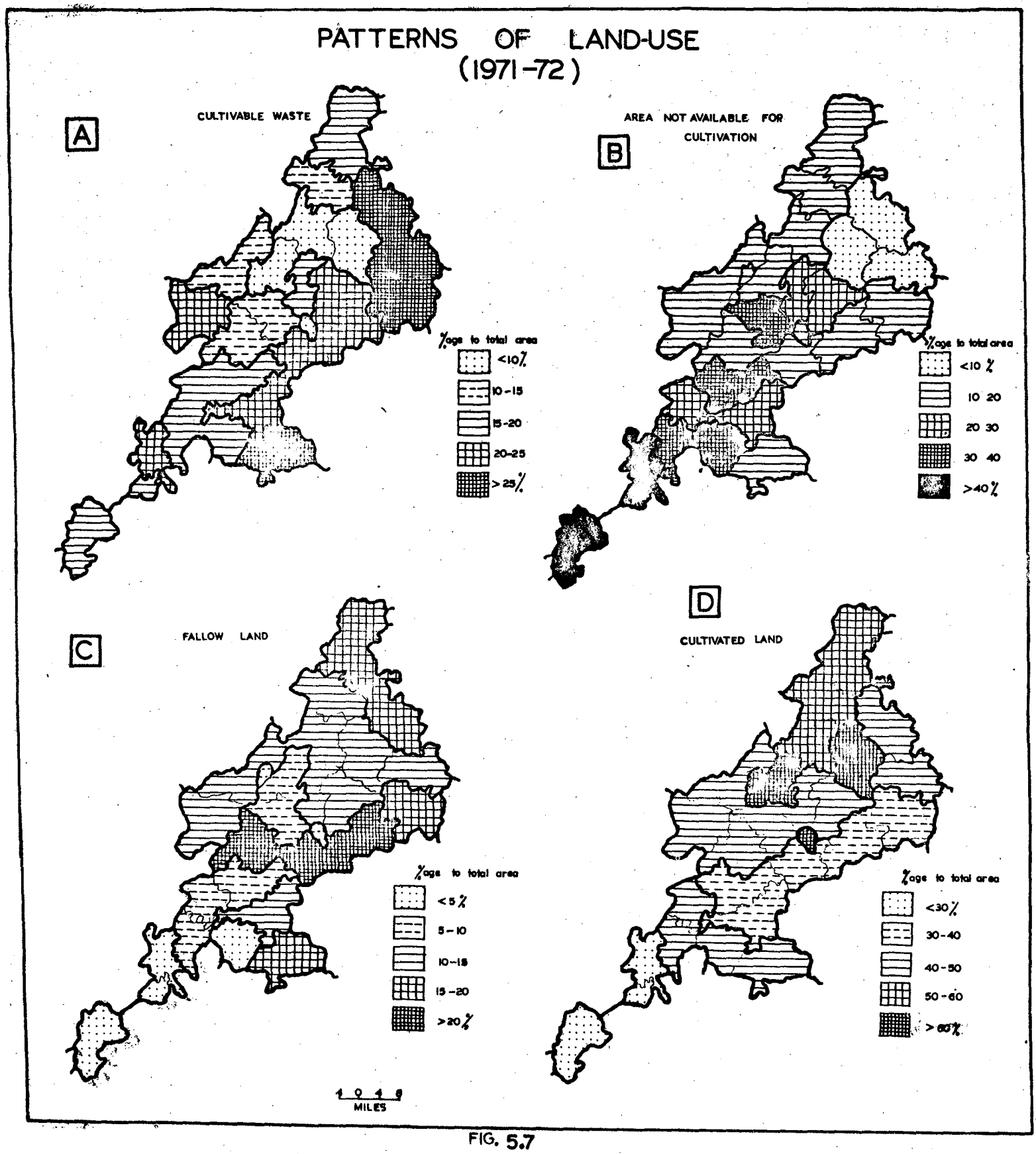

PATTERNS OF LAND-USE
(1971-72)
A
CULTIVABLE WASTE
%age to total area
<10%
10-15
15-20
20-25
>25%
B
AREA NOT AVAILABLE FOR CULTIVATION
%age to total area
<10 %
10 20
20 30
30 40
>40%
C
FALLOW LAND
%age to total area
<5%
5-10
10-15
15-20
>20%
D
CULTIVATED LAND
%age to total area
<30%
30-40
40-50
50-60
>60%
0 1 2 3
MILES

FIG. 5.7

Mangliyawas, Deratoo, Ramsar and Ankodiya circles show relatively low values (10 to 20%), the circles of Bandar Sindri, Kishangarh and Arain have very low (less than 10%) proportion of the land reported as not available for cultivation. Thus, it can be stated that higher share of the land incorporated in this category is found in the belt covered under the Aravalli range.

1.22 An area of 2,56,189 acres was reported as culturable waste in 1971, and its share amounted to 19.16% of the total geographical area in the region. Figure 4.6 (A) shows that higher prooortion of culturable waste is found in the eastern circles. In Bandar Sindri, Arain, Ankodiya, Sreenagar, Ramsar, Deratoo, Masuda and Bijayanagar circles of the eastern fringe, and Peesangan and Jawaja in the west, more than one-fifth of the toal area is culturable waste. The percentage share was near to median (15 to 20%) in the circles of the southern part. The lower values (below 15%) are observed in the centre part, the circles being Mangliyawas, saradhana, Pushkar, Ajmer I, Gagawana, Kishangarh and Karkadi (Table 5.5).

1.23 Fallow land (current, as well as, other than current) constitutes 12.95 per cent of the total geographical area in the region. This share varies substantially at the circle level. The circles of the north eastern friange (Rupnagar and Bandar Sindir) and the central part (Mangliyawas), Deratoo, Ramsar and Arain)

TABLE NO: 5.5

LAND-USE PATTERNS, 1975

(in percentage)

Sr. No:	Circles	Total Geographical Area (in Acres):	Area not available for cultivation	Cultivable Weste	Fallow Land:	Net sown Area:
1.	2	3	4	5	6	7
1.	Rupnagar	105083	13.97	17.45	17.77	50.82
2.	Karkadi	45641	15.43	12.65	14.88	57.03
3.	Kishangarh	60357	14.29	2.07	10.21	73.43
4.	Bandar Sindhri	68515	9.12	26.29	15.74	48.86
5.	Ankodiya	73832	13.98	32.39	16.37	37.26
6.	Arain	63511	12.75	29.88	14.14	41.97
7.	Ajmer I	45784	22.09	8.01	6.17	63.73
8.	Ajmer II	34586	26.43	17.02	10.37	43.09
9.	Pushkar	66914	30.55	14.51	12.71	42.22
10.	Peesangan	77417	23.46	20.28	11.02	45.24
11.	Mangaliyawas	62045	22.36	13.53	21.58	42.52
12.	Saradhana	47486	35.31	11.42	7.88	45.39
13.	Sreenagar	55146	26.34	20.47	13.05	41.14
14.	Derathoo	52638	19.57	20.98	20.87	38.50
15.	Ramsar	51519	15.02	24.52	25.58	34.87
16.	Gagawana	55821	23.35	8.36	14.08	54.22
17.	Bijainagar	58991	12.51	29.78	14.99	42.72
18.	Ramgarh	43676	40.08	15.35	4.41	40.16
19.	Masuda	56305	31.03	20.81	11.30	36.86
20.	Kherwa	59682	42.40	17.01	5.96	34.62
21.	Nayangar	39471	28.40	15.43	7.31	48.86
22.	Rajiyawas	31110	37.17	16.66	5.96	40.21
23.	Jawaja	34119	49.56	21.47	3.27	26.71
24.	Todgarh	44673	62.48	17.32	2.01	18.19
	Regional Average:	1328322	25.23	19.33	12.81	57.40

Sources: District Census Handbook - Ajmer (1971) pp. 6-36 (Village Directory)

along with Bijaynagar in the south, have higher proportion (above 15%) of land left as fallow land.

Average proportion (10 to 15 per cent) of the fallow land is found in the central part, incorporating Karkadi, Gangawana, Kishangarh, Ankodiya, Sreenagar, Ajmer II, Pushkar and Peesangan circle, alongwith Masuda in the south. The lower share of the fallow land (below 10 per cent) is observed in the southern part by and large. While Kherwa, Nayanagar, Rajiyawas, Ajmer I and Saradhana circles have relatively low (5 to 10%) proportion of the fallow land, it is very low (below 5%) in the circles of Ramgarh, Jawaja and Todgarh.

1.24 Net area sown (cultivated area) -

Nearly 42.8 per cent of the total geographical area was under cultivation in 1971, the acrage being 5,74,970. Fig. 5.7 exibits higher proportion of the cultivated area in the northern part. Ajmer I and Kishangarh circles possess very high share (more than 60 per cent) of the net area sown. The circles of Rupnagar, Karkadi and Gagawana show relatively high (50 to 60%) proportion of the cultivated area;.

The share of net area sown is found near median in the central part. The circles included in this class are Bandar Sindri, Arain (Kishangarh tehsil), Sreenagar, Ajmer II, Saradhana, Pushkar, Pusangan, Mangliyawas (Ajmer). Nayanagar, Rajiyawas, Ramgarh and Bijayanagar

(Beawar). Relatively low (30 to 40%) poportion of the cropped area can be seen in an alongated belt in the east-central part comprised by Ankodiya, Ramsar, Deratoo, Kherwa and Masuda circles. The lowest share is observed in Todgarh and Jawaja circles in the extreme south, the share being below 30 per cent.

In brief, it can be stated that (i) area not available for cultivation covers sizeable proportion mainly in the south-west; (ii) the proportion of the culturable waste land is higher in the eastern part; (iii) the area under fallow is concentrated in the central part, and (iv) the net area sown has higher percentage share in the circles of northern part. The inverse relationship between area not available for cultivated area on the other, is also notable.

2. Agricultural Land Use, 1971:

In the present section, an attempt has been made to indentify the salient features of the agricultural land use of the region. The census handbook provides information about first and second crops at the village level[1] and is useful in unfolding the general patterns of agricultural land use. The salient features, as observed in the distribution of first and second crops at the village level, can be described as follows:

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1. District Census Handbook - Ajmer (1971), pp. 6-36 (Village Directory).

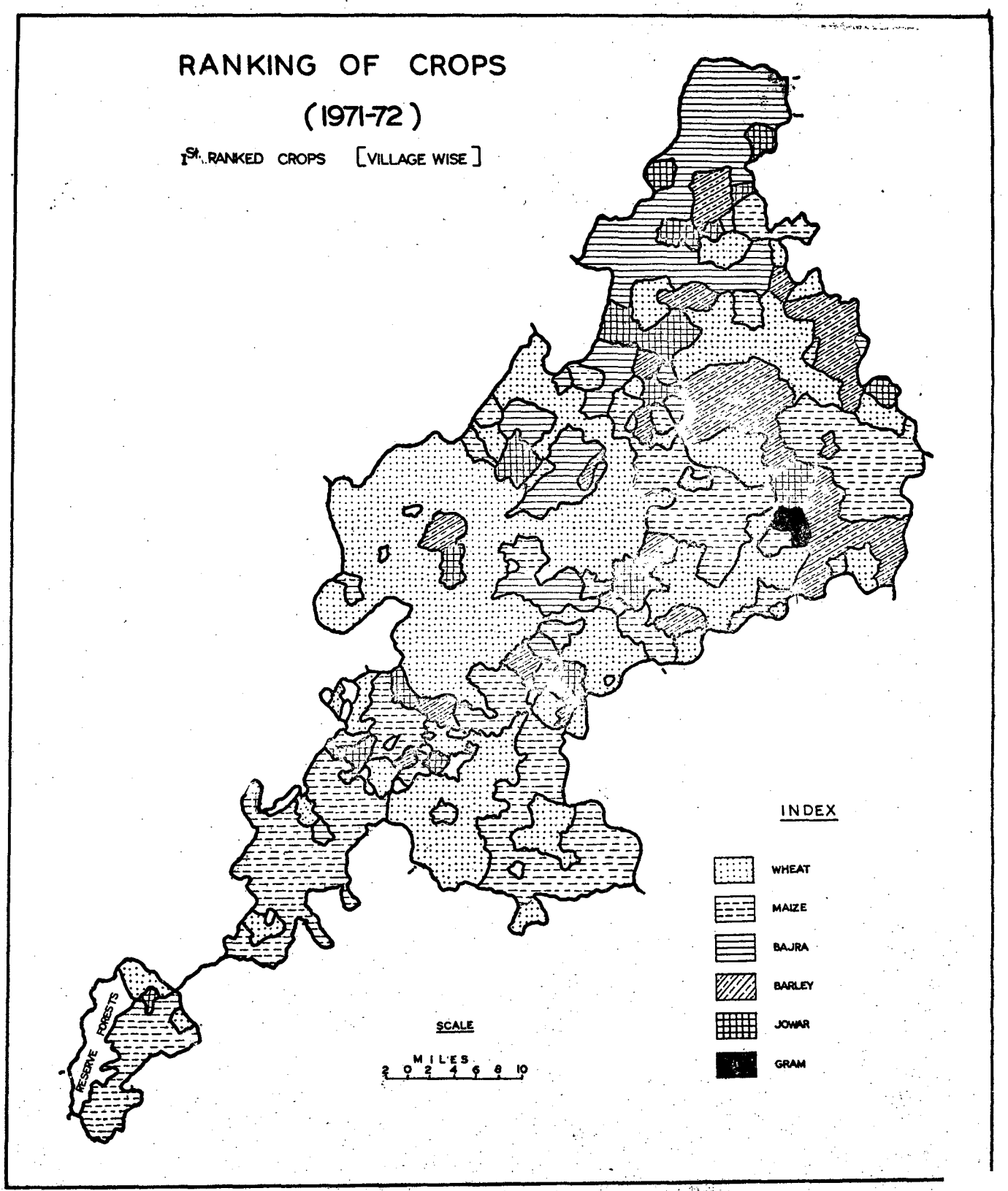
RANKING OF CROPS
(1971-72)
I^St. RANKED CROPS [VILLAGE WISE]
INDEX
WHEAT
MAIZE
BAJRA
BARLEY
JOWAR
GRAM
SCALE
MILES
2 0 2 4 6 8 10
RESERVE FORESTS

FIG. 5.8

2.1 First Ranked Crops:

Table 5.8 shows that Maize and wheat are the two dominant crops in the region and stand first in 37.6 (259) and 36.6 per cent (252) of the total village respectively. Barley (10.6%), Bajra (9.6%) and Jowar (5.4) are the other significant crops of the first rank. Gram is the only pulse which emerges on the scene but stands first only in two villages (0.3%).

The situation is found some what different at the tehsil-level. In Ajmer tehsil wheat is the first major crop and aquires 58.3 per cent of the total villages. Maize legs far behind it and stands first only in 38 villages (18.6%). It is followed by Bajra, Jowar and Barley which cover less than 10 per cent of the villages at this stage. But, in Beawar tehsil Maize replaces wheat and stands first in as many as 186 villages(57.4%). What occupies only 29.6 per cent (96 villages) of the total villages of the tehsil. Barley (8%) Jowar (3.1) and Bajra (1.8) are the other first ranking crops in the tehsil. In Kishangarh tehsil Bajra is first ranked crop in 42 villages (26.1 per cent) but it is followed immediately by wheat (23%) Maize and Barley (21.7% each). Jowar and Gram can be treated as minor first ranking crops in the tehsil.

The crop-wise groupings of the villages in the region (Table 5.6) reveals that maize is concentration mainly in the southern part of the region. Nearly three-

TABLE 5.6

Agricultural Land Use, 1971
(Ist Ranked Crops)

-: A :-

(Percentages by Tehsils)

1 S.No.	2 Crop	3 Region A	3 Region B	4 Tehsil Ajmer A	4 Tehsil Ajmer B	5 Tehsil Beawar A	5 Tehsil Beawar B	6 Tehsil Kishangarh A	6 Tehsil Kishangarh B
1.	Maize	259	100.00	38	14.67	136	71.81	35	13.51
2.	Wheat	252	100.00	119	47.22	96	38.10	37	14.68
3.	Barley	73	100.00	12	16.44	26	35.62	35	47.95
4.	Bajra	66	100.00	18	27.27	6	9.09	42	63.64
5.	Jowar	37	100.00	17	45.95	10	27.03	10	27.03
6.	Gram	2	100.00	--	--	--	--	2	100.00
	Total:	689	100.00	204	29.61	324	47.02	161	23.37

-: B :-

(Percent By Crops)

1	2	3 A	3 B	4 A	4 B	5 A	5 B	6 A	6 B
1.	Maize	259	37.59	38	18.63	136	57.41	35	21.74
2.	Wheat	252	36.57	119	58.33	96	29.63	37	22.98
3.	Barley	73	10.60	12	5.88	26	8.02	35	21.74
4.	Bajra	66	9.58	18	8.82	6	1.85	42	26.09
5.	Jowar	37	5.37	17	8.33	10	3.09	10	6.21
6.	Gram	2	0.29	--	--	--	--	2	1.24
	Total:	689	100.00	204	100.00	324	100.00	161	100.00

Note: A = No. of villages,
B = % share.

Source: District Census Handbook - Ajmer (1971), pp. 6-36 (Village Directory).

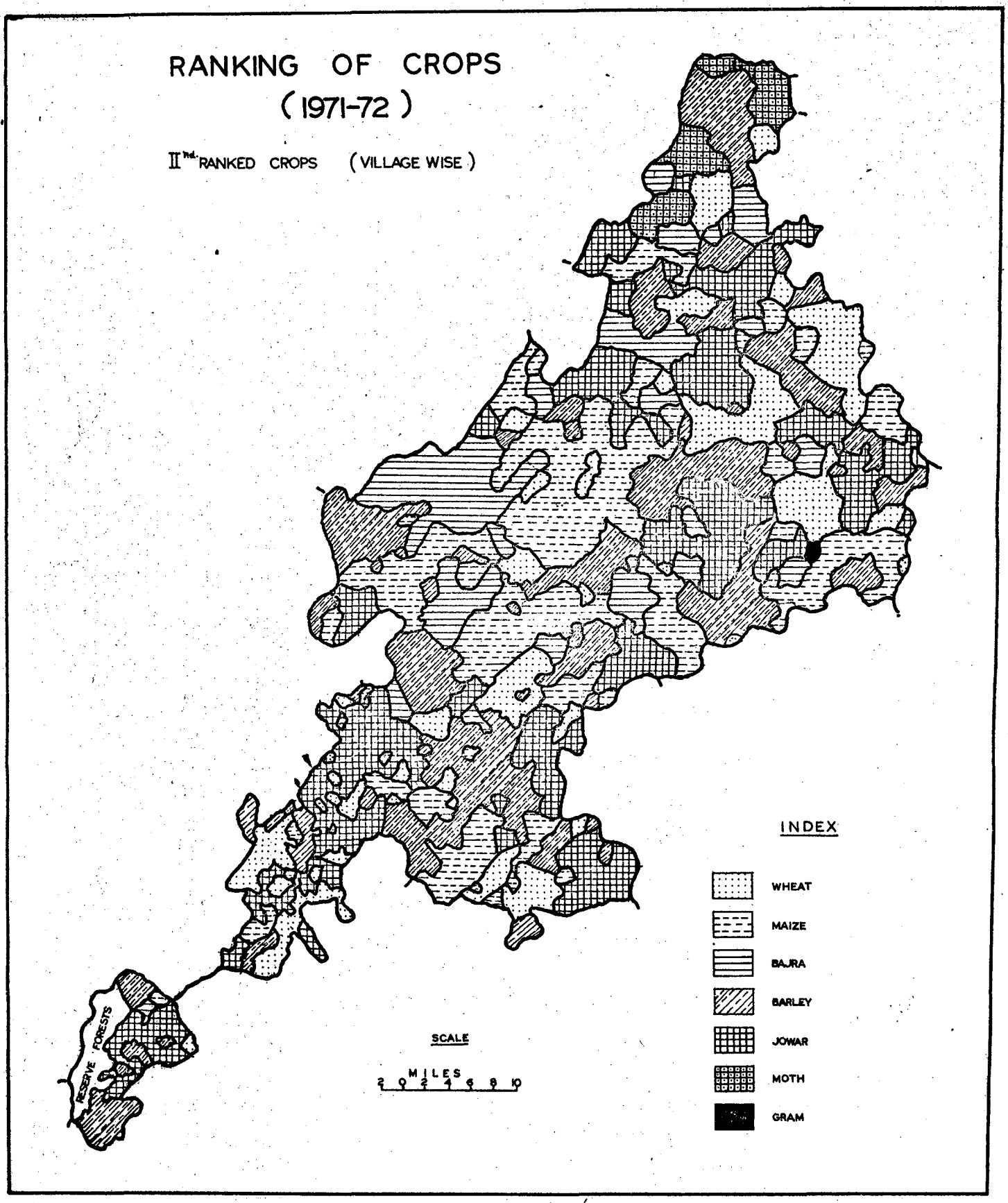
RANKING OF CROPS
(1971-72)
IInd. RANKED CROPS (VILLAGE WISE)
INDEX
WHEAT
MAIZE
BAJRA
BARLEY
JOWAR
MOTH
GRAM
SCALE
MILES
0 1 2 3 4 5 6 7 8 9 10
RESERVE FORESTS

FIG. 5.9

fourths of the villages showing maize as the first crop are situated in the Todgarh, Jawaja, Rajiyawas, Nayanagar and Bijayanagar circles of Beawar tehsil. Maize has same importance in Sreenagar, Ramsar, Arain and Ankodiya circles of the east-central part (Fig. 5.8).

Wheat occupies the villages of the central part by the large. Ajmer and Beawar tehsils share 47.2 and 38.1 per cent of the total villages having wheat as first crop, but Kishangarh contributes only 14.7 per cent to it. The chief pockets of wheat can be observed in Peesangan, Mangliyawas, Ajmer I, Pushkar, Deratoo (Ajmer tehsil), Kherwa, Masuda, Ramgarh (Beawar), Kishangarh and Bandar Sindri (Kishangarh) circles.

Barley is the third major crop in the region but covers mainly the villages of the eastern fringe of the region. It major concentration is found in the villages included in Bandar Sindri, Kishangarh and Arain circles (Kishangarh tehsil). Bajra has first rank in the villages of the extreme north, which are incorporated in Rupnagar and Karkadi circles of Kishangarh tehsil. But its pockets can be seen in Pushkar, Gagawana, Ajmer I and Saradhana circles also. Jowar occupies the parts of Ajmer tehsil in the centre and Gram covers only two villages of Kishangarh tehsil in the east.

2.2 Second Ranked Crops:

The picture is found entirely changed at this stage. Maize and wheat are shifted to the third and

TABLE 5.7

Agricultural Land Use, 1971

(IInd Ranked Crops)

-: A :-

(Percentage by Tehsils)

1 S.No:	2 Crop	3 Region A	3 Region B	4 Tehsil Ajmer A	4 Tehsil Ajmer B	5 Tehsil Beawar A	5 Tehsil Beawar B	6 Tehsil Kishangarh A	6 Tehsil Kishangarh B
1.	Jowar	189	100.00	40	21.16	116	61.38	33	17.46
2.	Barley	176	100.00	37	21.02	87	49.43	52	29.55
3.	Maize	150	100.00	79	52.67	48	32.00	23	15.33
4.	Wheat	102	100.00	8	7.84	64	62.75	30	29.41
5.	Bajra	59	100.00	40	67.80	8	13.56	11	18.64
6.	Moth	12	100.00	--	--	0	--	12	100.00
7.	Gram	1	100.00	--	--	1	100.00	--	--
	Total:	689	100.00	204	29.61	324	47.02	161	23.37

-: B :-

(Percentage by Crops)

1	2	3 A	3 B	4 A	4 B	5 A	5 B	6 A	6 B
1.	Jowar	189	27.43	40	19.61	116	35.80	33	20.50
2.	Barley	176	25.54	37	18.14	87	26.85	52	32.30
3.	Maize	150	21.77	79	38.73	48	14.81	23	14.29
4.	Wheat	102	14.80	8	3.92	64	19.75	30	18.63
5.	Bajra	59	8.56	40	19.61	8	2.47	11	6.83
6.	Moth	12	1.74	--	--	0	--	12	7.45
7.	Gram	1	0.15	--	--	1	0.31	--	--
	Total:	689	100.00	204	100.00	324	100.00	161	100.00

Note: A = No. of villages,

B = % share.

Source: District Census Handbook - Ajmer (1971), pp. 6-36 (Village Directory)

fourth position in the region and the previous two are occupied by Jowar and Barley respectively. Moth is the another pulse which emerges on the scene this time and aquires 12 villages (1.7%). Gram is able to occuoy only one village at this stage, but the other insignificant crop i.e., Bajra - stands second in as many as 59 village (8.6%) of the region (Table 5.7).

Maize becomes first major crop in Ajmer tehsil by commanding 79 villages and is followed by Jowar, Bajra (40 villages each) and Barley (37). Wheat aquires last position in the tehsil this time. In Beawar tehsil Jowar is dominant crop and covers 35.8 per cent of the total villages. It is followed by Barley (26.8) wheat (19.8) and Maize (14.8). Barley is the first crop in Kishangarh tehsil and stands second in 52 villages (32.3 per cent). Jowar (20.5), Wheat (18.6), Maize (14.3) Moth (7.5) and Bajra (6.8) are the other crops of the tehsil.

Jowar, barley and wheat are concentrated mainly in the southern part (Beawar tehsil). Todgarh, Rajiyawas, Nayanagar, Bijayanagar and Masuda are the circles where jowar occupies second rank at the village level, although its pockets can also be traced in Daratoo, Sreenagar, Kishangarh and Bandar Sindri Circles, Barley aquires significant portions of Mangliyawas, Masuda, Ramgarh, Saradhana, Peesangan, Sreenagar and Ramsar circles.

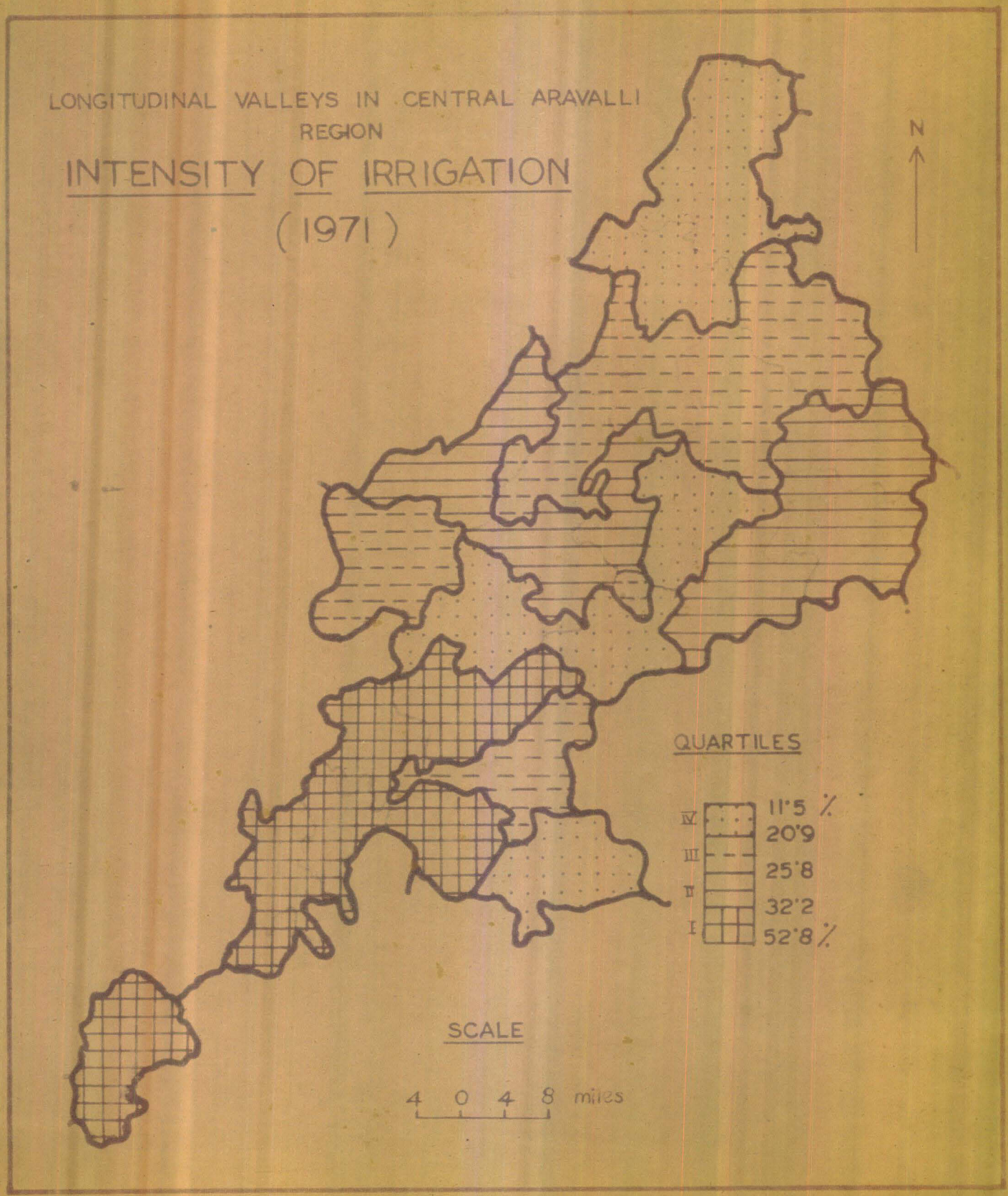
LONGITUDINAL VALLEYS IN CENTRAL ARAVALLI REGION
INTENSITY OF IRRIGATION
(1971)
N
QUARTILES
IV
III
II
I
11·5 %
20·9
25·8
32·2
52·8 %
SCALE
4 0 4 8 miles

FIG. 5.10

Beawar tehsil shares 62.8 per cent of the villages numerically although Kishangarh has more area under wheat this time (Fig. 5.9).

Maize and Bajra occupy mainly the villages of the central part (Ajmer tehsil). Nearly 52.7 and 67.8 per cent of the villages having Maize and Bajra as second crops are situated in this part. While the maize covers the parts of Pushkar. Ajmer I, Saradhana, Mangliyawas and Kherwa circles, bajra is found mainly in Pushkar, Peesangan and Mangliyawas circles. Both occupies 12 villages (Table 5.7.)this time and they all are situated in Rupnagar circle in the extreme north.

In brief, it can be stated that (i) at both the stages cereals, such as -wheat, maize, jowar, bajra and barley, dominate the whole region, (ii) maize and wheat are the first two crops at the first stage but they are replaced by jowar and barley at the later stage, (iii) while maize and wheat are dominant in the southern and the central parts respectively, Jawar and Barley occupy first positions, in the northern and easterns parts, and (iv) moth and gram are the two pulses which emerge on the scene but they too occupy negligible number of villages at both the stages.

2.3 Intensity of Irrigation:

According to the land records, 1,61,931 acres of land was reported as irrigated in 1971, which constituted nearly one-fourth (25.5 per cent) of the gross

cropped area. The figure (5.10) shows that higher intensity of irrigation is observed in the southern and the central parts. While it is found relatively high (25.8 to 32.2%) in the central part incorporating Ankodiya, Arain, Ramsar, Ajmer II, Saradhana and Pushkar circles, it is found high (32.2 to 52.8%) in Kherwa, Nayanagar, Ramgarh, Jawaja, Rajiyawas (45.3%) and Todgarh (52.8) circles in the south.

Lower values of the intensity are observed in the central and the northern parts, by and large. Circles of Bandar Sindri, Kishangarh, Gagawana, Ajmer I, Peesangan in the centre and Masuda in the south have relatively high values (20.9 to 25.8%)., but the values are below 20.9 per cent in Rupnagar. Karkadi (north), Sreenagar, Mangliyawas, Deratoo (centre) and Bijayanagar (south) circles. Thus, the extreme values were found in the circles of the extreme north and south, but the central part had the values near to the median (25.8%).

2.4 Sources of Irrigation:

On the basis of available data an exercise has been done finding out the main sources of irrigation at the regional, as well as, tehsil-level (Fig. 5.11.). The study reveals that wells are dominant among the sources of irrigation, and contribute 80.9 per cent to the gross irrigated area in the region. The second place is captured by tanks which share nearly 16.8 per cent of the gross irrigated area in the region. The

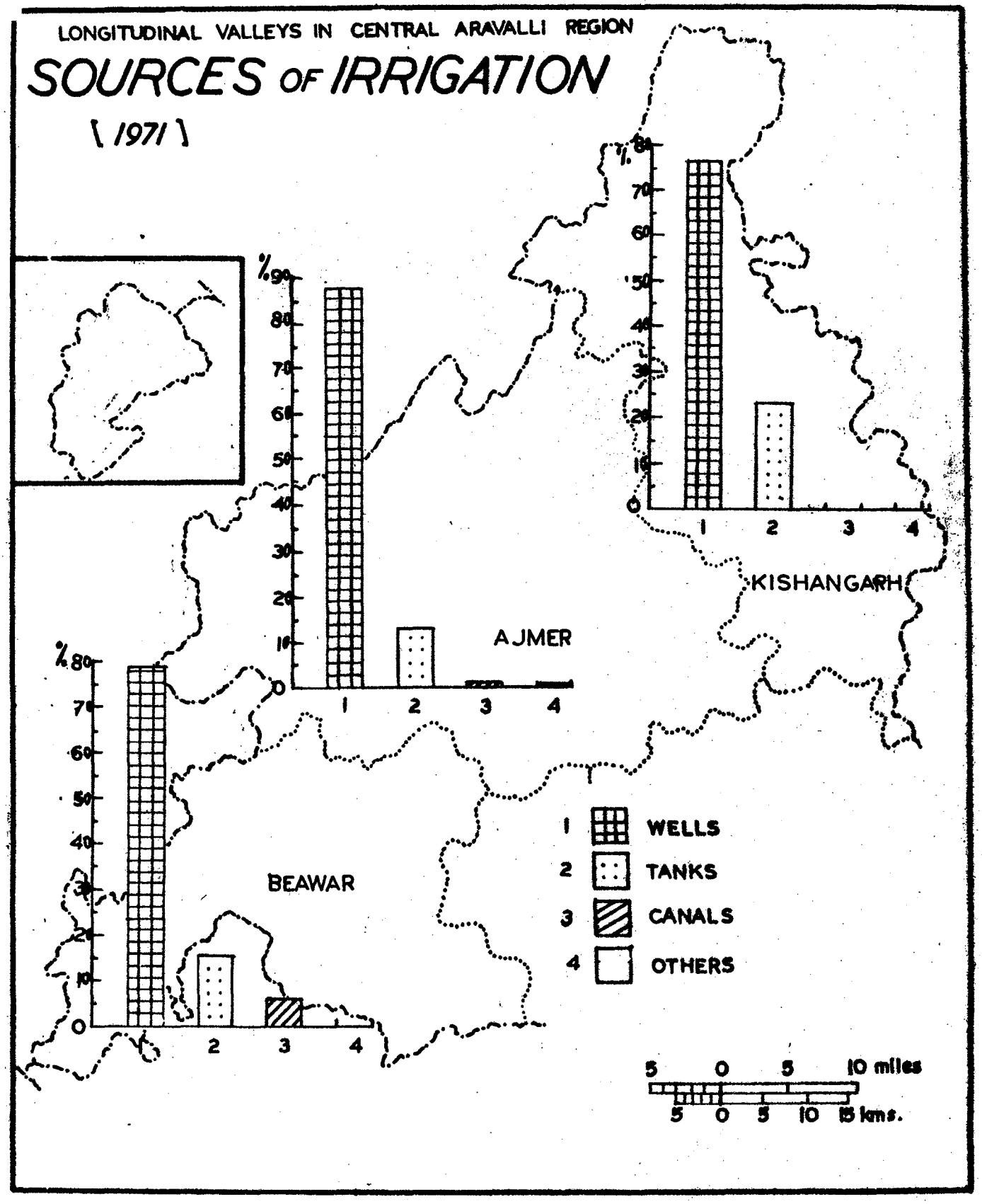
LONGITUDINAL VALLEYS IN CENTRAL ARAVALLI REGION
SOURCES OF IRRIGATION
(1971)
%
AJMER
KISHANGARH
BEAWAR
1 WELLS
2 TANKS
3 CANALS
4 OTHERS
5 0 5 10 miles
5 0 5 10 15 kms.

FIG. 5.11

area irrigated by canals (2.2%) and other sources (0.1) contributed insignificant portion to the gross irrigated area (Table 5.8).

TABLE 5.8

Sources of Irrigation, 1971

(By Tehsils)

S. No:	Tehsil	Gross Irrigated area:	Sources of Irrigation			
			Wells	Tanks	Canals	Others
1.	Ajmer	62,334 (100.00)	54,054 (86.72)	7,954 (12.76)	196 (0.31)	131 (0.21)
2.	Beawar	57,030 (100.00)	44,596 (78.20)	9,010 (15.80)	3,419 (5.99)	4 (0.01)
3.	Kishangarh	42,567 (100.00)	32,412 (76.15)	10,153 (23.85)	2 --	-- --
Region						
(Acres)		1,61,931	1,31,062	27,117	3,617	135
(%)		(100.00)	(80.94)	(16.78)	(2.20)	(0.08)

At the tehsil-level too, well is the main source of irrigation and more than three-fourths of the gross irrigated area is irrigated by wells in all the three tehsils i.e., Ajmer (86.7%), Beawar (78.2) and Kishangarh (76.2). Tanks also irrigated sizeable area in the tehsils of the region. Canals become significant only in Beawar tehsil, where they share 6 per cent of the gross irrigated area. The contribution of other sources is absolutely insignificant from the viewpoint of the irrigated land. The following salient features emerge out of the study of the economic structure of the

region.

(i) The maximum participation of workers in economic activities is found in southern circles which are primarily agricultural. These circles are Mangaliyawas, Kherwa, Bijainagar, Todgarh, Sreenagar, and Ramgarh.

(ii) The workers engaged in secondary and tertiary activities register maximum in the central circles which have larger number of urban centres and industrial establishments. These circles are Ajmer I, Ajmer II, Kishangarh, Sreenagar, Peesangan, Saradhana, and Ramsar.

(iii) The irrigation facilities are highly localized in the southern and the south-eastern portions of the region.

(iv) The forests are more dominent in the southern area. This region also provides the ranching facilities. With the result, livestock industry is well developed here.

(v) The northern part of the region has maximum land under cultivation. But the region is devoid of any irrigation facility and thus the agriculture is highly dependent on rainfall, which itself is a highly variable phenomenon here. This region includes the circles of Rupnagar, Karkadi, Bandar Sindhri, Ankodiya, Arain Gagawana.

CHAPTER VI

SPATIAL DISTRIBUTION PATTERNS OF SETTLEMENTS:

1. INTRODUCTION:

Identification of the spatial distribution patterns of settlements is the main object of this chapter and the Nearest Neighbour Technique has been applied to achieve it. The Nearest Neighbour Distance (N.N.D.) is considered as a straight line measurement of the distance separating any phenomenon from its nearest neighbour in space. The distribution has been studied not only of all the settlements taken together, but also of the settlements of varying size - groups.

This technique was enunciated by clark and Evans[1] in tracing out the patterns of distribution of various plant species over the surface. Subsiquently the technique was found suitable in identifying the spacing among the settlements and has been used for the purpose by Dacey,[2] King,[3] Thompson,[4] Browing and Gibbs.

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3. King, L.J.: "A Quantitative Expression of the pattern of Urban Settlements in Selected Areas of U.S." Analytical Human Geography (ed. P.J. Ambrose), London, Longmans, 1966 pp. 89-102.
4. Thompson, H.R.: "Distribution of Distance to Nearest Neighbour in a Population of Randomly Distributed Individuals", Ecology Vol. 37 (1956), pp. 391-94.

With the help of N.N.D. the departure from observed spatial distribution to a theoritical random distribution between clustered and dispersed pattern of settlements has been identified and denoted with the help of 'R' scale.[5]

2. DISPERSION OF SETTLEMENTS:

2.1 All Size-Settlements -

According to 1971 census, there were 674 inhabited settlements located over the area of 5310 square km. The tehsil-wise break up of the settlements was Ajmer tehsil (204), Beawar (315) and Kishangarh(155). The 'R' value has been calculated as 1.26 which shows

---

5. The 'R' value has been calculated form the following formula:

$$R = \frac{\bar{r}a}{\bar{r}e}$$

Where $\bar{r}a$ is the mean of observed distances in a given region and $\bar{r}e$ is the mean of the expected distances which can be obtained by the following method:

$$\bar{r}e = \frac{1}{2/p}$$

$$P = \frac{N}{A.} = \frac{\text{Total number of settlements}}{\text{Total geographical area.}}$$

The level of significance of 'R' value has been found through the calculation of 'Z' score as suggested by L.J. Kind and it has been tested through 't' score. The 'Z' value can be computed as:

$$Z = \frac{\bar{r}a - \bar{r}e}{\bar{o}\ \bar{r}e}$$

where $\bar{o}$ (standard Error) $= \frac{0.26136}{\sqrt{\frac{N^2}{A}}}$; (other things already explained above.)

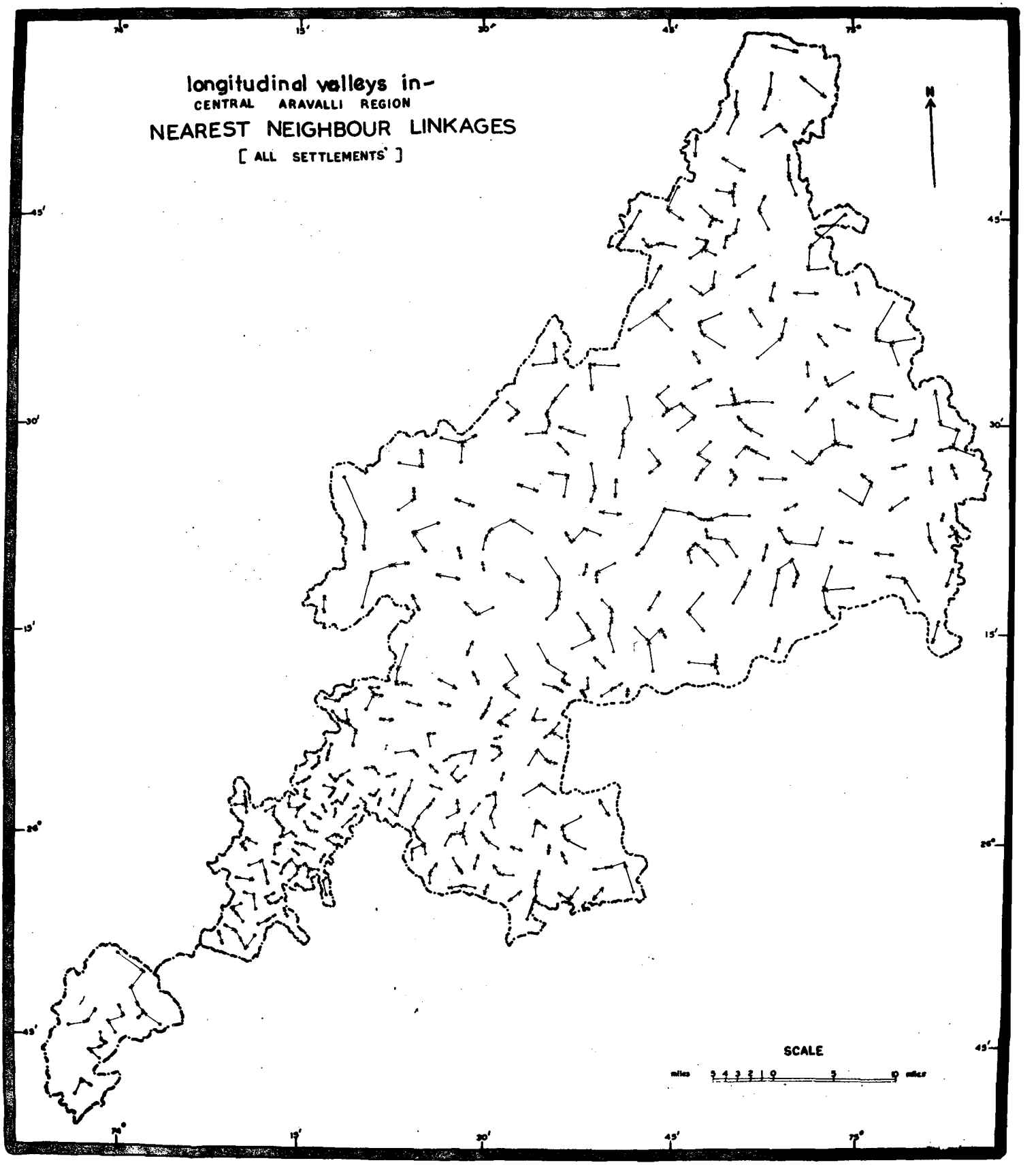
longitudinal valleys in-
CENTRAL ARAVALLI REGION
NEAREST NEIGHBOUR LINKAGES
[ALL SETTLEMENTS]
N
SCALE
miles
miles

FIG. 6.1

that the distribution is more regular than random[6]. The 't' score conforms the significance of 'R' value upto 99.0 per cent level of confidence (Table no. 6.1).

After the study of the figure (6.1) one can identify higher concentration of the settlements in the southern part (Bearwar tehsil) of the region. This phenomenon can be attributed to the existance of smaller longitudinal valleys with fertile lands and transport linkages.

2.2 Settlements with less than 200 Population:

Narly 25 per cent of the total settlements have less than 200 population and are concentrated mainly in Beawar tehsil (120). The remaining settlements are located in Ajmer (21) and Kishangarh (27) tehsils. The distribution pattern of the settlements was found approaching to Random - the 'R' value being 0.84 (significant at 99.0 per cent level of confidente).

2.3 Settlements with 200 to 499 Population:

185 villages fall in this population size-group which form 29.2 per cent to the total number of settlements in 1971. While 101 villages were situated in Beawar tehsil, the numbers for Ajmer and Kishangarh tehsils were

6. 'R' values range between o and 2.1491. While the extreme values point the clustered and the even distribution patterns respectively, the random distribution is denoted by the R value of 1.0.

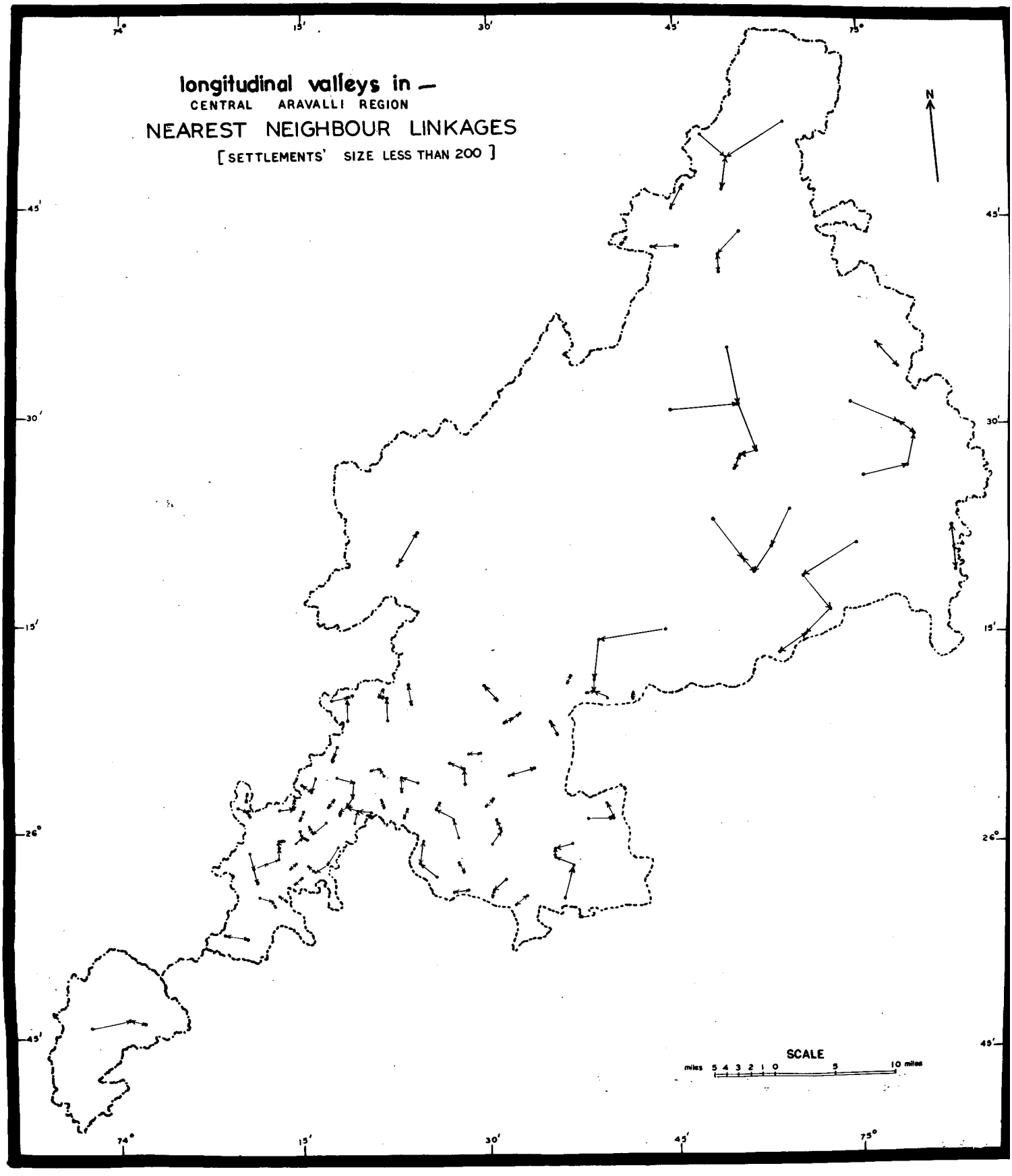
longitudinal valleys in —
CENTRAL ARAVALLI REGION
NEAREST NEIGHBOUR LINKAGES
[SETTLEMENTS' SIZE LESS THAN 200]
N
SCALE
miles 5 4 3 2 1 0 5 10 miles
74°
15'
30'
45'
75°
45'
30'
15'
26°
45'

FIG. 6.2

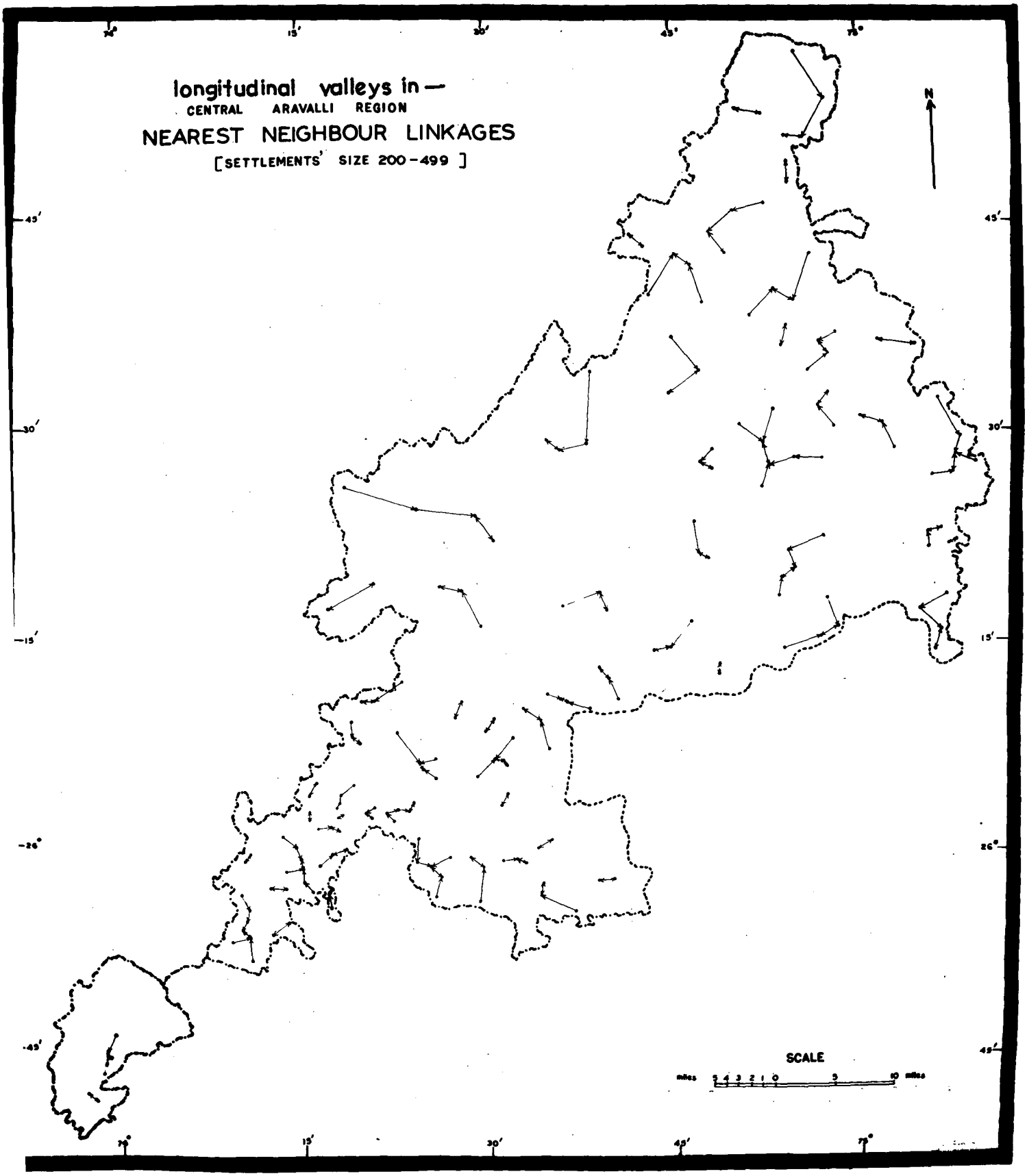
longitudinal valleys in —
CENTRAL ARAVALLI REGION
NEAREST NEIGHBOUR LINKAGES
[SETTLEMENTS' SIZE 200-499]
N
SCALE
miles 5 4 3 2 1 0 5 10 miles

FIG. 6.3

44 and 40 respectively. (Fig. 6.3). The 'R' value of 1.006 has shows that the distribution of the settlements included in this group is Random. The agglo meration of the villages in the extreme south is also notable.

2.4 Settlements with 500 to 999 Population:

There are 175 settlements belonging to this size-group, which constitute 26 per cent of the total settlements in the region. The tehsil wise distribution of the villages was as follows - Ajmer (71), Beawar (66) and Kishangarh (38). The distribution pattern of the settlements can be expressed as random, the 'R' value being 1.10. This value reveals that the settlements are distributed unevenly over the region (Fig. 6.4)

2.5 Settlements with 1000 to 1999 Population:

The settlements, incorporated in this size-group, contribute 17.3 per cent (121) to the total settlements of the region. While Kishangarh and Ajmer tehsils shared 42 and 50 villages respectively, 19 villages belonged to Beawar.

The 'R' value has been computed as 1.24 which indicates that the settlements have a more regular than random distribution. The 't' test also signifies the result upto 99.0 per cent level of confidence. The settlements are more frequently distributed over the central part, which can be attributed to the lowland topography with fertile soils on the one hand and transport linkages on the other (Fig. 6.5 and 6.8).

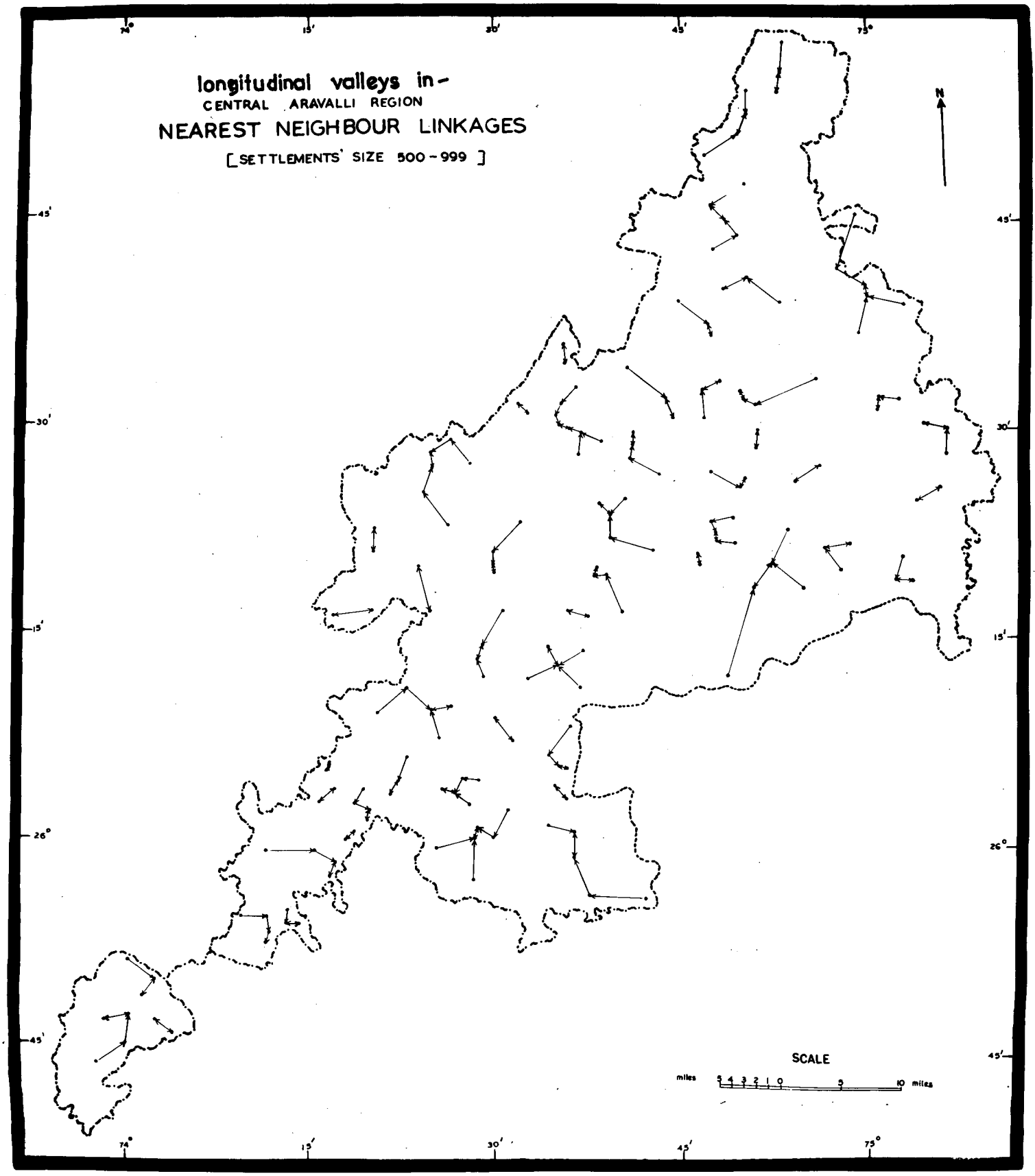
longitudinal valleys in -
CENTRAL ARAVALLI REGION
NEAREST NEIGHBOUR LINKAGES
[SETTLEMENTS' SIZE 500 - 999]
N
SCALE
miles 5 4 3 2 1 0 5 10 miles
74°
15'
30'
45'
75°
26°
45'
30'
15'

FIG. 6.4

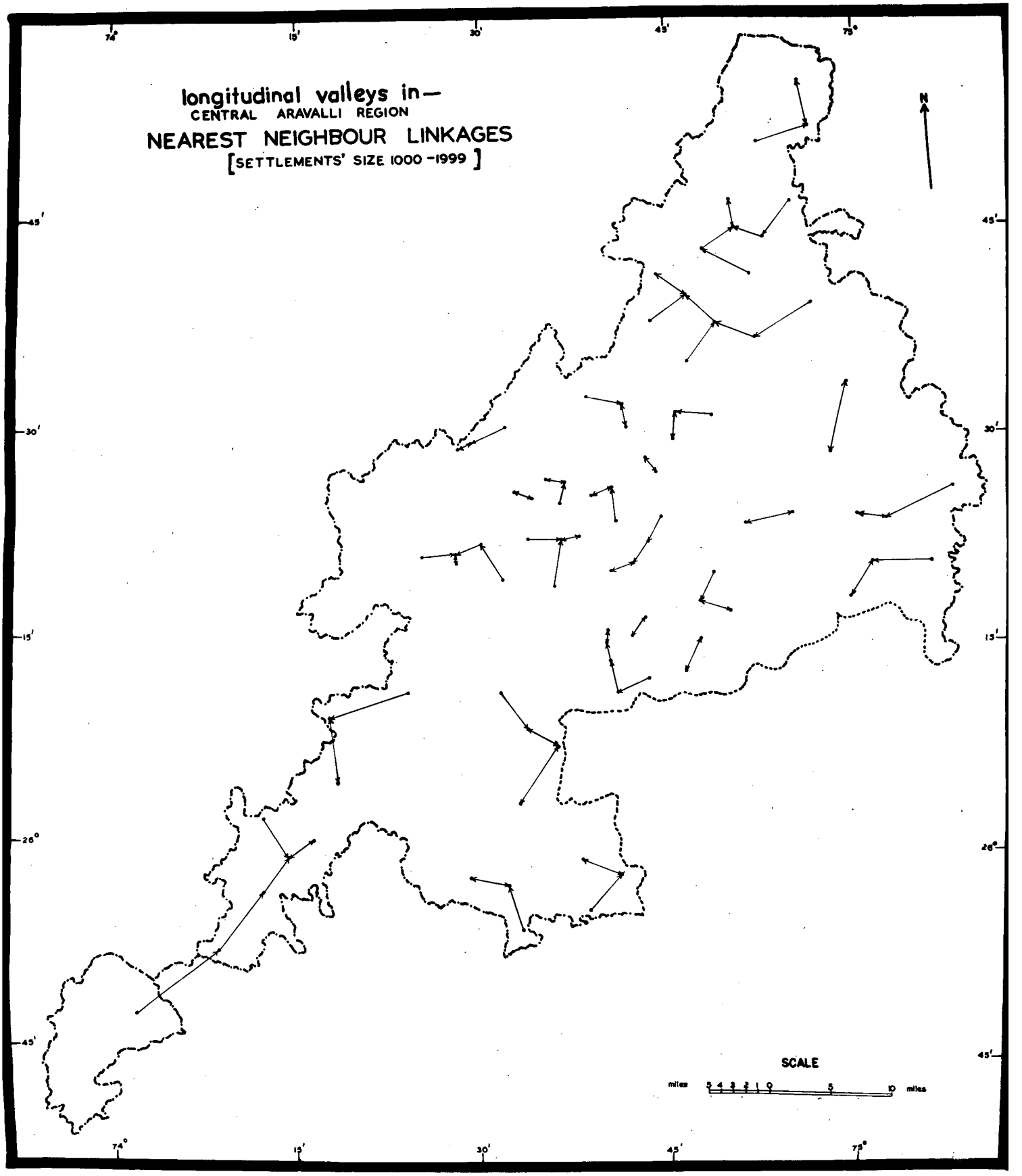
longitudinal valleys in—
CENTRAL ARAVALLI REGION
NEAREST NEIGHBOUR LINKAGES
[SETTLEMENTS' SIZE 1000 -1999]
N
74°
15'
30'
45'
75°
45'
30'
15'
26°
45'
SCALE
miles 5 4 3 2 1 0 5 10 miles

FIG. 6.5

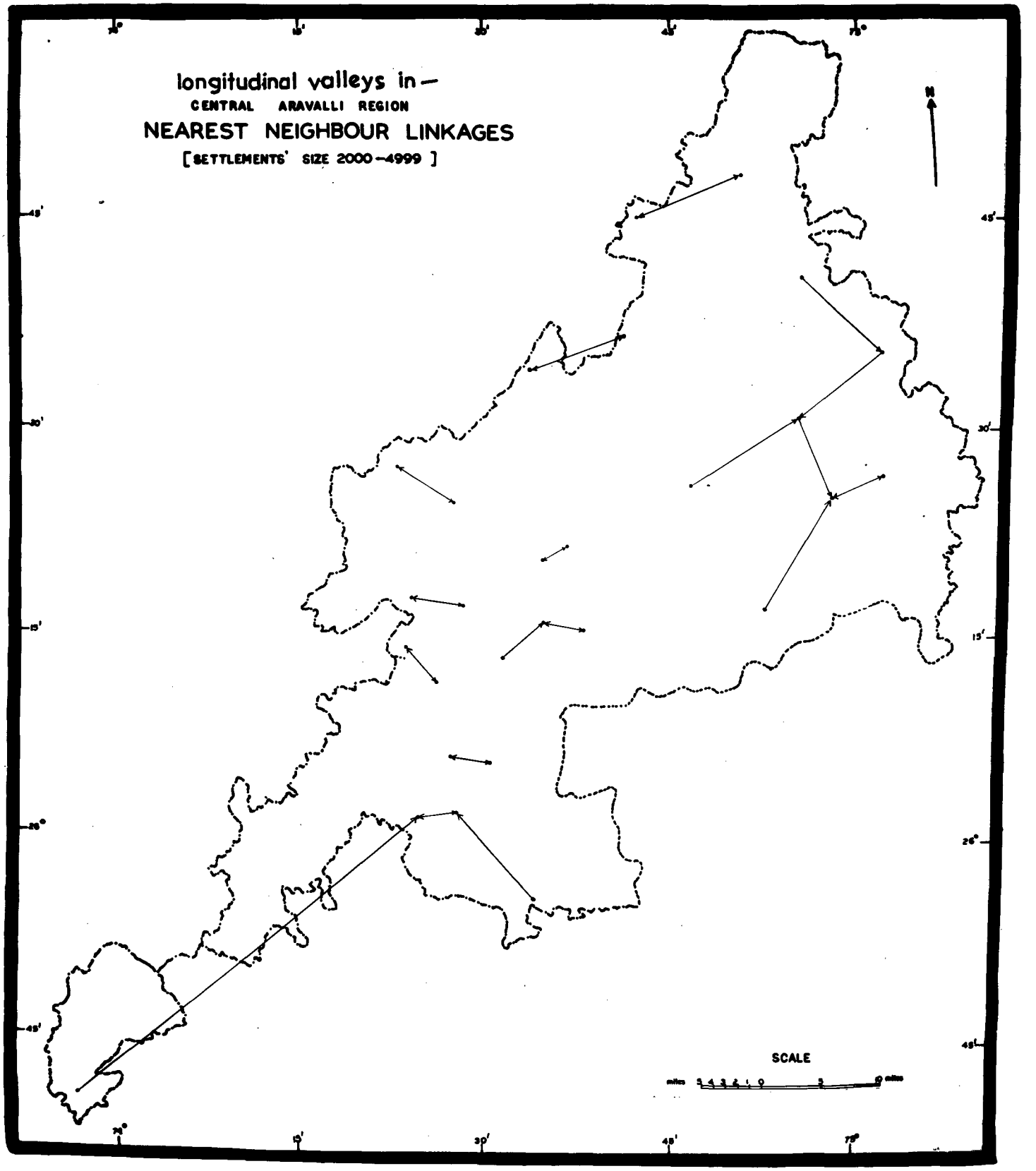
longitudinal valleys in—
CENTRAL ARAVALLI REGION
NEAREST NEIGHBOUR LINKAGES
[SETTLEMENTS' SIZE 2000–4999]
N
SCALE

FIG. 6.6

2.6 Settlements with 2000 to 4999 Population:

There were only 28 settlements included in this size-group which form 4 per cent of the total settlements. The highest number of settlements belongs to Ajmer tehsil (14) the rest of the number is shared by Beawar and Kishangarh (7 settlements each). The 'R' value is 1.57 which shows that their distribution is more than random but is less regular than even (Fig. 6.6).

2.7 Settlements with 5000 Population and Above:

Only 7 settlements are incorporated in this size-class which share nearly 1 per cent of the total settlements in the region. 4 of them belong to Ajmer tehsil and the rest of three are shared by Beawar (2) and Kishangarh (1). The 'R' value was calculated as 1.52 which indicates that the distribution pattern is more regular than random. The higher concentration of the settlements in the central part can be attributed to the nearness of Ajmer city and transport facilities (Fig. 6.7).

In brief, the salient features, as brought out in the analysis of spatial distribution of the settlements, can be noted below:

(i) The distribution is a little more regular than random with 'R' value placed at 1.26;

(ii) The small sized settlements are less than random in the distributional pattern, but as the size of the settlements in-

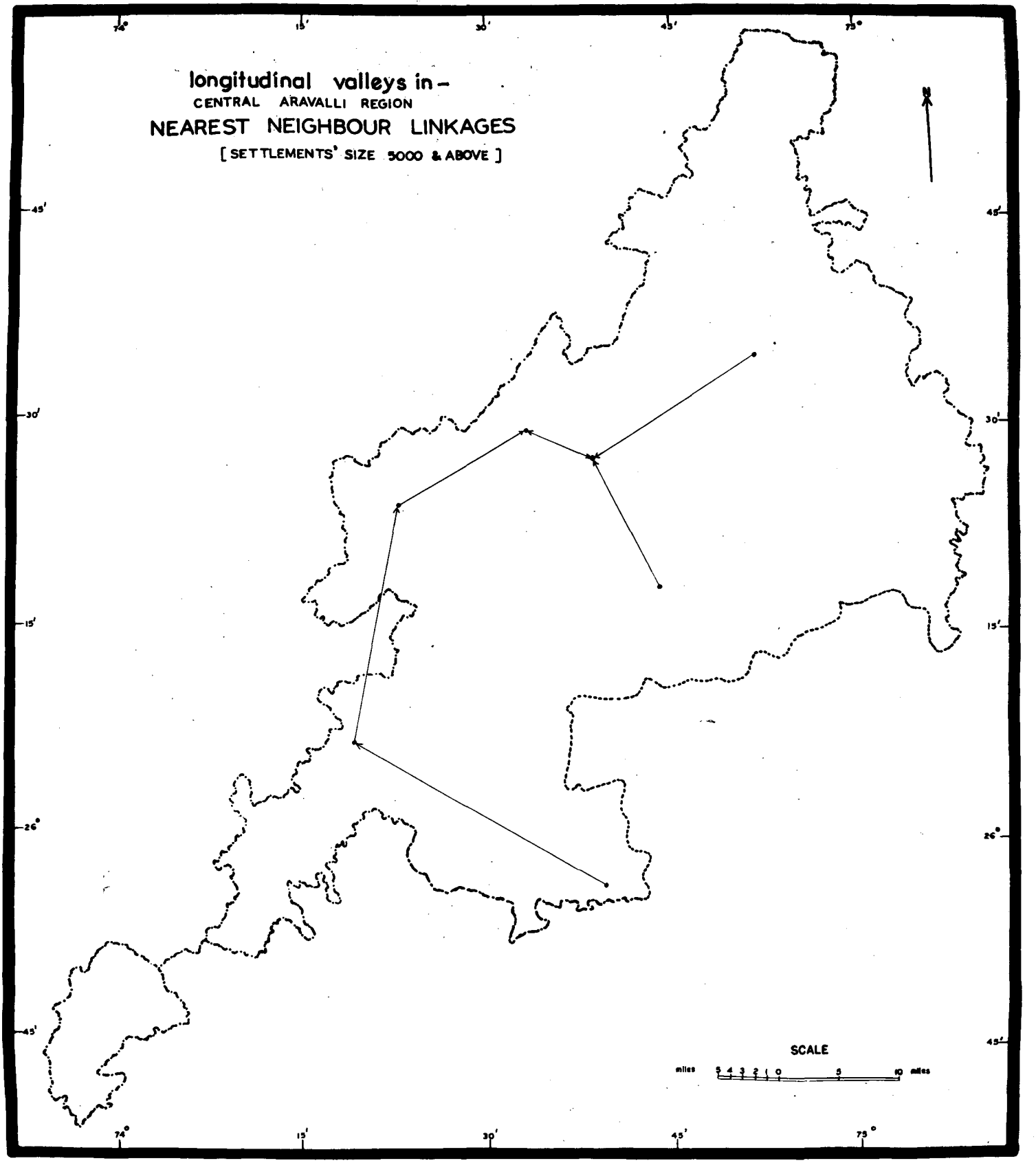
longitudinal valleys in –
CENTRAL ARAVALLI REGION
NEAREST NEIGHBOUR LINKAGES
[SETTLEMENTS' SIZE 5000 & ABOVE]
N
74°
15'
30'
45'
75°
45'
30'
15'
26°
45'
SCALE
miles
5 4 3 2 1 0
5
10 miles

FIG. 6.7

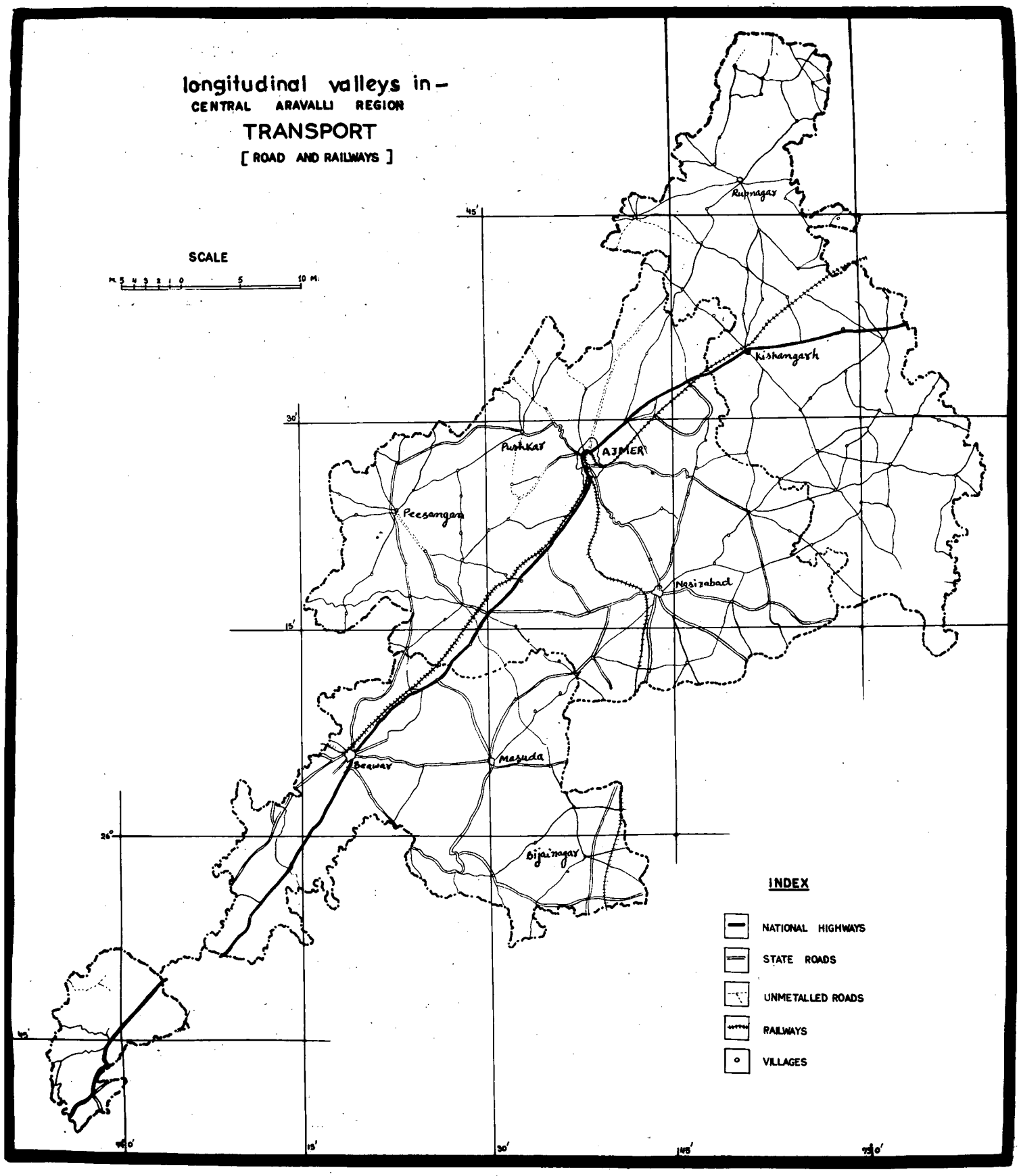
longitudinal valleys in -
CENTRAL ARAVALLI REGION
TRANSPORT
[ROAD AND RAILWAYS]
SCALE
10 M.
Rupnagar
Kishangarh
AJMER
Pushkar
Peesangan
Nasirabad
Beawar
Masuda
Bijainagar
INDEX
NATIONAL HIGHWAYS
STATE ROADS
UNMETALLED ROADS
RAILWAYS
VILLAGES

FIG. 6.8

TABLE **6.1**

Results of Nearest Neighbour Analysis

Population size Groups	No. of Settlements	$\bar{r}a$	$\frac{6}{\bar{r}e}$	R	$\bar{r}a - \bar{r}e$	$\sqrt{\frac{N^2}{A}}$	$\frac{0.26136}{\sqrt{N^2/A}}$	Calculated $\frac{\bar{r}a - \bar{r}e}{\bar{0}}$	Values tabulated	Levels of Confidence	Remark
All size-groups	674	1.7942	1.4192	1.2640	0.3750	86.2544	0.6281	13.345	3.2905	99.9%	Significant
Less than 200	168	2.4046	2.8447	0.8452	- .4401	5.3444	0.1140	3.8605	3.2905	99.9%	Significant
200 to 499	185	2.6433	2.6261	1.0065	+ .0172	7.3583	.0964	0.1786	.6745	50%	Insignificant
500 to 999	175	3.0645	2.7735	1.1049	+ .2910	5.9150	.1074	2.7094	2.5758	99%	Significant
1000 to 1999	111	4.9353	3.9662	1.2443	+0.9691	1.4144	.6986	4.4110	3.4020	99.9%	Significant
2000 to 4999	28	11.1339	7.0711	1.5745	+4.0628	0.1400	.6986	5.8156	3.6740	99.9%	Significant
5000 and Above	7	21.6071	14.1422	1.5278	+7.4649	.0087	2.8042	2.6620	2.3650	95%	Significant
Uninhabited	15										
Total:	689										

Total Geographical Area = 5310 Sq. Km.

Note: The exercise is based on the Quater Inch Topo-Sheets of the region.

creases, the degree of randomness also tends to increase;

(iii) The small sized settlements have higher concentration in the southern part (Beawar tehsil) but the larger ones are mainly distributed over the central part;

(iv) Generally the settlements show a tendency of concentration in the longitudinal valleys, passes and the foot hills of the Aravallis (Fig. 3.2). The plain area, which is under permanent agriculture, records random distribution patterns of settlements.

(v) In the areas, with better transport facilities the settlements are more regular than random (Fig. 6.8) and their size is reduced as the distance from the transport lines increases.

CHAPTER VII

LEVELS OF DEVELOPMENT: CHARACTERISTIC AND CORRELATES:

On the basis of the indicators which have been analysed have been analysed at length in the earlier sections of the study, an attempt has been made to identify regions of different level of development.

1. Selection of Indicators:

In this chapter, the levels of development are analysed on the basis of single variables. Finally, the variables have been composited and final picture of the level of development has been obtained. The variables selected for analysis are net area sown, intensity of irrigation, total work force, literacy rate, scheduled caste and scheduled population and the index of social amenities.

1.1 Net Area Sown:

The extent of area under the plough could at one level be an indicator of development in that a greater percentage of cultivated are would mean move agricultural production. This is specially use of areas which are leterogeneous. It is evident from the map the higher concentrations of net area is found in Kishangarh circle (1.67 L.Q.) as evident from Fig. 7.1[1] followed by Ajmer I (1.45) and Karkadi in the north, Rupnagar, Bandar Sindhri and Gagawana exibit relatively high porportion but rest

1. In the present Fig. the relative concentration has been computed by Location quotient method and all the values for various variables hereinafter will be location quotient values.

of the circles in the south and central parts have the location quotient values below the mean (0.98).

1.2 Intensity of Irrigation:-

The relative concentration of the irrigated area is found high in the southern circles such as Todgarh (3.22 L.Q). Jawaja, Rajiyawas and Nayanagar. Relatively high concentration is found in Kherwa, Ramgarh and Pushkar circles. In rest of the circles the location quotient values were lower then the regional mean (1.21).

1.3 Total work Force :-

Higher proportion of the workers in the total population means lower dependency ratio on the one hand and high demand of workers in various sectors. As most of the circles have agrarian economy, the work force will also have higher share in agricultural sector. In the circles of the Ajmer I, Kishangarh, Nayanagar, the demand for workers in secondary and Tertiary Sector is higher than in the agricultural sector.

The concentration of the total workers is observed to be high (above mean i.e., 1.13) in the circles of the southern and the central parts which have mainly (L.Q 0.58) in the region is centred in the circles which incorporate larger number of Urban centres (Fig. 7.1 D), namely, Nayanagar (1.76 L.Q), Ajmer I (1.56), Kishangarh (0.99), Bijainagar (0.71) and Todgarh (0.66) circles.

TABLE 7.1

LEVELS OF DEVELOPMENT, 1971
(Based on Various Indices)

Sr. No:	Circles	Net area sown	Intensity of Irrigation:	Total work Force	Literacy	Scheduled Population	Social Amenities.	Workers in Secondary + Terat	Aggregate Index
1	2	3	4	5	6	7	8	9	10
1.	Rupnagar	1.16	0.50	1.08	0.32	0.77	0.98	0.32	5.13
2.	Karkadi	1.30	0.40	1.04	0.36	0.87	0.46	0.31	4.74
3.	Kishangarh	1.67	0.97	0.91	0.99	1.04	0.90	1.68	8.16
4.	Bandar Sindhri	1.11	0.81	1.03	0.37	0.77	2.10	0.23	6.42
5.	Ankodiya	0.85	1.15	1.11	0.34	0.79	0.66	0.18	5.08
6.	Arain	0.95	1.19	0.95	0.36	0.76	0.77	0.19	5.17
7.	Ajmer I	1.45	0.94	0.78	1.56	0.94	3.81	2.14	11.62
8.	Ajmer II	0.98	1.15	1.17	0.53	1.27	2.97	0.53	8.60
9.	Pushkar	0.96	1.38	1.01	0.45	0.94	0.85	0.46	6.05
10.	Peesangan	1.03	0.95	1.13	0.48	0.97	0.88	0.39	5.83
11.	Mangaliyawas	0.97	0.76	1.29	0.53	1.01	1.25	0.26	6.07
12.	Saradhana	1.03	1.07	1.14	0.51	1.17	1.61	0.47	7.00
13.	Sreenagar	0.91	0.49	1.28	0.38	1.11	1.11	0.30	5.58
14.	Derathoo	0.88	0.66	1.02	0.51	0.95	0.34	0.30	4.66
15.	Ramsar	0.79	1.05	1.27	0.47	1.04	0.43	0.30	5.35
16.	Gagawana	1.23	0.77	1.07	0.44	1.13	0.68	0.37	5.69
17.	Bijainagar	0.97	0.74	1.28	0.71	0.94	0.61	0.51	5.76
18.	Ramgarh	0.91	1.44	1.43	0.32	1.45	0.54	0.12	6.21
19.	Masuda	0.84	0.99	1.23	0.51	0.95	0.41	0.28	5.20
20.	Kherwa	0.79	1.43	1.38	0.38	1.48	0.68	0.21	6.35
21.	Nayanagar	1.11	2.25	0.93	1.76	1.03	0.52	1.67	9.27
22.	Rajiyawas	0.91	2.43	1.10	0.51	1.56	0.28	0.32	7.11
23.	Jawaja	0.60	2.30	1.24	0.54	1.27	0.30	0.18	6.43
24.	Todgarh	0.12	3.22	1.27	0.66	1.61	0.79	0.23	7.87
Regional Mean		0.98	1.21	1.13	0.58	1.08	0.99	0.50	6.47
Standard Division:		0.29	0.69	0.16	0.36	0.25	0.86	0.53	1.64

Note: All the values are in Location Quotients.

1.5 Scheduled Caste and Scheduled Tribe Population -

Since the Scheduled Castes & Scheduled Tribes[2] belong to economically back ward classes it is presumed that their areal concentration woule be regotively correlated with the level of development of a sub-region, The concentration of Schedule Caste & Scheduled Tribes Population is low (1.07 L.Q) in the southern part, comprised by Todgarh (L.Q. 1.61), Rajiyawas (1.56), Ramgarh (1.45) and Kherwa (1.48) circles (Fig. 7.1 E). Relavively high values (1.07 to 1.32) can be observed in the central parts. Rupnagar, Bandar Sindhri, Ankodiya & Arain circles have lower levels of development, the values being below the mean i.e. 1.07.

1.6 Social Amenities -

The index of social amenities incroporates the availability of the facilities like education, Medical Power supply, drinking water, transport and communication. These amenities provide the essential infra-structure for the development and thus constitute an integral part of it.

(Fig. 7.1 F shows). The soatial distribution of

---

2. The possitive values for the scheduled population was computed from the following formula:

$$\text{Receiprocal} = \frac{1}{\text{Proportion of the scheduled population in a circle.}}$$

These values were divided by the regional reciprocal and thus, the location - quotient values were obtained.

To make it one of the constituent indicators of the aggregate index, the receiprocal of its values have been considered.

social amenities in the region. The map suggests that the highest concentration is found in Ajmer I (3.81) followed by Ajmer II (2.97) and Bandar Sindri (2.1) circles. The other three circles, having higher values than the mean (0.99) are Saradhana, Mangliyawas and Sreenagar. Rest of the circles have the location quotient values below mean (0.99). In brief, the concentration of the amenities is observed mainly in the central part of the region.

2. Correlation Amongst the Variables:

The analysis of the correlation matrix and the significane of r values the test[3] amongst the variables discussed above (Table 7.2) high-lights the following facts:

(i) Negative correlation (r = 0.612) between Net Area Sown and Intensity of Irrigation reveals that the irrigation is not so important in cropping and is

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3. The correlation - coefficient has been computed from the following formula:

$$r = \frac{NZXY - zxzy}{\sqrt{NZX^2 - (ZX)^2}\ \sqrt{NZY^2 - (ZY)^2}}$$

The significance of 'r' value has been obtained through the 't' which runs as follows:

$$t = rx \sqrt{\frac{n-2}{1-r^2}} \quad \text{or} \quad r = \sqrt{\frac{t^2}{n+t^2}}$$

Levels of significance - r 0.512 = significant upto 99.0%
r 0.395 = significant upto 95.0%
r 0.334 = significant upto 90.0%
r 0.334 = insignificatnt

TABLE NO: 7.2

CORRELATION MATRIX

Variables	Net Area Sown	Intensity or Irrigation:	Total Workforce	Literacy Rate.	Scheduled Population	Social Amenities	Secondary & Tertiary Work	Aggregate Index:
1.	1.000							
2.	-0.612[a]	1.000						
3.	-0.640[a]	+0.156[X]	1.000					
4.	+0.331[X]	+0.262[X]	-0.524[a]	1.000				
5.	+0.495[b]	+0.665[a]	+0.536[a]	-0.034[X]	1.000			
6.	+0.371[C]	+0.221[X]	-0.359[C]	+0.336[C]	-0.133[X]	1.000		
7.	+0.611[a]	+0.089[X]	-0.661[a]	+0.914[a]	-0.139[X]	+0.477[b]	1.000	
8.	+0.240[X]	+0.381[C]	-0.291[X]	+0.809[a]	+0.284[X]	+0.668[a]	+0.808[a]	1.000

Note: Suffix a = Significant upto 99.0% C = Significant upto 90.0%

b = Significant upto 95.0% X = Insignificant

highly localised - particularly in the southern part of the region.

(ii) Intensity of Irrigation shows significant possitive correlation (+ 0.381) with composite Index, which supports our hypothesis. Index of water resources used in essential in the areas with arid or semi-arid climate.

(iii) Work Force shows significant possitive relationship with Scheduled Population (+ 0.536), but negative with Literacy Rate (- 0.524), Social Amenities (- 0.359), workers in Secondary and Tertiary sectory (- 0.661) and Aggregate Index (- 0.291 insignificant). This shows that the major section of the Work Force comes from the scheduled population and it has major concentration in rural circles which lack all the urban amenities, education, industries, other services etc.

(iv) Literacy Rate has significant possitive correlation with Social Amenities (+ 0.336), Workers in Secondary and Tertiary Activities (0.914) and Aggregate Index (+0.809). This reveals the fact that high rate is found mainly in the circles which are having social amenities (including educational) and various non-agricultural activities.

(v) Scheduled Population shows significant possitive relationship with Net area sown (0.495), Intensity of Irrigation (0.665) and Total Work Force (0.536), but its relationship is insignificant with other

indicatiors along with Aggregate Index.

(vi) Social Amenities have high possitive correlation with Literacy Rate, Workers in Secondary and Tertiary Activities (0.477) and Aggregate Index (0.668). It means that all these indicators go together and are concentrated in the circles incorporating urban centres.

(vii) Workers engaged in Secondary and Tertiary Activities have high positive relationship with Literacy Rate, Social Amenities and Aggregated Index (0.808) and its supports the fact just noted above.

3. Levels of development based on composite index.

The composite index has been computed by adding the location quotient values of all the indicators taken to analys the degree of development of the region. Here, it is to be noted that location quotient values are absolute (value free) values and hence, can be aggregated. The following regions can be identified on the basis of the values attained by different circles in the composite index (Fig. 7.1 H).

(i) It is noticed that the circles of Ajmer I, Ajmer II and Kishangarh in the centre, and Nayanagar, in the south have attained the highest level development and of these Ajmer I attains the highest level (L.Q. value, above mean + 3 S.D. i.e., 11.62), followed by Nayanagar (9.27), Kishanagarh (8.16) and Ajmer II (8.60) circles

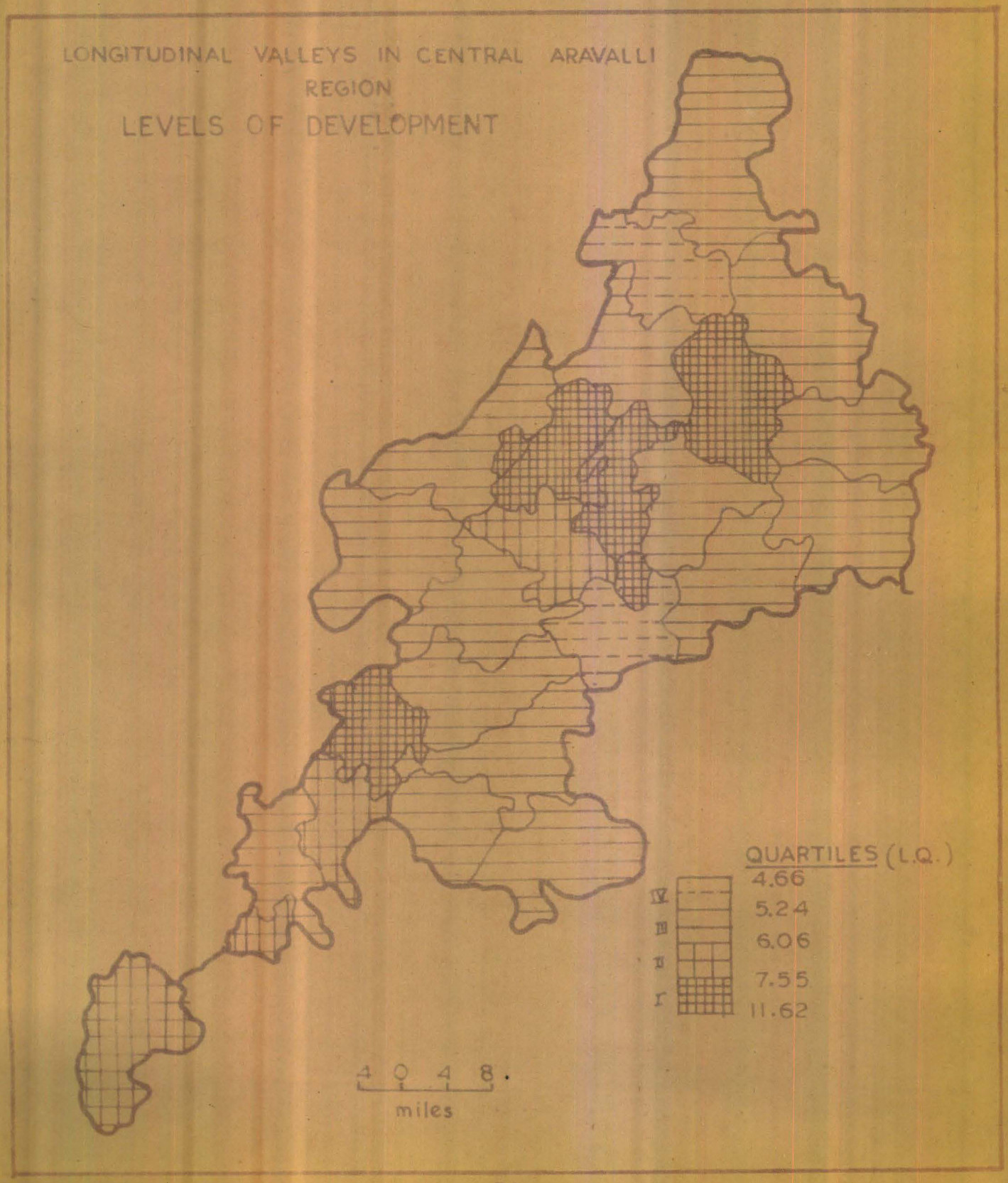
LONGITUDINAL VALLEYS IN CENTRAL ARAVALLI REGION
LEVELS OF DEVELOPMENT
QUARTILES (L.Q.)
4.66
5.24
6.06
7.55
11.62
IV
III
II
I
4 0 4 8
miles

FIG. 7.1

(above mean + 1 S.D. i.e., 8.11).

(ii) Region with medium level of Development:

The circles with medium level of Development (6.47 to 8.11) are Todgarh (L.Q. 7.87), Rajiyawas (7.11) and Saradhana (7.0).

(iii) Region with low Level of Development:

The location quotient values were obtained between mean and mean - 1 S.D. (6.47 to 4.83) for most of the circles in the region and forms are zig-zag zone, which starts from Rupnagar in the extreme north and ends in Bijayanagar circle in the south. This zone, representing relatively low index, is comprised by Rupnagar, Bandar Sindri, Arain, Ankodiya, Ramsar and Sreenagar circles of the east, Gagawana, Pushkar, Peesangan, Mangliyawas, Kherwa, Masuda, Ramgarh and Bijayanagar circles of the west-central part. Jawaja circle in the south-west can be considered on the fringe of this zone.

(iv) Region with Lowest Level of Development:

The lowest level of development (below mean - 1 S.D., i.e., 4.83) is observed in two circles only and they are identified as Karkadi (4.74) in the north and Deratoo (4.66) in the central part.

In brief, one can observe sharp variations in the aggregate index values in the region. In general most of the circles have lower levels of development and a few circles incorporating Urban centres, may be treated as the Islands of development in the Ocean of under

LEVELS OF DEVELOPMENT 1971

Socio-Economic Indicators

(LOCATION QUOTIENT VALUES)

development.

Composite Index -

The results of correlation matrix shows that the composite Index is positively correlated with all but one (Total work Force) indicators, but it is significant correlated with only Intensity of Irrigation (+ 0.381), Literacy Rate (+ 0.809), Social Amenities (+ 0.668) and workers in non Agricultural Activities (+ 0.808). The high values in the composite index in a few circles suggests that the level of development is high in the circles which incroporate larger number of Urban centres. The development is indeed, centred in fewer areas. For the balanced regional development, it is necessary that the backward regions should get priority in terms of investment in certain social amenities and public facilities to climenate the discrepency between the developing and backward areas.

A P P E N D I C E S

A P P E N D I X -: i :-

Demographic Aspects, 1971

Code No:	Area in Sq. miles:	Occupied Residential Houses:	No. of Households	Totoal Population	S. Castes Population:	S. Tribes Population:	Literated & Educated Persons	Total workers:	Non-Workers
1	2	3	4	5	6	7	8	9	10
1.	164.19	4972	5145	29339	6492	88	3411	10,596	18,743
2.	71.31	3048	3108	19506	3889	--	2539	5,837	12,669
3.	94.30	9420	9916	53212	8333	498	18827	16,186	37,206
4.	107.05	3045	3109	18705	4151	31	2523	6,459	12,246
5.	115.36	3009	3116	19527	4075	199	2410	7,281	12,246
6.	99.23	2919	3024	17665	3431	604	2290	5,620	12,045
7.	122.14	54907	56555	314368	57217	779	175249	82,159	2,32,209
8.	54.04	3033	3178	18109	2477	--	3440	7,078	11,031
9.	104.55	4786	4907	26492	4903	--	4333	8,990	17,542
10.	120.96	4846	4971	28070	4976	39	4889	10,651	17,419
11.	96.94	4498	4659	24507	3792	395	4683	10,629	13,878
12.	74.19	4776	5183	27006	3955	54	4933	10,300	16,698
13.	86.16	3255	3372	18118	2773	49	2505	7,782	10,336
14.	82.24	2801	2813	16667	2785	249	3045	5,722	10,945
15.	80.49	2830	2886	16340	2043	684	2762	6,951	9, 388
16.	87.22	3663	3854	22132	3391	18	3531	7,934	14,198
17.	92.17	4838	5834	30693	4421	1220	7855	13,132	17,561
18.	68.24	3408	3515	18911	1708	547	2173	9,085	9,826
19.	87.97	4063	4082	22607	3190	906	4138	9,227	13,380
20.	93.25	3517	3589	21705	2146	404	2994	10,067	11,638
21.	52.29	16324	166658	84314	14130	44	53210	26,296	58,018
22.	46.60	4449	4496	21536	2318	51	3954	7,965	13,571
23.	53.31	3532	3574	16852	2221	76	3301	6,988	9,864
24.	69.80	4765	4794	22640	2087	356	5404	9,758	12,882
Regional Total:	2124	160704	166338	909021	150904	7291	324399	3,03,693	6,05,328

Sources: District Census Handbook - Ajmer (1971) pp. 6-36(Rural Primary Census Abstract).

APPENDIX -: ii :-

The symbols used for denoting the various amenities are:

Educational -

P : Primary School;

M : Middle School;

H : Secondary/Higher Secondary School;

C : College.

Medical -

H : Hospital;

D : Dispensary;

FC : Family Planning Centre;

MCW : Maternity and Child Welfare Centre;

HC : Health Centre.

Power Supply -

E : Electrified

Drinking Water -

T : Tap i.e. Protected Water Supply;

W : Well;

TK : Tank;

TW : Tubewell;

R : River;

O : Others.

Communications -

PR : Pucca Road;

KR : Kutcha Road;

T : Train.

Posts and Telegraphs -

PO : Post Office;

P&T : Posts and Telegraphs Office;

TL : Telephone.

A P P E N D I X -: iii :-

Availability of Social Facilities, 1971

Code No:	No. of Villages:	Educational				Medical					Power Supply 'E'
		1 P	2 M	3 H	4 C	1 H	2 D	3 FC	4 MCW	5 HC	
1	2	3	4	5	6	7	8	9	10	11	12
1	33	23	1	1	-	3	4	2	-	1	1
2.	25	20	2	1	-	1	3	-	-	1	-
3.	23	23	6	4	1	-	2	1	-	-	5
4.	23	13	2	4	-	-	2	1	-	1	1
5.	26	16	1	-	-	-	2	1	1	2	-
6.	27	18	-	1	-	2	1	1	1	1	-
7.	19	130	26	39	7	2	1	-	1	-	5
8.	16	32	7	4	1	2	1	-	-	-	10
9.	21	22	1	1	-	1	3	1	1	-	2
10.	24	20	2	2	-	1	3	-	-	-	6
11.	21	17	2	1	-	1	-	-	-	-	10
12.	16	12	3	2	-	1	3	1	-	-	12
13.	20	17	1	1	-	1	2	1	-	2	1
14.	25	14	1	-	-	1	2	-	-	-	6
15.	23	12	-	1	-	2	-	1	1	-	3
16.	22	18	1	1	-	2	-	1	1	-	10
17.	31	21	1	3	-	1	1	-	2	-	8
18.	32	16	2	0	-	1	4	1	3	-	1
19.	35	19	3	1	-	-	3	1	1	-	1
20.	35	26	-	1	-	2	2	2	1	2	4
21.	49	48	7	6	1	1	1	-	-	-	6
22.	53	23	1	1	-	-	3	-	-	-	11
23.	57	20	1	2	-	1	1	1	1	-	5
24.	33	40	1	1	-	1	1	1	1	-	-
Regional Total:	695	530	72	74	10	26	47	17	14	10	108

Sources: District Census Handbook - Ajmer (1971), pp.6-36 (Villave Directory).

APPENDIX -: iv :-

Availability of Social Facilities, 1071

Code No:	Drinking Water						Transport			Communication		
	1 T	2 W	3 TK	4 TW	5 R	6 O	1 PR	2 KR	3 T	1 PO	2 P&T	3 TL
	1	2	3	4	5	6	7	8	9	10	11	12
1.	-	102	36	-	5	-	7	6	-	14	1	1
2.	-	52	19	-	-	-	2	11	-	7	-	1
3.	-	51	22	-	-	-	8	7	3	5	-	1
4.	-	66	48	-	3	101	8	4	2	7	-	1
5.	-	69	35	1	-	-	10	3	-	10	-	-
6.	-	67	30	-	2	-	3	12	-	8	1	1
7.	-	145	12	-	-	-	4	12	-	6	-	6
8.	6	75	12	-	-	-	9	10	-	8	-	6
9.	-	93	6	-	4	1	11	14	-	12	-	-
10.	-	111	3	1	1	-	4	17	5	9	1	-
11.	-	82	5	-	-	-	14	14	11	9	1	-
12.	-	59	8	1	-	-	21	26	-	20	2	1
13.	-	70	16	1	-	-	6	9	-	7	1	1
14.	-	69	4	-	-	-	7	14	-	8	-	-
15.	-	58	-	-	-	-	6	9	-	7	-	-
16.	6	67	10	-	-	-	6	16	1	13	-	-
17.	-	39	28	-	3	-	13	11	-	10	-	-
18.	-	74	33	-	-	-	9	6	-	6	-	-
19.	-	96	9	-	-	-	10	17	-	5	1	1
20.	-	121	13	-	1	-	2	15	2	8	-	-
21.	-	123	16	-	3	-	19	24	1	11	-	3
22.	-	146	-	-	-	-	24	29	-	11	-	-
23.	-	199	3	-	-	-	22	33	1	8	1	1
24.	1	436	11	-	-	-	9	27	-	8	1	-
Regional Total:	8	2412	379	4	122	102	235	346	26	227	10	24

Sources: District Census Handbook - Ajmer (1971), pp. 6-36 (Village Directory).

APPENDIX -: V :-

Occupational Structure, 1971

Code No:	Cultivators	Agricultural Labourers	Livestock, forestry etc.	Mining & Quarrying	Household Industry	Otherthan Household Industry	Construction	Trade & Commerce	Transport storage communication	Other Services
1	2	3	4	5	6	7	8	9	10	1
1.	7328	987	831	9	366	124	38	220	76	617
2.	4769	835	328	--	167	85	27	77	29	520
3.	3813	554	334	17	558	4555	387	1922	778	3268
4.	4902	428	486	0	132	47	12	107	87	258
5.	5498	377	832	7	207	98	3	88	12	159
6.	4265	401	507	--	139	20	3	92	8	185
7.	4864	1927	182	182	3690	8575	2781	14063	17920	27176
8.	4017	1179	289	--	179	153	85	139	233	780
9.	5010	1753	484	20	697	98	98	222	175	453
10.	6157	2070	670	10	447	161	53	356	61	667
11.	7175	1409	791	64	350	64	66	228	155	327
12.	6011	1318	864	52	397	113	209	191	518	627
13.	4731	1122	831	113	187	124	30	170	55	418
14.	3653	884	463	2	173	67	70	108	118	184
15	2850	741	1366	123	273	58	44	183	50	263
16.	4843	1323	502	27	277	253	45	160	96	408
17.	8291	1735	277	6	435	386	130	795	238	839
18.	7696	286	619	11	143	118	5	35	24	148
19.	6861	457	799	6	303	72	52	176	42	459
20.	7469	1040	643	3	223	62	30	52	91	454
21.	6257	1044	397	16	1530	6741	604	4270	1305	4132
22.	5782	783	247	46	234	358	48	73	41	353
23.	5860	241	318	24	168	28	24	57	9	259
24.	8490	166	143	20	170	84	13	151	27	4964
Total:	137596	23060	14002	758	11445	22444	4857	23935	22148	43448

Sources: District Census Handbook - Ajmer (1971) pp. 6-36 (Rural Primary Census Abstract).

APPENDIX -: vi :-

OCCUPATIONAL STRUCTURE, 1971
(in percentage)

Code No:	Total Workers 100%	Cultivators	Agricultural labourers:	Livestock, Forestry, etc.	Mining and Quarrying	Household Industry	Other than Household Industry	Construction:	Trade & Commerce	Transport storage and communication:	Other services:
1.	2	3	4	5	6	7	8	9	10	11	12
1.	10596	69.15	9.31	7.84	--	3.45	1.30	0.35	2.07	0.71	5.82
2.	6837	69.75	12.21	4.79	--	2.44	1.24	0.39	1.12	0.42	7.60
3.	16186	23.55	3.42	2.06	0.10	3.44	28.14	2.39	11.87	4.80	20.19
4.	6459	75.89	6.62	7.52	--	2.04	0.72	0.18	1.65	1.34	3.99
5.	7281	75.51	5.17	11.42	0.09	2.84	1.34	--	1.20	0.20	2.18
6.	5620	75.88	7.13	9.02	--	2.47	0.35	--	1.63	0.19	3.29
7.	82159	5.92	2.35	1.19	0.22	4.49	10.43	3.38	17.11	21.81	33.07
8.	7078	56.75	16.66	4.08	0.28	2.60	2.16	1.20	1.96	3.29	11.02
9.	8990	55.73	19.50	5.38	--	7.75	1.09	1.09	2.47	1.95	5.04
10.	10651	57.80	19.43	6.29	0.09	4.20	1.51	0.50	3.34	0.57	6.26
11.	10629	67.50	13.26	7.44	0.60	3.29	0.60	0.62	2.15	1.46	3.08
12.	10300	58.36	12.80	8.39	0.50	3.65	1.10	2.03	1.85	5.03	6.09
13.	7782	60.79	14.42	10.68	1.45	2.40	1.59	0.39	2.18	0.71	5.28
14.	5722	63.84	15.45	8.09	--	3.02	1.17	1.22	1.89	2.06	3.22
15.	6951	55.39	10.66	19.65	1.77	3.93	0.83	0.63	2.63	0.72	3.78
16.	7934	61.04	16.68	6.33	0.34	3.49	3.19	0.57	2.02	1.21	5.14
17.	13132	63.14	13.21	2.11	--	3.36	2.94	0.99	6.05	1.81	6.39
18.	9085	84.71	3.15	6.61	0.12	1.57	1.30	--	0.44	0.26	1.63
19.	9227	74.36	4.95	8.66	--	3.35	0.78	0.56	1.91	0.46	4.97
20.	10067	74.19	10.33	6.42	--	2.22	0.62	0.30	0.52	0.90	4.51
21.	26296	23.79	3.97	1.51	0.06	5.82	25.64	2.30	16.24	4.96	15.71
22.	7965	72.59	9.83	3.10	0.58	2.94	4.49	0.60	0.92	0.51	4.43
23.	6988	83.86	3.45	4.55	0.34	2.40	0.40	0.34	0.82	0.13	3.71
24.	9758	87.01	1.70	1.47	0.20	1.74	0.86	0.13	1.55	0.28	5.06
Regional Average: 303693		45.31	7.59	4.61	0.25	3.77	7.39	1.60	7.88	7.29	14.31

Source: District Census Handbook - Ajmer (1971), pp. 6-36 (Rural Primary Census Abstract).

APPENDIX -: vii :-

LAND-USE PATTERNS, 1971
(AREA IN ACRES)

Code No:	Total Geographical Area:	Area not Available for Cultivation:	Forest land:	Orchards & Tree groves	Culturable Waste	Fallow land	Cultivated Area
1	2	3	4	5	6	7	8
1.	105083	11714	2964	--	18336	18668	53401
2.	45641	4735	2311	--	5774	6791	26030
3.	60357	5111	3515	3	1247	6161	44320
4.	68515	5083	1162	--	18011	10782	33477
5.	73832	7493	2831	--	23915	12084	27509
6.	63511	6563	2454	4	18852	8980	26558
7.	45784	8446	1916	209	3210	2827	29176
8.	34586	8553	1555	104	5886	3586	14902
9.	66914	9532	10909	--	9712	8507	28254
10.	77417	14918	3240	--	15702	8535	35022
11.	62045	11722	2156	--	8396	13388	26383
12.	47486	14800	1965	--	5425	3741	21555
13.	55146	14528	--	--	11286	7196	22136
14.	52638	9110	1194	--	11044	10987	20303
15.	51519	6600	1141	--	12655	13180	17963
16.	55821	10273	2761	--	4665	7858	30264
17.	58991	5949	1433	--	17567	8842	25200
18.	43676	15921	1585	--	6705	1925	17540
19.	56305	16269	1205	2	11716	6361	20752
20.	59682	19595	5713	1	10153	3558	20662
21.	33471	9495	--	10	5163	2448	16355
22.	31110	11522	29	13	5184	1853	12509
23.	34119	14520	2042	7	7324	1114	9112
24.	44673	27805	104	--	7737	899	8128
Regional Total	1328322	280850	54185	353	256869	170271	565794

Source: District Census Handbook - Ajmer (1971), pp. 6-36 (Village Directory)

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