POKHARA VALLEY

A GEOGRAPHICAL SURVEY

Harka Gurung

Self-portrait. Edinburgh, 1962

Harka Gurung was born in Lamjung, Central Nepal, in 1939 and went to military school in India. Topping in IA at Tri-chandra College as well as BA (Hons) at Patna College, he later did his Post-Graduate Diploma (1961) and PhD (1965) from the University of Edinburgh, Scotland.

His academic assignments include Demonstrator (University of Edinburgh), Research Fellow (SOAS/ University of London), Lecturer (Tribhuvan University) and Visiting Fellow (Population Institute, Hoholulu). He served the Government of Nepal as Member and Vice-Chairman of the National Planning Commission (1968-74) and State Minister for Education, Industry & Commerce, Tourism, and Public Works & Transport (1975-78).

After leaving the government, he turned to consultancy work including those for HMG/Nepal, ADB, ESCAP, IDRC, IFAD, IUCN, UNDP, UNESCO, UNICEF, UNRISD, USAID, WWF and the World Bank. He has been a Board Member of ADIPA, ICIMOD, IIEP/UNESCO, and Lumbini Development Trust. He served as Director (1993-97) of Asian & Pacific Develpment Centre, an intergovernmental organisation based in Kuala Lumpur. He has been associated with New ERA, Kathmandu, since 1981.

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A GEOGRAPHICAL SURVEY

Submitted to the Ministry of Planning & Economic Affairs,
His Majesty's Government of Nepal

HARKA GURUNG

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Cover plate : Annapurna Himal from Ramghat. Note the extensive open space in the foreground and Annapurna-I hidden by westerly streamers. April, 1963.

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The preliminary work and processing of field data was carried out in Edinburgh under the supervision of Dr. Arthur Geddes and I am grateful to him for criticism and guidance. While in Nepal, I benefitted from the assistance readily given by various agencies and government departments. I would like to acknowledge in particular: Kulsekhar Sharma (Panchayat Secretary), Maj-Gen P.B. Khatri (Defence Secretary); Bhekh B. Thapa (Planning Secretary); T.B. Rayamajhi (Director of Census Dept.); Kulbir Singh (Director of Surveys); Toni Hagen (Basic Survey); G.P. Lohani (Nepal Rastra Bank); R.G.M. Willan (Chief Conservator of Forest); K.A. Kurze (Third Secretary, American Embassy); and Col. B.D.M. Singh (Military Attache, Indian Embassy). The weather record was provided by the Director-General of Observatories, Lodi Road, New Delhi, through Gobardhan Shah of the Royal Nepalese Embassy.

In Pokhara, the officials of the local Goswara, Panchayat Development, Town Municipality, Irrigation Department, and Nepal Malaria Eradication Organisation were most helpful. Research in the field was successfully undertaken only because of the cooperation and aid willingly given by many individuals in Pokhara too numerous to mention here.

Harka Gurung
London, 1965

* Pokhara Valley, Nepal Himalaya: A field study in regional geography. 246 pages, 60 figures and 100 photographs. University of Edinburgh, August, 1965.

Foreword

Geography is known to have passed through various phases of development as new problems are revealed and more appropriate methods are formulated for analysis. Geographers have to deal with a wide range of problems and cautious steps are taken in advancing new ideas in the area. Starting from classical times man had been regarded as a product of the environment. This idea remained almost unquestioned until the work of Charles Darwin in the 19th century confirmed in a scientific manner the position of man as a creature adapted to his environment and just not a passive creature blindly following its dictation. On the other hand, work in the social sciences showed remarkable regularity in human behaviour. It was justifiably concluded that although man had to follow certain natural and economic laws in performing his tasks, the almost passive nature of man gradually lost its acceptance with technological advancement. Other schools of thought stressed the fact that "man is free to make his own choice" although within the limits set by nature. Such limits are wide enough to provide a scope to man in his choice based upon cultural background and technological advancement.

In any discipline, philosophy plays a very important role and with it the methodology. Similarly, geographers develop a logic of explanation with rigorous arguments, reasonable inferences and internally coherent methods. The trend of geographical inquiry at any point of time is the manifestation of interaction between and among prevailing philosophical viewpoints and methodological approaches. Because of the extreme diversity of viewpoints in philosophy from the purely objective to the idealistic, it can be said that geography tends to take the best of the various "-isms" without any camouflage of noble sentiments and moral overtones. Thus geography maintains its multidisciplinary nature yet does not forget its main domain of spatial realm of geographic discipline. A partial or unisectoral view cannot help development which implies the process of economic, social and political change. Geography, by its very nature, is multidisciplinary and a geographer is expected to cultivate the capacity to visualise things in a holistic manner. All relevant factors–land, climate, vegetation, soil, population, products, etc.–are visualised in totality. The holistic vision of a geographer can provide insight and capacity for coordination which is necessary for all-round development. It provides the technique of getting essential aspects of the "whole". Planning based on such perspective is more realistic and "earth-bound". So geographers can avoid building castles in the air and make a meaningful contribution to bring about a balanced development.

In this report Dr. Harka Gurung covers various physical aspects such as structure, relief, drainage, climate, biogeography, and soils. These elements act as the stage properties for various human activites in Pokhara Valley that are reflected in human geography (culture area, settlement, population), economic geography (growth of Pokhara town, land use) and last, the systematic analysis and geographic synthesis. The sequence of human occupance is clearly exhibited by the fact that the plain area which was regarded as a negative zone of occupance earlier became a new focus for settlement after the launching of the malaria eradication programme.

The figures and statistics in the book may be old as they were collected almost four decades ago. Since then, there has been tremendous changes in Pokhara Valley in social, economic and demographic terms. But these data do possess some historic value which present a picture of what Pokhara was then. This book also exemplifies the regional method of geographical inquiry, interpretation and explanation. The data have been collected with keen personal observation as well as discussions and interviews. The entire Pokhara Valley was covered on foot by the author who later travelled the length of the country from west to east on different occasions and produced the book *Vignettes of Nepal* (1980). Dr Harka Gurung, in his own original versatile manner, has produced several maps which vividly show the author's proficiency in cartography in the real sense of the term. It must have been very tiresome for him in 1962/63 to draw the land use map of Pokhara town, no less than mine when I had to do the same sort of work in Kathmandu Valley townships in 1956.

In conclusion, I must thank Dr. Harka Gurung for bringing this useful report to light as an informative book for the benefit of not only the students and fellow geographers but also development practitioners at large. His assurance of a certain percentage of the sales proceeds to Nepal Geographical Society (NGS) is highly appreciated. This courtesy is another expression of continous services from him to NGS in different capacities, including as its Life Member and past General Secretary and President.

Prof. U.M. Malla
President
Nepal Geographical Society

Kathmandu
December, 2001

Preface

The present monograph is a synthesis of my doctoral dissertation based on ducumentary research in Kathmandu (summer 1962) and field investigation in Pokhara (August 1962-April 1963). It was originally prepared for and submitted to the Ministry of Planning & Economic Affairs in appreciation of the cooperation provided in data collection. That report seems to have been lost as I have found no reference to it in any subsequent writings or publications on Pokhara Valley. Nor could I trace it in the National Planning Commission library after I became a member in 1968. This rejuvenation of the report was made possible through access to the only other copy deposited at the School of Oriental & African Studies, London.

There are three reasons why this 36-year-old report deserves reincarnation. The first is the need for wider dissemination of recorded information. My doctoral dissertation was never published as I was diverted from academics soon after its completion. One exception was a chapter extract, "Geomorphology of Pokhara Valley" in *Himalayan Review,* Vol. II-III, 1970, pp. 37-57. The second reason is impelled by the tremendous transformation Pokhara Valley has undergone since 1963. The data included in the monograph could be useful as a temporal record to other researchers. The measurement units used are British as the country had not yet adopted the metric system in the 1960s. Third, since I am finalising a study on social and cultural changes in Pokhara Valley with a four-decade perspective, this volume would serve as an appropriate evidence of the base-line situation. This will be apparent from the photographs then taken by myself (except the aerial photograph, Plate J) and their subsequent transformation. Apart from this Preface, Foreword, and back cover (The Fulbari highlight), all other materials are reproductions of the original report.

I presume that the regional method applied in this study would encourage students of geography towards a more holistic approach. The inclusion of numerous maps and diagrams, all by the author, is to demonstrate the potential of cartographic technique in factual representation. Finally, I wish to record my appreciation to Prof. Upendra Man Malla, who preceded me in geography study both in Patna and United Kingdom, for the Foreword.

Harka Gurung
December, 2001

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"There is too, almost underlying this great centre [of mountain], a town and a mart which always attracted my curiosity almost beyond any other town in Nepal. No one has been there, no one has seen it, but we know that its climate is almost tropical, that it cannot be more than 2,500 feet in altitude, that it is on the banks of a great lake, and that it is an open valley and lies immediately at the foot of these magnificent giants [Annapurna Himal]. Phewa Tal is the name of the lake and Pokhara that of the town. Some day and from somewhere someone will arise who will do adequate justice to what must be one of the most impressive and beautiful sights to be found in any mountain country."

- Brig. Gen. Charles G. Bruce,
The Land of Gurkhas by W. Brook Northey,
Cambridge, 1937, p.4

Introduction

Plate B: South-west view from Kahun Danda. Phulbari village in foreground, Ramghat and airfield in middle distance, and Mattikhan Danda in the background. August, 1962.

Introduction

1. Theme and Approach
2. The Study Area

This chapter outlines the writer's aim, assumption and approach in studying Pokhara Valley. In section one, the relevance of geographical survey to rational planning is pointed out and his methods of field inquiry and data presentation explained. Section two locates and defines the study area with reference to its Himalayan situation.

1. Theme and Approach

The original doctoral dissertation "Pokhara Valley, Nepal Himalaya: A Field Study in Regional Geography" was basically an application of scientific concepts used in area study. In the present report, emphasis is placed on brief expository and interpretative description of the area under consideration.

The reality of a place is an expression of the complex of physical, biotic, societal, and economic phenomena. The intensive study of diverse factors in a specific area by geographic survey and analysis reveals the relationship between man and environment as a whole. Maps of distribution patterns, a geographer's basic tool, aid in identifying areal phenomena in interrelationship.

A planner will achieve his aim only if he bases his assumptions on a proper understanding of the distribution pattern of resources and their causal relationship. For the term "region" in the planning context denotes an area with unified characteristics in respect of natural resources and development problems, and the aim of regional planning is the articulation of relationships between human and environmental factors. Thus, it follows that the results of a systematic geographical survey can be utilised as a diagnostic basis for planning optimum use of local resources.

This report does not presume to tackle planning problems of the Pokhara region. It merely attempts at an objective description of the region on a geographical foundation as an integrated reference for planners and specific investigators. It, however, purports to exemplify systematic regional studies geographers can accomplish and the writer's belief in the applied aspects of scientific research for the benefit of society.

Field study provides an opportunity to examine areas more closely. This writer's acquaintance with Pokhara goes back to brief visits in 1952, 1955, and 1959. The present field work was conducted between August 1962 and April 1963, including 42 days spent in the neighbouring localities of Nuwakot, Dhampus, Sikles and Lamjung (the writer's home district).

The equipment for the field work included survey and meteorological instruments, two cameras, topographical and cadastral maps, and vertical air photographs (Plate J). The technique of inquiry was a combination of examining documentary sources where available, interpretation of maps and aerial photographs, interview and discussion, and personal observation. The whole Pokhara region of about 200 square miles was covered on foot by extensive traverses, observations recorded on base maps, and explanatory notations made. Along with black and white photographs, a large collection of oblique colour slides was taken for laboratory examination of land use. Interest was focussed

on preparing a land use map on a medium scale (Fig. 22).

In order to supplement this over-all regional pattern, six local studies were made. These included a hill village (Kahun), a plain village (Baidam), three small bazars (Pardi, Arghounpouwa, Sisuwa), and a large bazar (Pokhara town). In the last bazar, 480 houses were intensively surveyed as to urban land use (Fig. 34), and its three-mile-long main street was levelled by an Indian clinometer to ascertain the town site.

In presenting the findings, qualitative description has been combined with quantitative tables and cartographic presentation. Photographs were liberally used in the doctoral dissertation. Here, only a few plates have been included as samples of landscape situation at the time of survey. The topical chapters follow a conventional arrangement of habitat, society, and economy. Physical geography is viewed as an essential scientific starting-point of area analysis and land use as human response to the physical environment.

2. The Study Area

Nepal extends between the longitudes 80°East and 88°East, and Pokhara is centrally located on longitude 84°East. The Tibetan border is 40 miles to the north and the Indian border 48 miles south of Pokhara. The Pokhara Valley region as defined in this study, lying between longitudes 83°50′-84°10′ East and latitudes 25°7′-28°15′North, has been delimited mainly by means of watersheds except in the north-west (Fig. 2). Such a physiographic delimitation stems from the belief that in mountain areas, intermont basins offer a valid framework for regional study.

Administratively, Pokhara Valley includes parts of Kaski, Syangja, and Tanahu districts of Gandaki Anchal (Fig .15). Eighty-seven per cent (178 sq. miles) of its area is covered by the 33 *thum** of Kaski district, while Syangja claims 10 per cent and Tanahu 2 per cent only (Table 5). With reference to population and agricultural land records, only the Kaski *thums* have been analysed for lack of access to data elsewhere. Such an approach should provide a regional generalisation not very far from reality.

Geographically, the present region falls in the *pahar* (hilly) country bounded by the Mahabharat Lekh in the south and the Himalayan range in the north. The *pahar* landscape has two ecological units: temperate zone known as *lekh* and sub-tropical zone *kachhar*. The *lekh* zone occurs above 6,000 feet with snow in winter. Agriculture is limited and the people inhabiting there practise transhumance in livestock. The milder *kachhar* zone is densely populated as it can grow diverse crops. The lowest of the *kachhar* zone, below 3,000 feet, is further distinguished as *bensi*. The *bensi* zone includes humid and malarial valley bottoms given over to paddy and other tropical crops (Fig. 36).

* Revenue sub-division

Physical Geography

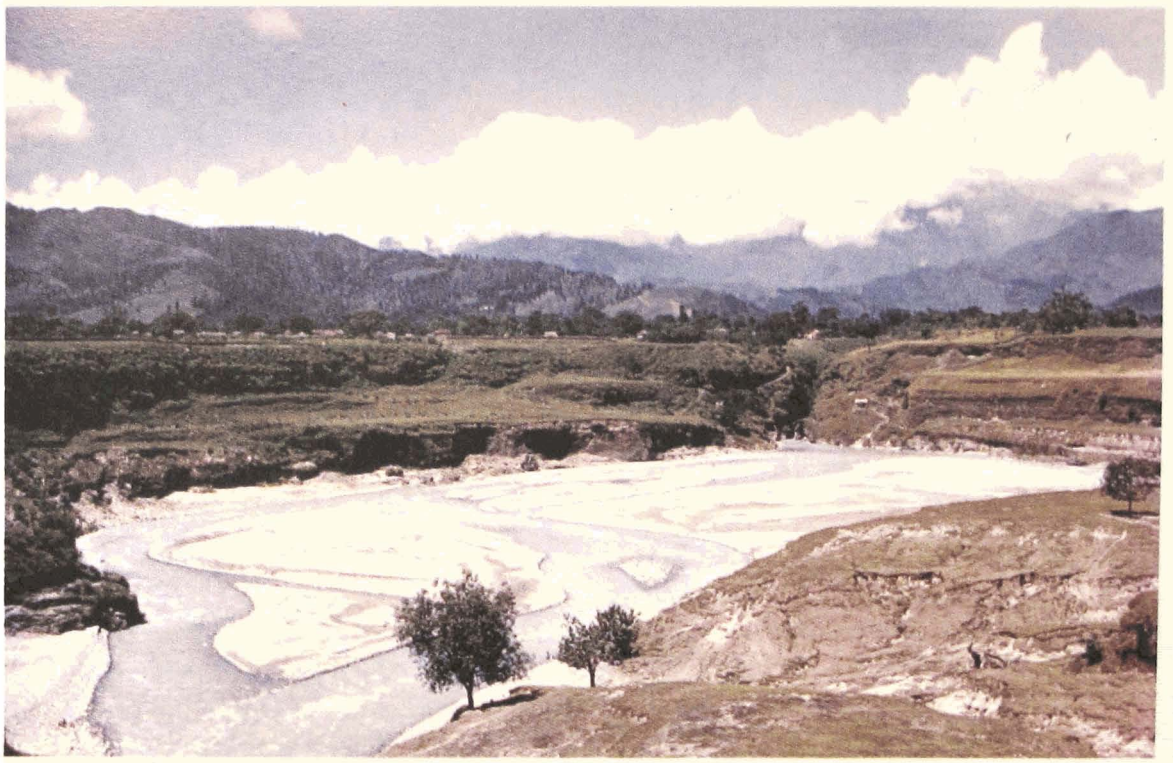

Plate C: Seti river terraces at Ramghat. The place is sacred as a cremation site for Hindus and a burial ground for Gurungs. April, 1963.

Physical Geography

1. Structure
2. Geomorphology
3. Hydrography

The extensive plain of Pokhara provides a sharp contrast to its hilly environs (Fig. 1). Some believe that the Pokhara plain originated from the drying-up of a huge lake similar to the vales of Kathmandu and Kashmir (Hagen, 1959). The present writer is unable to subscribe to this conclusion of a lacustrine origin. The writer's thesis, based on the field examination of Pokhara gravels, morphology of the plain, and drainage pattern is suggestive of an outwash plain. He assumes that the formation of the plain was due to a large valley train emanating at the head of the Seti Valley and the gravels are the legacy of a periglacial past.

1. Structure

Pokhara region is partly a tectonic window whereby the older formation of 'Pokhara zone' has been exposed by the erosion of overlying nappes (Hagen, 1959). The region includes four tectonic/geologic components.

i) The 'Pokhara zone' is primarily composed of phyllite and quartzite and exhibits anticlinal and synclinal structures trending north-south.

ii) Overlying the 'Pokhara zone' is the 'Nuwakot nappe' system composed mainly of Carboniferous and Triassic-Jurassic quartzite, limestone, shale, breccia, and phyllite. The structure of the 'Nuwakot nappe' is of anti-clinal type and the axis is east-west.

iii) The 'Nuwakot nappe' is in turn capped by the younger 'Kathmandu nappe' and their contact zone is represented by some hot springs in the highlands. 'Kathmandu nappe' system is crystalline in character and consists of gneiss, quartzite, sandstone, schist, Ordovician limestone and phyllite. Instrusions of granite, pegmatite and aplite occur in the older sections while the younger section is mainly Lower Paleozoic in formation.

iv) The most striking element in the regional geomorphology is the gravel deposits filling the preglacial Seti valley. The present writer's field observations reveal these deposits to be glaciol-fluvial in origin and suggests the nomenclature 'Pokhara gravel'. The gravel plain extends over 30 miles along Seti river between the Bharabhure gorge in the north to Dobhan gorge in the south. Its sub-surface parameters are unknown but gorge sections offer estimates ranging from a thickness of over 400 feet in the north to 200 feet in the south (Fig. 6B). These superficial deposits are primarily gravels derived from gneiss, phyllite, sandstone, quartzite, slate and dolomite. The texture is coarse and the pebbles and the small boulders are not well-rounded. Upstream, some of the boulders attain immense size. Some gravels with their sandy matrix have been banded together with calcareous sand. Uncemented conglomerate with interstitial sand are more extensive than the finely-bedded ones. The conglomerates can range from those in which all the pebbles are in contact with each other to those in which the pebbles are 'floating' in a matrix of sand. Both can be found in cemented and uncemented condition.

The degree of stratification varies from place to place and horizon to horizon. The bedding is large-scale and gently dipping downstream. An exami-

nation of gorge profiles along the Seti confirms the diversity of deposition and stratification (Plate C). The heterogeneity in the drift mass is the function of diluvial deposition.

It is difficult to imagine that they were deposited under the calm waters of a lake. What seems probable is that the gravels were carried down by pro-glacial streams during phases of deluge. The abnormal periods alluded to were the successive periods of the retreat of the Annapurna glacier. The exceptional steepness could facilitate the transport of debris and the preglacial transverse valley at Pokhara provided an ideal receptacle to the excessive materials. In the beginning, the Seti meandered wide over this outwash plain. The inherent nature of the gravels and the sandy matrix overlaid by the braided channels of the Seti are responsible for the poor quality of the plain soil.

2. Geomorphology

The region south of Annapurna Himal presents one of the sharpest contrasts in topography. From the summit of Machhapuchhre to the town of Pokhara, the vertical height lost within 18 miles of horizontal distance is over 20,000 feet, or 1,100 feet in every mile (Plate A). Dissected rugged hills are typical of this mountainous terrain and the plain of Pokhara stands out as a distinct depression feature in the landscape. The plain is confined by hills ranging in height from 3,500 feet in the south and east to 8,900 feet in the north. According to altimetric frequency analysis, most of the hill summits range within 4,000-6,000 feet (Fig. 3A).

(i) Hills. Looking east-south-east from Dhampus, an anticlinal valley and its associated troughs can be followed through the valleys of Yangdi, north of Kahun, Arba, and Arghoun hills to Madi Valley (Fig. 2). North of this anticlinal axis lie the well-disssected highlands and southwards are a series of strike-ridges. The highland rocks dip steeply (27^0) northwards and the more resistant crystallines, quartzites and dolomites stand out sharply while the phyllitic exposures are most liable to landslides. The numerous spurs that bifurcate from the highlands are sharp and sinuate separated by narrow valleys.

South of the Yangdi-Madi anticlinal axis, three parallel strike-ridges run west-north-west to east-south-east. The first ridge, Barsami-Anpu that separates the plain from the southern hill complex is most emphatic with an average height of 3,500 feet. The second ridge system consists of the western Kalabang (4,743 ft.) and eastern Deorali (3,300 ft.) and these two extremities can be connected through the remnant hills of Dhungesangu, Rithepani and Bhanadhik on the plain (Plate H). The third ridge alignment starts from Kaskikot (5,867 ft.) to Sarankot (5,223 ft.), Kahun (4,736 ft.), Arba (4,500 ft.), Arghoun (4,655 ft.) and Majhthan (4,002 ft.). A subsidiary ridge, Begnas (3,956 ft.) runs parallel to Majhthan, to which it is laterally joined by a tectonic bridge of conglomerate at Jinrithar.

The scarp and dip topography of the area is not due to monoclinal structure but rather due to thrust-faults. The Kaski ridge with a pronounced hogback shape is in fact a synclinal ridge as an antithesis to the anticlinal valley of Yangdi (Fig 2). Truncated spurs on Kalabang and Barsami ridges are clear indications of the west-north-west/east-south-east fault line.

The ridges have a scarp north face and gentle south slope (Fig. 3A). The scarps average 28^0 and are too steep for cultivation and are left forested (Plate J). The south-facing slopes averaging a gradient of 18^0 are preferred both for settlement and cultivation. Vegetation is sparse and the red lateritic soils give them a distinct ochre hue.

(ii) Pokhara plain extends over 30 miles between Bharabhure (4,241 ft.) in the north to Dobhan (1,425 ft.) in the south-east (Fig. 4). Its 12-mile upper section, enlarged by the lateral alluvial plains of Mardi, Kali and Yangdi, averages over a mile in width. The plain continues south through a narrow gap between Sarankot and Kahun ridges, and the town is situated on the apex of a large alluvial cone at this point. The central plain below Pokhara spreads eastwards to Rupa Tal and is nowhere less than 3 miles broad (Plate B). The lower stretch of the plain that commences south of Rupa Tal is narrow and eight miles long until its final termination at Dobhan gorge.

The plain surface slopes south and the altitudinal descent from its head to its distal part 30 miles south is 2,826 feet, a gradient of 94 feet to a mile. Local variations along the longitudinal profile are more revealing (Fig. 6B). The average gradient of the upper plain is 114 feet a mile, that of the central plain 86 feet a mile and of the lower plain 50 feet a mile (Table 1). The plain also slopes laterally. The existence of a higher elevation along its axis has caused diversions in the course of the tributary

streams.

The gravel mass filling the pre-glacial valley of Pokhara has been worked up by the Seti into extensive terraces and steep gorges (Plate C). Gorges occur where the Seti flows close to the outliers or cuts across buried hills. Terraces are the result of the lateral erosion of gravels by the meandering Seti. The flights of terraces become more numerous downstream, while conversely their height increases upstream. The amplitude of relief between the top terrace and the Seti thalweg also increases headward. Some terrace levels can be paired and the height differences between the pairs imply differential periods of rejuvenation. Their relative heights indicate an increasing time interval between successive rejuvenation. The long profile of the Seti also show increasing aggradational phases and corroborates the above assumption (Fig. 6B). Assuming the terraces to be cyclic, three major degradation phases are observable. Relative to this time dimension is the soil formation: the humus formation becomes poorer as one descends to lower, younger terraces.

3. Hydrography

The region is drained by the Seti and includes over a dozen small river basins ranging in elevation from 1,700 feet to 8,900 feet. The snow-line being above 17,000 feet, the only glacier-fed streams are the Seti and Mardi Khola from the southern slopes of Annapurna Himal.

The Seti, plunging straight south-west 20 miles from its source, takes four sharp turns within Pokhara Valley and the recurrent right-angled turns are an indication of structural control. The four western feeders, Phusre, Marse, Yangdi and Mardi, all flow in a south-easterly direction parallel to one another (Fig. 5). These parallel streams in turn have a trellis pattern receiving tributaries at right angles to the strike vales. On the plain, only a few larger streams are capable of traversing the plain to meet the master stream and many get lost in the porous gravel. Thus in stream density, the plain is coarse-textured and the hill are close-textured with dendritic and radial patterns. The density of stream is in inverse ratio to their order, illustrated by the lower order hill streams and the higher order streams of the plain (Fig. 6A).

(i) Streams. The study area has 17 perennial streams apart from the Seti, eleven of which join the Seti directly. The density of intermittent streams on the hill is 13 per square mile but on the plain it is only one to every 4 square miles. The monsoon that activates the intermittent streams is also associated with a profusion of ephemeral streams with ill-defined channels.

The Seti dominates all its tributaries in length, size, and volume. The longest tributary Mardi is only 16 miles compared to 167 miles of the Seti. Bijayapur Khola (Gyauje Khola upstream) is the longest (13 miles) stream that originates and empties entirely within the study region. The length of other streams are Yangdi, 11 miles; Marse, Khudi, Dobhan, 10 miles each; Kali 6 miles; Bhurjung and Anpu 5 miles each; and Kahun and Bagadi, 4 miles each.

The streams carry a large amount of silt and the Seti itself is milky white with glacial melt-water. Seasonal variations in stream discharge are great, attaining a maximum during the second half of the monsoon. Even the lake-sustained streams like Pardi, Bagadi, Khudi and Dobhan Khola show immense fluctuation from season to season. The ratio

Table 1: Pokhara Plain Gradient

Section	Location (Altitude in ft.)	Ft. loss in miles	Gradient
Upper	*Bharabhure to Pokhara*	*1,254 in 11 miles*	1:556
	Bharabhure (4,251), Ghachok (4,094)	157 in 4 miles	1:1,584
	Ghachok - Hyangja (3,413)	681 in 4 miles	1:372
	Hyangja - Pokhara (299)	413 in 3 miles	1:450
Middle	*Pokhara-Malmul*	*946 in 11 miles*	1:736
	Pokhara (2,997) - Daduwakhola (2,625)	375 in 4 miles	1:640
	Daduwakhola - Khudi (2,191)	434 in 5 miles	1:728
	Khudi - Malmul (2,051)	140 in 2 miles	1:905
Lower	*Malmul - Dobhan* (1,655)	*396 in 8 miles*	1:1,349
Average	Bharabhure - Dhoban	2,596 in 30 miles	1:652

Source: Contour map (scale 1:63,360), Survey of India, 1958-59.

of maxima-minima discharge is greatest in streams that depend mostly on rains. In diurnal terms, the peak flood occurs in the evenings and is lowest during the early hours of the morning.

The longitudinal profile of the Seti is hyperbolic with a steep slope in the upper reaches (Fig. 6B). The average bed slope of the Seti is 1:194 compared to the 1:250 average of five other sampled Himalayan rivers. The Seti profile in detail is marked by a short aggradation below Bharabhure, long down-cutting between Ghachok and Dhungesangu, short degradation at Chiragadi and aggradation at Gagaungauda, followed finally by a long gentle reach. The tributary streams also have irregular profiles indicating their extreme youth in descending rapidly over a newly uplifted land surface. Their upper reaches have an average gradient of 1:727. All the streams that plunge down the hills flatten out on reaching the plain and meander between high banks. Many streams on the plain flow sluggishly with a low gradient (1:47), their youthful development retarded by the lake-dams.

(ii) Lakes. The region has long been known for its numerous lakes (Fig. 5). The eight lakes account for 3.68 square miles in area. The three-mile-long Phewa Tal with an area of 1.85 square miles is larger than all the rest put together. Begnas Tal (0.96) and Rupa Tal (0.53) are fairly large and the 0.19 square mile Maidi Tal is undergoing rapid sedimentation. The remaining four, Khalte (0.08), Gunde (0.05), Dipang (0.01), Kamalpokhari (0.01), have become mere ponds.

In shape the three larger lakes retain their dendritic shore-lines typical of drowned valleys. Phewa Tal alone exhibits a shore-line of submergence due to successive damming (Plate D). The latest dam under construction will give it a maximum capacity of 460 million cubic feet of water. Its inlet end is covered with deltaic alluvium from Marse Khola and the deepest part runs along the foot of the Kalabang ridge. In Rupa Tal, the line of depth runs along the north-south axial and in Begnas Tal it deepens eastward. The other lakes are shallow and Kamalpokhari is entirely choked with aquatic plants.

The occurrence of numerous lakes in juxtaposition with a gravelly plain may at first seem anomalous. However, the fact that the lakes do not override but abut the plain-edge suggests their close interrelationship. This writer does not believe that the lakes are the dismembered parts of an old huge lake. The morphology of the plain has no vestige of being a lake floor and indeed there is strong evidence to believe that the lakes were formed consequent upon the formation of the plain. The Pokhara lakes were formed when the pre-glacial drainage system was filled up by the outwash drift of the valley train. The glacio-fluvial deposits along the main Seti valley acted as barriers to the tributary streams. Lakes must have been more numerous immediately after the deluge by the valley train. That some lakes persisted while others were drained away depended upon the local slope, the amount of debris and the erosive power of the streams. Larger streams were capable of incising more vigorously and maintaining their course while smaller streams were impounded behind the barrier. Some lateral lakes of small dimension could be obliterated by fresh alluviums and lateral erosion. The variety in the shape and size of the lakes does not reflect their diverse origin but rather the type of valley in which they were formed. Thus longitudinal valleys were drowned into a finger lake (Rupa) and the damming of two merging valleys formed a triangular lake (Begnas).

Climatology and Biogeography

Plate D: Planted trees on the plain and natural forest on hills, overcast by monsoon clouds. Ratna Mandir complex beside Phewa Tal. August, 1962.

Climatology and Biogeography

1. Climate
2. Vegetation
3. Soil

The combined effect of temperature and precipitation on the length of growing season for natural or cultivated plants vary considerably from one level to another. Thus the biotic environments from the tropical to sub-tropical and temperate zones that induce three climatic plant associations also have corresponding crop zones. The low-lying *bensi* zone grows paddy, maize, sugarcane, tobacco, oilseeds and tropical fruits. It is succeeded by the intermediate zone above 3,000 feet proliferating in diverse sub-tropical crops. Above 6,000 feet, the chief crops are millet, barley, and potato.

1. Climate

Pokhara Valley, though within 20 miles of the frigid heights of Annapurna, has attributes of a humid sub-tropical climate owing to the low elevation. Its mean temperature is always above 56°F with summer means exceeding 72°F, and its tropical aspect is evidenced by the climographs (Fig. 7).

The region is exposed both to the summer monsoon and winterly jet-streams and these two air masses give a distinct seasonal character to which the rhythm of life is closely attuned. Temperature conditions are unusually high for a Himalayan station; with eight months exceeding the 80° F maxima (Table 2). The annual mean is 71°F and the range 20°F with a January minima and July maxima. The annual curve of temperature shows the months preceding July to be warmer than the symmetric ones after. There is a rapid transition from the coldest month to the beginning of extreme heat. The lowest recorded mean was 43°F in January 1963 and the highest mean of 91°F in May 1957. Monthly ranges are highest during the pre-monsoon lull in April and the lowest during July-August when high humidity and cloudiness retard radiation. Nocturnal inversion of temperature occurs when down-valley winds reduce the temperature after sunset at lower levels. Cold spells are exceptional, and 'summer days' (over 77°F) extend from April to October.

The main precipitation here occurs in the form of rainfall. Snowfall associated with the westerly disturbances during winter occurs only on the highlands above 6,000 feet and the snow cover never lasts more than a few weeks. The annual rainfall averages 141 inches ranging from 123 to 157 inches (Table 3). The variability of rainfall is below 15 per cent. The greatest accumulation of 82 per cent rain occurs between mid-May and mid-September, and nocturnal precipitation is at least three times higher than during the day time. The hurricane rainfall of autumn, though providing a maximum late summer rain, proves disastrous to ripening crops. The winter cyclonic precipitation averages 3-5 inches, but contributes much snowfall on the higher grounds.

The relative humidity averages 76 per cent with a range of 38 between the April minima and the December maxima (Fig. 8A). Diurnal range is greater during the winter and except in early summer, relative humidity is at its maximum in the early hours. The dew point shows a close correlation with the annual march of precipitation and the annual value averages 54 per cent with a summer high (Table 4). Evaporation values progress in converse relation to

the relative humidity and dew point: the maxima occurs in March-April and minima during July-October (Table 4). The diurnal range is greatest during the spring maxima and the average daily evaporation shows a corresponding decrease with increasing altitude (Fig. 8B).

There is a high proportion of water surplus particularly during summer. December and February-April are the only months during which potential evapotranspiration exceeds precipitation. The plain, however, experiences water deficiency outside the monsoon season because of its low water table (c. 200 feet) due to its gravel stratum.

The most prevalent wind system seems to be the northerly one as evidenced by the north-inhibited and south elongated branches of the shade trees on the plain. Insolation causes varieties of local ascending and descending winds, some of them strong enough to effect seasonal winds. The katabatic winds funnelling down the higher mountain slopes are most pronounced in the evening, and during March-April these acquire gale force, causing much damage to the buildings. The average wind speed is 2.9 knots and varies from winter low to spring high (Table 4).

On average, 222 days in a year have air temperatures exceeding 68°F and the remaining days are also fairly warm (Fig. 9). The seasonal pattern may be termed as a cool-warm-hot-warm cycle as follows:

I. Cool: late November-February
II. Warm: early March-early April
III. Hot: late April-early September
IV. Warm: late September-early November

2. Vegetation

The near tropical temperature and heavy rainfall experienced in Pokhara region provide abundant climate energy for plants and the vigorous growth is matched by a rich flora. Owing to the nature of the topography, plant formations evince vertical zonation from the tropical moist deciduous to sub-montane forest and montane evergreens (Fig. 10B). Then there are two locational types, riverain forests and plain savannah. Another distinct ecological unit is the plantation of trees by man on the plain for fence, fodder, and shade (Fig. 10A). Thus the six vegetation types found in the region are (i) tropical moist deciduous forest, (ii) sub-tropical wet hill forest, (iii) temperate moist montane evergreen, (iv) low savannah, (v) riverain, and (vi) plantations (Fig. 11).

(i) The moist deciduous type, found below 3,600 feet has *sal* (Shorea robusta) as the dominant species with evergreen shrubs. Common sal associates are Aegle marmelos (*bel*), Buchanania latifolia and Lagerstroema parviflora. Where sal is missing other species such as Albizzia (*siris*), Dalbergia latifolia, (*satsal*), and Duabanga grandiflora form a closed forest. Locally, Phoenix humilis and Dendrocalamus strictus thrive on the shady slopes and Bauhinia vairegata (*koiralo*) occur on dryer slopes as does Salmalia malabarica (*simal*) along the stream banks.

(ii) The wet hill forest (3,600-6,200 ft.) is less dense than the lower monsoon forest and is characterised by the dominance of Schima wallichii (*chilaune*) with Castanopsis indica (*katus*) as the next in importance. The lower section of this type includes Berberis spp. leontice (*kaphal*) and Polyalthia longifolia (*dar*) and in the upper section are found Alnus nepalensis (*utis*), Fraxinus floribunda (*lankuri*) and Quercus lanugonisa (*phalat*). Tropical grasses are replaced by a dense undergrowth of shrub, herb, creeper, aroid, epiphyte, orchid, and fern. The most common are Acre oblongum (*pirpire*), Berberis nepalensis (*chutra*), Cretaegus crenulata (*ghangaru*), Ribes (*aselu*), Rhus acuminata (*bhalaye*), Solanum indicum (*dhatura*), and Zenthoxylum alatum (*timur*). Dendrocalamus stricticus (*bans*) of numerous varieties occur and Euphorbia royleana are found on dry slopes.

(iii) Moist montane evergreen forest (6,200-9,000 ft.) is mainly of oak (*phalat*) and rhododendron (*guras*) with Betula utilis (*bhojpatra*) higher up. In composition, the montane forests have characteristic low bushes on the northern aspect and grasses on the southern aspect. Arundinaria (*nigalo*) forms clumps of impenetrable jungle sheltering leeches. The trunks and branches are festooned with parasitic plants and filigree of moss and lichen. Old camp sites are overgrown with wild nettle. Alpine slopes of Anaphalis nubigena (*buke*) are encountered on the exposed meadows higher up.

(iv) The edaphic low savannah of the plain varies from terrace to terrace. The grass on the lower terraces are swampy and tougher such as the inedible Saccharum spontaneum (*kans*). The intermediate terraces have Saccharum munja and xerophytic plants such as Acacia catechu (*khair*) and Zyziphus jujuba (*bair*). The well-drained upper terrace grows

Poa pratensis (*dubo*) and Imperata cylindrica (*khar*) in enclosures. On the lake edges, the savannah vegetation grades into coarse hygrophilous grasses like Carex spp. (sedge), Phragmites communis (reed) and Cyperus (papyrus).

(v) Riverain vegetation is a distinct locational type along the streams. On the Seti river terraces, it supplants the serial stages of grassland as dry deciduous forest of Acacia catechu. The stretches of Acacia forest with Zyziphus jujuba bushes and grasses provide a park savannah character. On older grounds, Acacia is superseded by Salmalia malabarica. The narrow river gorges harbour a rich community of shade-loving plants.

(vi) Then there are the complex of planted trees around the plain villages which help to transform the microclimate, soil, and vegetation of the farmsteads (Fig. 10A). The first plants that come with the settlers are the fence trees such as Euphorbia royliana and Euphorbia pulcheriana. Salmalia malabarica and Dendrocalamus strictus are valued for their supply of building materials. The most conspicuous trees on the plain and low hills are the shade trees for *chautara* (rest platform). The commonest shade trees are Ficus bengalensis (*bar*) and Ficus religiosa (*pipal*), though evergreen Ficus benjamina (*swami*) and deciduous Sapinus mukorossi (*ritha*) are also found.

Forests yield fuel, building materials, timber, fodder, food, and wild game. The forests have been, by their very usefulness, over-exploited. The chief causes for the deterioration and ultimate destruction of forests are periodic fires, shifting cultivation, over-grazing and lopping of trees. Two factors give full play to the above causes: the demand for more cropland with the increase in population and the old state fallacy that the country's forest resources were inexhaustible. Late realisation has led to the declaration of all forest land as "reserved" but this has created an acute shortage of fuel.

3. Soil

Immaturity remains the chief characteristic of the soils found in the region. Indications of laterisation are observable up to 4,000 feet. In descriptive terms, there are four soil types: (i) montane brown forest soil, (ii) montane red earth, (iii) recent alluvia of the foothills, and (iv) gravelly loam of the plain.

i) The brown forest soil corresponds roughly to the temperate oak belt of the highlands. As they are derived from sedimentary as well as crystalline rocks, the soil is grained with quartz and mica. The humus accumulation enriched by a deep root system is dark-brown in colour but their fertility is offset by the location on steep slopes. They tend to lose top soil rapidly when exposed.

ii) At lower elevations, the brown forest soils develop a reddish-brown horizon. These so-called red earths, are derived mainly from gneiss, schist and phyllite. Where the soils are derived from quartzite there is much scree. There is considerable accumulation of iron oxide and the mull layer is thick only under forest. They are usually leached deep and contain hydrous oxide clays. Plant nutrients are lacking and profitable farming necessitates application of manure.

iii) Recent alluvia are found both as overlaying the plain near the foothills and along the river valleys. These alluvial deposits tend to grade finer downstream and the ease with which they can be irrigated makes them the preferred sites for cultivation. The soil is sandy loam and have good internal drainage. Soils around the lakes have rich surface horizon and are fertile when drained.

iv) The gravelly loam on the plain is derived from the outwash gravels. The humus layer at the top is very thin, varying from six inches in the southern part of the plain to about three inches in the north. It has very poor water-holding capacity and needs much irrigation water.

Table 2: Temperature Summary, 1957-62.

In Fahrenheit

Month	Maximum	Extreme Maximum	Median	Minimum	Extreme Minimum	Range	Per cent
Jan.	66.6	68.6	56.3	46.0	43.5	20.5	7.6
Feb.	69.6	74.5	59.9	49.5	47.7	20.1	8.1
Mar.	77.7	80.4	66.6	55.6	53.8	22.1	9.1
Apr.	86.7	87.6	73.6	60.6	60.1	26.1	10.1
May	88.0	91.8	77.2	66.4	63.7	21.6	10.4
June	85.5	89.2	77.5	69.6	69.3	15.9	10.6
July	85.1	86.0	78.1	71.2	70.7	13.9	10.6
Aug.	84.6	86.9	77.8	71.1	70.3	17.1	10.8
Sept.	81.1	84.7	73.4	65.7	46.6	15.4	10.0
Oct.	80.4	82.6	71.2	62.1	61.0	18.3	9.6
Nov.	73.9	76.8	62.5	53.2	50.9	20.7	8.4
Dec.	68.2	70.5	58.2	48.2	43.7	20.0	7.9
Annual	78.9	81.3	71.1	60.9	56.7	20.4	100

Source: Director-General of Observatories, New Delhi.

Table 3: Rainfall Record, 1956-63.

In Inches

Month	1956	1957	1958	1959	1960	1961	1962	1963	Average
Jan.		3.92	0.69	2.95	0	2.13	2.20	0.16	1.93
Feb.	No	0.26	0.59	0.48	1.06	2.64	2.87	0.91	0.91
Mar.	data	0.37	1.94	0.88	3.43	1.65	1.57	3.98	2.05
Apr.		1.39	8.15	2.35	1.10	2.24	2.95	4.84	1.01
May		3.85	7.14	10.90	9.45	5.55	12.91	9.61	8.54
June	24.22	18.33	17.05	29.40	21.26	30.87	39.06	26.38	25.63
July	27.05	9.51	36.37	23.92	31.96	41.18	31.97		32.01
Aug.	25.78	50.00	48.00	19.39	10.98	40.39	40.39		35.63
Sept.	25.54	27.59	22.99	26.35	27.05	18.43	18.46	No	21.89
Oct.	8.48	3.30	10.12	11.43	9.09	8.82	4.25	data	7.07
Nov.	0.31	0.08	0.12	0	0.20	0.04	0.04		0.04
Dec.	0.76	1.47	1.44	0	0	1.06	0.75		0.79
Total	-	153.48	132.07	128.05	123.08	154.92	157.42	-	141.50

Source: Director-General of Observatories, New Delhi.

Table 4 : Weather Records (1956-1963), Pokhara. Altitude, 2,700 feet (917 m.). Long. 84°E, Lat. 28°15'N.

	Barometric Pressure (in Millibars)			Temperature °F						Relative Humidity %			Dew Point Pressure 30.0 in %			Piche Evaporimeter (1m.)			Wind Speed * (in knots)		
				08.30			17.30														
	08.30	17.30	Mean	Dry	Wet	Dep-res-sion	Dry	Wet	Dep-res-sion	08.30	17.30	Mean	08.5.	17.30	Mean	Day	Night	24 hrs.	08.30	11.30	17.30
Jan.	923.9	920.6	922.2	52.5	49.1	3.4	58.3	53.6	4.7	81	75	78	45	45	44	1.0	0.8	2.7	3.1	4.2	1.5
Feb.	922.2	919.6	920.9	56.8	52.0	4.8	63.0	55.2	7.8	76	59	67	44	41	42	2.3	1.0	3.6	1.9	3.7	3.8
Mar.	920.2	917.6	918.9	65.5	59.5	6.0	65.5	59.2	6.3	70	66	68	50	48	49	3.5	2.4	7.5	2.0	4.7	3.9
Apr.	917.4	915.5	916.4	74.1	62.4	11.7	75.6	63.9	11.7	54	45	49	40	41	40	4.4	3.5	7.5	1.9	1.9	4.4
May	914.7	911.8	913.2	77.5	66.9	10.6	76.5	67.6	8.9	59	61	60	48	53	50	3.7	2.6	6.4	1.9	4.8	4.0
June	915.7	910.9	912.3	77.0	71.8	5.2	78.4	74.5	3.9	78	85	72	63	70	66	1.9	0.9	3.0	2.6	3.7	3.7
July	915.0	911.2	912.1	75.8	73.6	3.2	79.5	75.0	4.5	87	82	84	69	69	69	1.5	0.6	2.2	2.7	4.6	4.8
Aug.	914.1	911.2	912.6	76.5	72.9	3.6	78.8	74.3	4.5	87	82	84	68	68	68	1.5	0.6	2.1	2.0	4.1	3.5
Sept.	915.2	912.9	914.5	75.6	71.8	3.8	76.6	73.4	5.2	86	86	86	66	69	67	1.5	0.5	2.2	1.9	4.6	2.3
Oct.	920.5	918.3	919.4	70.7	65.3	5.4	70.9	67.3	3.6	77	85	79	57	62	59	1.9	0.8	2.7	2.1	4.6	1.6
Nov.	623.8	920.9	922.5	61.9	57.6	4.3	62.1	60.6	1.5	70	94	85	50	55	52	2.1	0.8	2.9	2.2	6.5	0.8
Dec.	921.4	921.3	921.5	53.0	51.6	3.4	54.1	54.9	0.2	82	94	88	38	50	42	1.8	0.7	2.6	2.3	4.0	1.1
Annual	918.4	915.1	916.7	68.2	63.0	5.4	69.9	64.9	5.0	78	74	76	53	55	54	25.9	15.2	45.4	2.2	4.3	2.9
Reference to Figs.										Fig. 8A			Fig. 8D			Fig. 8B			Fig. 8C		

Source: Director-General of Observatories, New Delhi.

* Readings only for 1960 - 63

Social Geography

Plate E: Indian Pension Camp, Ramghat. Most people are in their traditional Gurung dress. Annapurna-IV, Annapurna-II, and Lamjung Himal in background. January, 1963.

Social Geography

1. Culture Areas
2. Settlement Pattern
3. Population

The survey of the cultural landscape provides realistic determinants which will ensure the transition from the present to the future. In relative terms, physical environment is more constant than the human response. Inherent in the societal complex is the variation in response and impact of similar natural resources on different peoples. In this chapter are outlined the tribal and Hindu culture areas, their traditional stamp on the settlement pattern, and finally the population dynamics.

1. Culture Areas

Two culture groups impinge in the Pokhara region: tribal Mongoloids in the highlands and caste-stratified Caucasoids in the lowlands. The Mongoloid population is represented by the Gurung, Magar, Tamang, Thakali and Newar. Gurungs form the largest group here and, along with Magars, they are valued for military service (Plate E). The Thakali and Newar are strictly speaking outsiders who have settled in the bazars as traders and craftsmen. The Thakali come from the upper Kaligandaki Valley and their proficiency in local dialects give them an advantage over the Newar traders. The Newar settlers came first in the mid-18th century from Bhatgaon from where they imported their urban tradition.

The Caucasoid include the Bahun, Thakuri, Chhetri, artisan castes and Churaute. Bahuns predominate on the plain and live in dispersed villages. Thakuris are few but Chhetris are found well-distributed both in exclusive villages or mixed with the Bahun. The artisan castes provide specialised services and their professional competition for patronage tends to scatter them. The Churaute peddlers in bangles remain social outcasts since they are Muslims.

In the sphere of language, the striking feature is the fissiparity of the Tibeto-Burman language due to geographic isolation and the dominance of the Indo-Aryan Nepali language due to the political influence of its speakers. The appeal of Nepali is both of practice and prestige which a more cultivated language confers.

The influence of higher religion rests lightly on the people while ancestor-worship, animism, fetishism in after-life and overt reliance on shamans (*Jhankri*) are common practices. The chief distinction between the Lamaists and Hindus may be observed in the significance of colour. The Hindu shrines fly red pennants and Bahun women prefer scarlet dresses. To the lowland Hindus, the red colour is the symbol of the sun and gold and their houses are plastered with red laterite. In the highlands, white supersedes red in sacredness and houses are white-washed with clay. To the Lamaists, white is the symbol of supermundane and celestial, the absolute and pure. The Muslim Churaute have their own mosque at Kundahar and the latest new intrusion is Christianity with a church at Ramghat. The local attitude towards these exotic elements is not of antagonism but of indifference.

On ethnic, linguistic, and religious basis one might classify the highlands as the tribal culture area and the lowlands as the Hindu culture area (Fig 12). The tribal-Hindu contact line runs at the altitudinal level of about 4,500 feet. Apart from the

terrain and social contrast, the two culture areas differ in the extent of forest and its preservation or destruction of which native attitudes greatly contribute. Forests are more extensive in the tribal highlands where people live in symbiotic relationship with the forest. On the other hand, the dread of forests and primacy of agriculture among the Hindus have led to deforestation in the lowlands. There are differences in settlement pattern too: the nucleated village of the highland contrasts with the dispersed villages of the lowlands. The process of transition from tribe to caste has led to the gradual erosion of the indigenous tribal culture to which the physical isolation of its montane habitat provides the last prop. The evolution of Nepalese society must be seen as the outcome of the mixing of diverse peoples within the geographic confinement enclosed by the Himalayan range and Mahabharat Lekh. Acculturation is most intense in the intermediate low hills where the downward tribal and upward Hindu population movements impinge. Another point of assimilation are the bazars which act as the melting-pot for different ethnic and caste groups.

2. Settlement pattern

On average, there are 10 villages and 500 houses in each *thum*. The density of villages is 2 per square mile and that of houses 91 per square mile in the region. The site of 366 settlements are graphically represented in Fig. 13 which clearly shows the preference of hills for habitation. About 80 per cent of the villages are located on the hill and 71 per cent of the total face southwards. The plain which covers 27 per cent of the region's area has only 15 per cent of these settlements. Most villages are found above 3,000 feet and below 5,000 feet. The higher level is limited by steep slopes, forest and colder climate and the lowest level is avoided for its debilitating climate and malarial scourge. The settlement types may be classified as nucleated villages, dispersed villages, and linear bazars. These is turn determine the pattern of population distribution (Fig. 14).

(i) The nucleated settlement, typical of the tribal highlands, are marked for their mutual distance but within each nucleus there is greater cultural cohesion. They are patri-clan settlements as a manifestation of people's tendency to live in familial and kinship groups. Nucleated villages are located on hilltops commanding a view over the fields above the convexity of the slope or on saddles where tracks meet. Houses are rectangular in plan and double-storeyed. The building materials are stone plastered with clay. Roofs may be either of thatch or slate.

(ii) The loosely-clustered villages of the low hills are a transition between the true nucleated one of the highlands and dispersed one on the plain. The plain houses are detached, each enclosed by fields. The farm units are tied to their workplace and have less communal restraint. The only link between the houses are narrow defiles leading to a *chautara* where the village council meets. The houses are rectangular in plan though occasional elliptical houses of the past are also to be found. Buildings made of stone and wooden frame-work may be single or double-storeyed. The roof material is exclusively of thatch while the use of the slate suggests the owner's affluence.

(iii) Bazars or commercial settlements are confined to the main routes on the plain. The volume of pedestrian traffic influences their size. Houses with street-level shops line the roads and the shaded *chautara* act as their rallying-point. The bazars are listed in Table 15 and all but one align the busier Pokhara-Kathmandu route.

Bazar houses range from makeshift wattle huts to most ornate brick structures. The typical bazar house is a three-storeyed tile and brick structure introduced by Newar settlers (Plate G). Their architectural style with trellised windows and overhanging eaves are reminiscent of Kathmandu Valley. Occasional fires in the bazar have led to greater emphasis being given to durable tin for roofing instead of the incendiary thatch or heavy slates.

Most of the hilltops have stone edifices known as the *kot*. Some of them still preserve archaic artefacts such as rotary-querns and stone platforms. The one at Nawakot has a well laid-out quadrate-cross plan. As medieval fortresses, they are well sited for their defensive location. They still retain their importance as the seat of local deities where animals are sacrificed during April and October *dasain*. Some *kots* have now been transformed into schools thus imparting them a central function which they once held.

3. Population

For lack of data elsewhere, statistical treatment has been confined to the 33 Kaski *thum* covering 86 per

cent of the Pokhara region (Fig. 15). The density of population is 483 persons per square mile compared to 173 for Nepal and over 2,000 for Kathmandu Valley. Density within individual *thum* varies from 125 to 1,235 persons per square mile (Table 5 and Fig. 16). For the 27 *thum* with land record data, the average density of population is 4.1 persons per acre of irrigated land (Table 6). Of the 13 *thum* exceeding the average density, the majority are located in the hill. Thus, *thum* with a share in the plain land have lower agricultural density. Though the hills have more villages, the plain exceeds in population. The plain dominance in population is primarily due to the bazar concentration there (Fig. 14). The population of Pokhara municipality is 14,624 with a density of 3,450 persons per square mile. The aggregate population of eight bazars is 16,189 or 18 per cent of the region's total population (Table 15).

In composition, all *thum* record more females than males, ranging from 51 to 58 per cent (Table 5). The average female ratio for the region is 52.7 compared to 50.7 for Nepal and 49.5 for Kathmandu Valley. The chief reason for female preponderance is the out-migration of males for work. Males constitute at least 80 per cent of the absent population. Polygamy among Caucasoid castes also leads to in-migration of females in the region. The age structure has a broad base with a high proportion of children, suggesting a rapid rate of population growth.

Between 1954 and 1961, there has been a 10.7 per cent increase in population (Table 7). The *thum* with declining population are localised on the hills and *thum* with bazars show the maximum numerical gain (Fig. 17). This indicates the trend of urbanisation on the plain. Not all hill migrants have settled in local bazars. Some have settled in the tarai, notably in Rapti Dun. Although there has been an increase in out-migrants between 1954 and 1961, there was a gain of 10 per cent through internal migration. This relative decline in emigration abroad has been due to the opening up of the tarai for rehabilitation and increase of employment opportunities at home.

Importation of 'civilised diseases' has been going on for a long time through the traffic of Gurkha soldiers and seasonal labourers to India. The hill people seem to have less resistance to alien pathogens such as malaria, tuberculosis and bronchitis. Diseases of the digestive system are the commonest, especially during the rainy season. Among the pulmonary and respiratory diseases, asthma prevails in the lower valleys. Leprosy is also an occasional disease leading to the segregation of the patient. Endemic goitre is fairly common among the highlanders. The plain of Pokhara was dreaded for malaria a few years ago but DDT spraying since 1959 has made considerable progress in controlling malaria and this has led to the increase of settlements on the plain.

Table 5: Population, Sex Ratio, Density, 1961

S.No.	Thum	Area	Population			Sex Ratio	Density
		Sq. mile	Male	Female	Total	(Female %)	
1.	Arba	4.45	736	936	1,672	55.9	375.7
2.	Arghoun	16.53	3,802	4,448	8,350	53.9	505.1
3.	Armala	4.10	1,060	1,096	2,156	50.8	525.8
4.	Astam	1.90	428	464	892	52.0	469.4
5.	Batulechaur	5.50	1,857	2,137	3,994	53.5	1,650.4
6.	Begnas	7.64	775	1,010	1,785	56.5	233.6
7.	Bhalam	2.53	337	434	771	56.2	284.9
8.	Bhirchok	1.71	450	567	1,017	55.7	594.1
9.	Bhumdi	5.49	291	396	687	57.6	125.1
10.	Bhurjungkhola	3.55	247	277	524	52.7	147.8
11.	Bijayapur	3.45	516	603	1,119	53.8	324.3
12.	Chisapani	1.00	230	322	552	58.3	552.0
13.	Deorali	3.67	1,143	1,374	2,517	54.5	685.8
14.	Ghachok	3.10	1,127	1,246	2,373	52.5	1,098.6
15.	Gharmi	1.60	321	450	771	58.3	481.8
16.	Hyangjakot	1.53	345	397	742	53.5	484.9
17.	Hyangjabensi	2.31	1,399	1,779	3,178	55.6	1,375.7
18.	Jhuprang	5.33	266	273	1,731	50.6	324.7
19.	Kahun-Kundahar	11.24	3,814	4,232	8,086	52.5	719.3
20.	Kalabang	2.61	278	367	645	56.7	247.1
21.	Kaski	9.22	3,799	4,410	8,209	53.7	889.2
22.	Khadarjung	2.27	511	549	1,060	51.8	466.9
23.	Lahachok	4.50	1,059	1,212	2,271	53.3	504.6
24.	Majhthan	2.56	1,585	1,896	3,481	54.4	883.4
25.	Mauja	9.43	829	989	1,818	54.4	192.7
26.	Pachbhaiya	3.29	438	451	889	50.7	270.2
27.	Pumdi	8.79	1,071	1,308	2,379	54.9	282.0
28.	Riban	1.05	571	641	1,212	52.8	1,154.2
29.	Rupakot	7.95	1,035	1,199	2,234	53.6	284.6
30.	Sarankot	12.11	6,961	7,993	14,684	53.4	1,234.6
31.	Syaglung	2.63	753	931	1,684	55.2	640.3
32.	Tallakot	3.14	1,123	1,330	2,453	54.2	781.2
33.	Ulleri	1.40	132	141	273	51.6	195.0
	Total	177.71	40,278	45,798	86,859	-	-
	District share	Area	Per cent			52.7	482.9
A.	Part of Kaski	157.1	85.5				
B.	Part of Tanahu	3.89	1.9				
C.	Part of Syangja	18.55	9.3				
	Total Area of Region	200.15	100				

Source: Census Director, Personal communication, 28th June, 1965.

Table 6: Population Density on *Khet* Land, 1961/62

S.No.	Thum	Population	Irrigated Cropland (acres)	Density (per acre)
1.	Arba	1,672	452	3.7
2.	Arghoun	8,350	3,225	2.6
3.	Armala	2,156	433	4.3
4.	Batulechaur	3,954	626	6.3
5.	Begnas	1,785	622	2.8
6.	Bhalam	772	197	3.9
7.	Bhumdi	607	146	4.6
8.	Bhurjungkhola	524	33	17.0
9.	Bijayapur	1,119	293	3.8
10.	Ghachok	2,373	415	5.7
11.	Gharmi	772	235	5.7
12.	Hyangjabensi	3,278	828	3.8
13.	Jhuprang	1,732	51	33.0
14.	Kahun-Kundahar	8,035	1,424	5.6
15.	Kalabang	649	165	3.9
16.	Kaskikot	8,209	2,627	3.1
17.	Khadarjung	1,060	160	6.6
18.	Lahachok	2,271	522	4.3
19.	Majhthan	3,481	315	11.0
20.	Mauja	1,818	443	4.1
21.	Pachbhaiya	889	383	2.3
22.	Pumdi	2,379	754	3.1
23.	Rupakot	2,234	997	2.2
24.	Sarankot	14,954	1,701	8.7
25.	Syaklung	1,684	172	9.8
26.	Tallakot	2,453	655	3.7
27.	Ulleri	273	96	2.8
	For 27 Thums	72,595	17,830	4.1

Source: Population census, 1961 and land revenue records, 1962.

Table 7: Population Change, 1954-61

S.No.	Thum	1954	1961	Change	
				Absolute	Per cent
1.	Arba	1,719	1,672	-47	-2.7
2.	Arghoun	6,697	8,350	+1,653	+24.7
3.	Armala	2,248	2,156	-92	-4
4.	Astam	904	892	-12	-1.3
5.	Batulechaur	3,732	3,994	+262	+7
6.	Begnas	1,903	1,785	-118	-6.2
7.	Bhalam	671	771	+10	+1.3
8.	Bhirchok	1,050	1,017	-33	-3.1
9.	Bhumdi	709	687	-22	-3
10.	Bhurjungkhola	492	524	+32	+6.5
11.	Bijayapur	1,229	1,119	-110	-9.0
12.	Chisapani	607	552	-55	-9.1
13.	Deorali	2,092	2,517	+425	+20.3
14.	Ghachok	2,214	2,373	+159	+7.2
15.	Gharmi	576	771	+15	+2.0
16.	Hyangjakot	754	742	-12	-1.6
17.	Hyangjabensi	3,178	3,178	0	0
18.	Jhuprang	1,793	1,731	-62	-3.5
19.	Kahun-Kundahar	6,637	8,086	3	+21.81
20.	Kalabang	603	645	+42	+7.0
21.	Kaskikot	7,913	8,209	+296	+3.71
22.	Khadarjung	1,047	1,060	+13	+1.2
23.	Lahachok	2,238	2,271	+33	+1.51
24.	Majhthan	3,552	3,481	-71	-2.0
25.	Mauja	1,817	1,818	+1	+0.1
26.	Pachbhaiya	513	889	+376	+73.3
27.	Pumdi	2,139	2,379	+240	+11.2
28.	Riban	1,187	1,212	+25	+2.1
29.	Rupakot	1,770	2,234	+464	+26.2
30.	Sarankot	13,053	14,954	+4	+14.6
31.	Syaklung	1,726	1,684	-42	-2.4
32.	Tallakot	2,192	2,253	+2618	+11.9
33.	Ulleri	283	273	-10	-3.5
	Pokhara region	78,408	86,859	+8,451	+10.8
	Kaski district	133,627	141,175	+7,548	+5.8
	Gandaki districts	722,602	807,909	+85,307	+11.8
	NEPAL	8,473,478	9,753,378	+42,387,490	+15.1

Source: Census Director, Personal communication, 28th June, 1965.

Economic Geography

Plate F: Orange orchard, Batulechaur. These were later affected by a blight from introduced varieties. Temperate forest in background. November, 1962.

Economic Geography

1. Land Use
2. Industry
3. Trade & Transport

The economy of the region is very much a reflection of the local environmental condition. Physical limitations impose a subsistence economy: if the plain is poor, the hilly terrain demands high labour input. Land policy also affects use-intensity on different land grades. Social and commercial value of rice has relegated other crops to lesser importance in spite of the heavier taxation on paddy land. Crop farming remains the most important occupation and rearing livestock is mainly to provide manure and draft animals. Pastoralism is more important in the highlands where grazing land is extensive and wool-weaving is a traditional industry. The growth of new industries near the bazars reflects the economics of locational advantage. Tourism is the latest innovation in the economy of the region.

1. Land Use

An appreciation of the slope problem gives some indication of the region's land-use capability. The land use pattern is a reflection of the slope of the ground as it puts an obvious limit to the amount of productive land. Topographically, three major slope zones may be recognised: (i) very steep (> 25^0), (ii) steep to fairly steep (5^0-24^0), and (iii) gentle to moderate steep (< 5^0) (Fig. 18).

(i) Very steep slopes are characteristic of the highlands and the north-facing scarp of the hills. Such lands are mostly forested and when exposed, liable to erosion.

(ii) Steep to fairly steep slope have moderately stabilised soil but requires terracing for better utilisation. Most terrace fields are limited to slopes of less than 20 degrees but cultivated patches on declivities of 31 degrees are also found.

(iii) Gentle to moderate slope zones have fairly well-stabilised soil and naturally are good cropland. The alluvial fans constitute areas of moderate slope but are exposed to seasonal flooding.

The traditional practice of terracing is an attempt to overcome the physical handicap of a sloping ground. The terrace fields may range from crudely-built small patches to intricate tiers extending over an entire hillside. The two primary types are the flat-surface terraces for irrigated crops and sloping terraces for dry crops (Table 9). Terracing is a laborious task and requires constant care. The cost of maintaining existing fields inhibits the acquisition of new fields.

The extent and type of cultivated land in the region can be considered on the basis of revenue records. Such data were available for 27 Kaski district *thum* (revenue divisions) out of 33 (Table 9). These cover an area of 166.9 square miles or 83.4 per cent of the regional area. Such a coverage may be considered to fairly represent the area under study. According to the assessment of 1933, the 27 *thum* recorded an area of 13,114 cultivated land (31.8 acres=100 *muri*). Three contiguous *thum* (Sarankot, Kahun-Kundahar, Arghoun) with considerable plain land claimed 39.1 per cent of the total cultivated land (Fig. 19). Five *thum* had less than 77 *khet* land, of which three in the west and two in the north abut the highlands.

Of the total cultivated land, 5,230 *khet* land or 39.9 per cent was irrigated and the rest unirrigated (Fig. 19). Ten *thum* had more unirrigated land, rang-

ing from 50.7 per cent to 67.5 per cent (Table 9). Seven of these had mostly hilly land. Among the four *thums* with less than a third land under irrigated category, three had extensive plain land. The pattern is indicative of the dominance of the traditional irrigation system on hill terraces at the time of land assessment in 1933. Irrigated land is graded into *abal* (A), *doyam* (B), *sim* (C) and *chahar* (D) according to water availability, soil type, and productivity. Among the total 5,230 *khet* (irrigated) land of 27 *thums*, 42 per cent was of *chahar* or poor grade (Table 10). There was progressively a less proportion of superior grade: *sim* (37.2 per cent), *doyam* (15.4 per cent), and *abal* (5.3 per cent). This preponderance of poorer grade land contrasts sharply with that of Kathmandu Valley where *chahar* land is only 10 per cent and *abal* grade 22 per cent. Of the eleven *thum* with more than 5 per cent *abal khet*, six included plain land. Similarly, of the seven *thums* with more than half as *chahar khet*, four included plain land. If Bhurjungkhola with no *abal khet* is hill-based, Hyangjabensi with 81.4 per cent of its *khet* in *chahar* grade is plain-based. Thus, land form did not seem to be the determining factor in access to irrigation or productivity.

Increase in irrigated land during three decades (1933-62) was recorded to be 8.3 per cent (Table 11). In terms of *matomuri* irrigated land, *thum* adjacent to the plain had more such land added (Fig. 20). Ten of these gained 11 to 43 *khet muri* land. Conversely, nine out of the ten thums with minimal increase in *khet* land were hill-located. This contrast may be attributed to the initiation of major irrigation works on the plain in recent years (Fig. 21). The pattern is somewhat different when increase of *khet* land among *thums* is viewed in percentage terms. There is less gain in eastern thums already served by lake sources. A block of four northern thums gained by over ten per cent in irrigated land.

An intensive survey of the region was made to map land utilisation on a topographic scale (Fig. 22). The major land use categories are (i) settlements; (ii) orchard; (iii) cropland; (iv) grazing land; (v) woodland; (vi) lakes and marshes; and (vii) unproductive land (Table 8).

(i) Settlements and associated non-agricultural land include two sub-categories (1a): urban and rural settlements; and (1b) recreational and development sites. No area was computed for this category because of their diffused character. While the villages are sited on the cropland category, bazars lie along the roads. The largest expanse of developmental land is the sheep farm at Lampatan covering 300 acres.

(ii) The orchard category includes orange orchards at Hyangjachaur and Batulechaur (Plate F). Horticulture as garden cultivation in other villages have not been mapped as they occur not as blocks but as points of limited extent.

(iii) Cropland covers 40 per cent (78 square miles) of the total area of which 23 per cent are terraced. The alluvial flats on the periphery of the plain constitute the best arable land for their deep rich alluvium and ease for irrigation. Of the 27 *thums* for which figures are available, 40 per cent was irrigated land and 60 per cent unirrigated (Table 9).

(iv) Grazing land is confined to the extensive grassland along the Seti river terraces. They are all unimproved pasture land except for periodic burning. The area under grazing land is 11 square miles, about 6 per cent of the total area.

(v) Woodland accounting for 87 square miles or 43.2 per cent of the total area forms the largest category of land use. Thirty per cent of this is dense forest on steeper and higher grounds. Scrub woodlands, also used for grazing, mark the transition zone between dense forest and cropland .

(vi) Lakes and marshes occupy 2 per cent (4 square miles) of the total area, most of it under permanent water body. Except for Phewa Tal, all lakes have deltaic marshes.

Table 8: Land Use, 1963

Category	Square Miles	Per cent
1. Woodland	87	43.2
a. Dense	57	30.3
b. Scrub	30	15.9
2. Cropland	78	41.4
a. Terraced	45	23.9
b. Alluvial flat	33	17.5
3. Lakes	4	2.1
4. Marsh	1	0.5
5. Orchard	x	x
6. Settlement	x	x
7. Grazing land	11	5.8
8. River bed	8	4
Total	180	100.0

Source: Fig. 22.

(vii) Unproductive land includes stretches of sand and boulder along the streams. Sites of recurrent landslides and exhausted quarries also fall under this category. These account for 4 per cent of the total area.

The above land use survey was supplemented by sampling of five localities. These were Kahun on a hill, and Baidam, Pardi, Arghoupouwa, and Sisuwa on the plain. Kahun has poor grade land (Fig. 23A) and grows maize and thatch grass (Fig. 24). Baidam has some *khet* land beside the lake (Fig. 23B) for paddy. The houses are all rural, dispersed among *pakho* fields (Fig. 25). Pardi has both *khet* and *pakho* land and houses beside the canal bridge have shops (Fig. 26). Arghounpouwa between the old main road and canal has more *khet* land with some shops fronting the road (Fig. 27). Sisuwa has access to canal irrigation along with shops and *chautara* (rest platform) at the road tri-junction (Fig. 28).

The change in land use has been caused by the following factors; (i) irrigation extension; (ii) malaria eradication; (iii) transport improvement; and (iv) government assistance. The increase in irrigated land, 8.3 per cent between 1933 and 1962, has been greatest in the plain *thums* and least in the montane areas (Table 10, Fig. 20). While irrigation improvement in the hills rely on local ingenuity in water-control, those on the plain demand greater resources and technique owing to their larger scale. The two most important government-instituted irrigation projects are those of Bijaypur Khola and Phewa Tal (Fig. 21). The Phewa Tal project in reality is a modern improvement on an older dam. These two projects have helped reclaim a large amount of land from the thirsty plain. Malaria eradication work begun in 1959 has dispelled the old dread of the plain for malarial scourge. Improvements in communication and transport has encouraged growth of bazars both in size and number. Gharipatan, once an expanse of thicket infested with highway robbers is now an all-weather airfield (Plate B). The first batch of village development workers in 1952 were the forerunners of government interest in the region's development. Their efforts in improving farm practices by introducing winter crops and horticulture have had some repercussions near the bazars. *Birta* abolition has led to the conversion of less-intensively used fallow *birta* land to public ownership and these now form the nucleus of physical development.

2. Industry

Pokhara was once famous for chintz-making but this Newari handicraft has greatly declined with the increasing import of milled cotton goods. Similarly, copper manufacturing for which the town was famous in the 18th century has declined owing to outside competition (Hamilton, 1819). The present local industries can be categorised as whole-time or seasonal according to the time devoted. Small inadequate holdings and plentiful labour during the non-agricultural season make subsidiary employment essential.

(i) Seasonal. The slack season following the autumn harvest is given to various types of secondary and tertiary industries. Porter-work is accepted by the hill men as freely as petty-trading by the Bhotia, and porters exceed the numbers in any other occupation during winter. Collection of forest products in the highlands and the pressing of sugar-cane and oilseeds in the lowlands are local industries. The highlanders are adept at weaving mats and baskets of bamboo and making wooden containers by employing lathe. Sheep breeding has established a long tradition of wool-weaving among the tribal people, especially the Gurung.

(ii) Whole-time. Metal-work, leatherwork, tailoring, pottery and fishing are done by various artisan castes. There seems to be much scope for tanning if the large quantity of exported hides and skins were processed locally through improved methods. Pottery-making is concentrated in Kumalgaon between October and May. The traditional methods of milling foodgrain by hand quern (*janto*), foot-pestle (*dhiki*), and water-mills (*ghatta*) have been replaced by powered mills in the bazars. There are about half a dozen such mills at present, all run on diesel power with an average capacity of 10 horsepower.

The rapid growth of bazars has intensified the quarrying industry for building stone. Other new industries include a match factory which uses the plentiful Salmalia (*simal*) soft wood. Two furniture factories in the town derive their raw materials from Alnus nepalensis (*utis*) floated down the Seti from the northern forests and Acacia Catechu (*khair*) from Khairenitar.

The latest industry but with immense promise is tourism. From November 1961 to July 1963, Pokhara had 681 visitors from 24 countries (Table 12). Of the 387 tourists visiting Pokhara in 1962, spring and autumn were peak seasons with a

depression during summer (Fig 29C). Though within 26 miles of the Annapurna range, Pokhara enjoys a mild winter. The pyramidal peak of Machhapuchhre (22,958 ft.) dominates the region and greatly enhances the scenic view (Plate A). From the southern Barsami ridge (3,630 ft.) one can have an uninterrupted view of the Himalayan panorama extending 114 miles from Putha Hiunchuli in the west to Ganesh Himal in the east. The northern highlands provide good forest for field sport and the surrounding hills offer trekking and hiking opportunities. The lakes add beauty to the landscape apart from being natural sites for boating and angling (Plate D). The town is also an important staging-point for climbing expeditions to the mountains of central and western Nepal. With improvement and increase in accommodation facilities, there is every prospect of tourism as a modern industry affecting the economy of the region.

3. Trade and Transport

The location of Pokhara at the junction of arterial routes has made it an important entrepot for long-distance trade. Two trans-Himalayan routes, one through Kore La (14,900 ft.) and another across Gya La (18,397 ft.) converge at Pokhara and bifurcate southwards to the foothill markets of Butwal (840 ft.) and Narayanghat (900 ft.). During the trade season in winter, Pokhara bazar is overcrowded with jostling men and merchandise and innumerable tea stalls(*bhatti*) sprout along the routes.

The chief commodities of Tibetan origin are wool, blankets, fur, yak-tails, herb, borax, salt, and sheep and goats carrying these. In 1962 over 1,500 maunds of wool worth Rs. 3 lakhs (Indian currency) was exported through Pokhara. Indian items are primarily cotton piece-goods, cigarettes, kerosene and sundry manufactures. It is indicative that the Pokhara municipality income for 1962 gave a return of 43 per cent from cigarettes, 26 per cent from other trade goods, 21 per cent from road cess and the rest from tea shops. The Pokhara region exports foodgrains to the Bhotia region and oilseeds, oranges, herbs, hides and skin, live animals and birds to India. The great demand for salt results in the excessive export of grain to Tukche at the peril of food shortage locally during spring. With the disruption of the Tibetan salt supply since 1959, people have turned increasingly to Indian sources. In contrast to the general downward movement of the people to Pokhara bazar and tarai for shopping, the Churaute of Kundahar visit outlying villages selling glass bangles, hair ribbons, and fancy goods.

The numerous fairs and festivals around Pokhara also link religious gatherings to economic exchange. The Dhungesangu Jatra for instance used to be famous for supplies of grain and copper goods during the 18th century. But, by all indications, the importance of fairs for trade has declined with the growth of bazars following transport development.

The importance of Pokhara town is not merely as a trade centre but as a halting stage on the main east-west road linking far west Nepal with Kathamandu. The traditional arterial roads are marked by rest-houses and *chautara*. Usually *chautara* congregate closer in bazars and even ante-date the shops around them. For instance, in the centre of Pokhara town, Lamochautara, 80 feet long, 24 feet broad and 3 feet high, is reputed to be over 200 years old. The *chautara* with shade trees beckon the weary pedestrians, and in modern terms may be likened to porter parking lots.

The arterial routes are served by numerous inter-village tracks, some permanent and others seasonal. Because of the lack of permanent bridges, most communication lines between two points are improvised tracks. During the monsoon, the ridge-top paths are preferred while in winter the dry riverbeds become the line of movement. Most of the tracks outside the plain are too precarious for pack animals and man remains the essential beast of burden. Even on the plain, wheeled vehicles were entirely lacking till recently. Transport here has indeed developed in an inverted sequence: airplane in 1952, jeep in 1959, and bullock-cart in 1961. By the close of 1962, there were 3 jeeps, 22 bullock carts, and 136 bicycles. Air traffic has increased progressively and it may even be said that air service has retarded road development by diverting the potential surface traffic. Among all the internal services, the Pokhara-Bhairawa and Pokhara-Kathmandu routes accrue the largest income by handling 25 per cent passengers and 14 per cent freight of the total volume (Table 13). Air passenger traffic to and from Pokhara maintained a steady flow except dips in March and July of 1960 (Fig. 29B). Cargo transported by air was high in early spring, moderate in summer and low during the autmn tourist season (Fig. 29B). The completion of the long-awaited Pokhara-Sunauli road with Indian aid, and the Pokhara-Kathmandu road with Chinese assistance should have far-reaching consequences on the region's future development.

Table 9: *Khet* and *Pakho* Land by *Thum*, 1933

SN.	Thum	Khet (Irrigated)				Pakho (Non-Irrigated)				Both				Per cent of
		K	M	P	Ma	K	M	P	Ma	K	M	P	Ma	Khet Land
1.	Arba*	135	67	1	2	112	4	1	-	247	71	2	2	54.7
2.	Arghoun*	969	35	10	-	725	45	3	-	1694	80	13	-	57.2
3.	Armala	155	20	11	2	230	84	1	-	386	4	12	2	40.2
4.	Batulechaur*	180	77	17	4	928	92	3	-	1109	69	20	4	16.3
5.	Begnas*	155	98	11	2	229	44	-	-	385	42	11	2	40.5
6.	Bhalam	61	69	6	2	80	71	1	-	142	40	7	2	43.3
7.	Bhumdi	39	48	7	4	37	47	3	-	76	95	10	4	50.7
8.	Bhurjungkhola	10	78	6	2	24	82	-	-	35	60	6	2	30.0
9.	Bijayapur	92	70	15	-	82	68	-	-	175	38	15	-	52.8
10	Ghachok*	126	75	18	6	238	91	2	-	365	67	0	6	34.7
11.	Gharmi	40	33	2	4	90	10	3	-	130	43	5	4	30.9
12.	Hyangjabensi*	309	13	7	4	443	90	3	-	753	3	10	4	41.0
13.	Jhuprang*	15	79	11	4	20	61	2	-	36	40	13	4	43.4
14.	Kahun-Kundahar*	430	87	8	6	1418	71	3	-	1849	58	11	6	23.3
15.	Kalabang	48	37	10	-	23	32	2	-	71	69	12	-	67.5
16.	Kaskikot	706	93	15	-	623	74	1	-	1330	67	16	-	53.1
17.	Khadarjung	49	70	6	2	105	33	-	-	155	3	6	2	32.0
18.	Lahachok*	152	8	11	6	269	96	-	-	422	4	11	6	36.2
19.	Majhthan	94	94	18	6	155	7	3	-	250	1	21	6	38.0
20.	Mauja	132	92	10	-	73	34	-	-	206	26	10	-	64.4
21.	Pachbhaiya*	118	89	11	2	57	38	3	-	176	27	14	2	67.4
22.	Pumdi	212	10	2	4	241	89	2	-	453	99	4	4	46.7
23.	Rupakot*	309	54	-	-	289	66	2	-	599	20	2	-	51.7
24.	Sarankot*	511	80	6	2	1070	75	-	-	1,582	55	6	2	32.3
25.	Syaklung	52	76	18	6	75	59	2	-	128	35	20	6	41.1
26.	Tallakot*	193	99	11	2	330	18	-	-	524	17	11	2	37.0
27.	Ulleri	23	32	17	4	13	33	1	-	36	65	18	4	63.1
	Total	5,230	86	15	4	7,883	24	4	-	13,114	10	19	4	39.9

* Includes part of the plain

Note: K=Khet, M=Muri, P=Pathi and Ma=Mana

100 Khet muri = 31.8 acres

Source: Revenue Office, Pokhara.

Table 10 : Grade of *Khet* Land by *Thum*, 1933

S.N.	Thum	(A) Abal			(B) Doyam			(C) Sim			(D) Chahar		
		Khet	Muri	Row %	Khet	Muri	Row %	Khet	Muri	Row %	Khet	Muri	Row %
1.	Arba*	2	28	1.7	16	17	11.9	60	14	44.3	57	6	42.1
2.	Arghoun*	23	57	2.4	129	64	13.4	386	26	39.8	429	87	44.3
3.	Armala	-	39	0.3	22	93	14.8	47	3	30.3	84	84	50.7
4.	Batulechaur*	-	55	0.3	19	7	10.5	91	7	50.4	70	8	38.8
5.	Begnas*	24	59	15.8	44	12	28.3	62	44	40.0	24	81	15.9
6.	Bhalam	4	8	6.6	12	60	20.4	29	33	47.5	15	67	25.4
7.	Bhumdi	1	76	4.5	7	45	18.9	16	74	42.4	13	52	34.2
8.	Bhurjungkhola	-	-	-	5	56	51.6	5	9	47.2	-	12	1.1
9.	Bijayapur	2	71	2.9	7	54	8.1	40	67	43.9	41	76	45.0
10.	Ghachok*	2	97	8.1	8	88	24.2	23	85	65.1	-	91	2.5
11.	Gharmi	4	60	11.4	1	47	3.6	9	31	23.1	24	93	61.8
12.	Hyangjabesi*	2	16	0.7	4	3	1.3	31	5	10.0	270	28	87.4
13.	Jhuprang	-	55	3.5	1	27	8.0	2	15	13.6	11	81	74.8
14.	Kahun-Kundahar*	57	59	13.4	151	41	35.1	90	4	21.0	131	72	30.6
15.	Kalabang	2	49	6.5	10	64	27.7	19	52	50.9	5	71	14.5
16.	Kaskikot	25	26	3.6	93	68	13.3	317	4	44.8	270	93	38.3
17.	Khadarjung	1	62	3.3	8	78	17.7	21	61	43.5	17	67	35.6
18.	Lahachok*	13	59	8.9	39	91	26.1	45	20	29.6	53	36	34.9
19.	Majhthana	5	62	5.9	12	79	13.5	45	42	47.8	31	9	32.6
20.	Mauja	-	43	0.3	7	87	5.9	55	91	42.1	68	70	51.7
21.	Pachbhaiya*	34	75	29.2	35	18	29.6	31	68	26.6	17	26	14.5
22.	Pumdi	-	6	0.0	1	51	0.7	97	44	45.9	113	7	53.3
23.	Rupakot*	16	11	7.0	64	44	28.1	131	49	52.3	17	48	7.6
24.	Sarankot*	9	86	1.9	39	9	7.6	186	99	36.5	275	84	53.9
25.	Syaklung	4	14	7.8	19	53	37	12	46	23.6	16	62	31.5
26.	Tallakot*	31	48	16.2	26	87	13.9	48	67	25.1	86	96	44.8
27.	Ulleri	-	85	3.6	2	77	11.9	7	33	31.4	12	36	53.0
	Total	274	18	5.3	795	31	15.4	1916	7	37.2	2,164	55	42.0

* Includes part of the plain.

Source: Revenue Office, Pokhara.

Table11: Increase in *Khet* Land, 1933-62

S.N.	Thum	1933				1962				Increase				Per cent
		K	M	P	Ma	K	M	P	Ma	K	M	P	Ma	Increase
1.	Arba	135	67	1	2	143	85	10	-	8	18	8	6	6.0
2.	Arghoun	969	35	10	-	1013	99	10	7	44	64	-	7	4.6
3.	Armala	155	20	11	2	156	92	16	2	1	72	5	-	1.1
4.	Batulechaur	180	77	17	4	199	67	-	-	18	90	18	6	10.5
5.	Begnas	155	98	11	2	166	32	11	6	10	66	-	4	6.8
6.	Bhalam	61	69	6	2	62	85	16	2	1	16	5	1	1.9
7.	Bhumdi	39	48	7	4	46	33	12	4	6	85	5	-	18.1
8.	Bhurjungkhola	10	78	6	2	10	78	6	2	-	-	-	-	0
9.	Bijayapur	92	70	15	-	93	47	6	4	-	23	7	4	0.2
10.	Ghachok	126	75	18	6	132	13	2	4	5	37	3	6	4.2
11.	Gharmi	40	33	2	4	42	42	14	-	2	9	2	2	7.1
12.	Hyangjabensi	250	55	7	4	263	81	12	4	13	26	5	-	5.3
13.	Jhuprang	15	79	11	4	16	38	13	6	0	59	2	2	3.7
14.	Kahun-Kundahar	430	87	8	6	453	28	12	4	22	59	4	2	5.2
15.	Kalabang	48	37	10	-	52	59	10	4	4	22	-	4	8.7
16.	Kaskikot	706	93	15	-	836	62	14	6	129	31	19	6	18.3
17.	Khadarjung	49	70	6	2	51	25	16	2	1	45	10	-	2.9
18.	Lahachok	152	8	11	6	166	32	8	6	14	24	-	-	9.3
19.	Majhthan	94	94	18	6	99	84	13	6	4	90	15	-	5.2
20.	Mauja	132	92	10	-	141	14	15	7	8	78	5	7	6.6
21.	Pachbhaiya	120	89	11	2	121	99	10	-	1	10	-	-	0.9
22.	Pumdi	212	10	2	4	240	5	7	-	27	95	2	2	13.2
23.	Rupakot	309	54	-	-	316	27	14	6	6	73	14	6	2.3
24.	Sarankot	511	80	6	2	541	74	3	6	29	6	17	4	5.8
25.	Syaklung	52	76	18	6	54	88	-	-	2	12	3	2	4.0
26.	Tallakot	193	99	11	2	209	11	18	6	15	12	7	4	7.8
27.	Ulleri	23	32	17	4	30	69	10	-	7	37	12	2	31.6
	Total	5,230	86	15	4	5,664	78	14	6	433	91	19	2	8.3

Note: K=Khet, M=Muri, P=Pathi and Ma=Mana.

Source: Revenue Office, Pokhara.

Table 12
Tourist Traffic, Pokhara
Mid-November 1961 to Mid-August 1963

Month (Gregorian)	Year	1. Argentina	2. Australia	3. Canada	4. Ceylon	5. Denmark	6. Ethiopia	7. France	8. Germany	9. Holland	10. India	11. Israel	12. Italy	13. Japan	14. Netherlands	15. New Zealand	16. Norway	17. Pakistan	18. Spain	19. Sweden	20. Switzerland	21. U.K.	22. U.S.A.	23. U.S.S.R.	24. Yugoslavia	Total
	2018																									
Mangsir (mid Nov-m. Dec)	1961	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	6	2	-	-	14
Push (m. Dec-m. Jan)	1961/62	-	-	-	-	-	-	1	-	1	10	-	-	3	-	-	-	-	-	-	6	4	3	-	-	28
Magh (m. Jan-m. Feb)	1962	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	3	3	-	-	9
Fagun (m. Feb-m. Mar)	1962	-	1	-	-	-	-	4	-	-	4	-	-	-	-	-	-	-	-	1	-	3	3	-	-	16
Chait (m. Mar-m. Apr)	1962	-	-	-	-	-	-	2	-	-	8	-	-	-	-	-	-	-	-	1	-	6	-	-	1	18
	2019																									
Baisakh (m. Apr-m. May)	1962	-	12	-	-	-	-	3	4	1	23	-	-	1	-	-	-	-	-	-	3	6	9	-	-	62
Jeth (m. May-m. June)	1962	-	7	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	7	6	-	-	22
Asar (m. June-m. July	1962	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	4	1	-	-	10
Savan (m. July-m. Aug)	1962	-	1	-	-	-	-	-	-	-	18	-	5	-	-	-	-	-	-	2	-	-	2	3	-	31
Bhado (m. Aug-m. Sept)	1962	-	-	-	-	-	-	-	-	3	23	-	-	-	-	-	-	-	-	1	3	2	1	6	-	39
Asoj (m. Sept-m. Oct)	1962	1	3	-	-	-	-	3	7	-	13	-	1	-	1	-	-	-	-	-	-	3	6	-	-	38
Katik (m. Oct-m. Nov)	1962	-	3	-	-	2	1	-	6	-	10	1	0	-	-	-	2	-	-	3	3	10	7	-	-	49

Source: Department of Tourism, Kathmandu.

Table 12 (cont..)
Tourist Traffic, Pokhara
15 November 1961 to August 1936

Month	Year	1. Argentina	2. Australia	3. Canada	4. Ceylon	5. Denmark	6. Ethiopia	7. France	8. Germany	9. Holland	10. India	11. Israel	12. Italy	13. Japan	14. Netherlands	15. New Zealand	16. Norway	17. Pakistan	18. Spain	19. Sweden	20. Switzerland	21. U.K.	22. U.S.A.	23. U.S.S.R.	24. Yugoslavia	Total
Mangsir (mid Nov-m. Jan)	1962	-	6	-	-	-	-	4	3	6	13	-	-	7	-	-	-	-	-	-	7	9	1	-	-	56
Push (m. Dec-m. Jan)	1962/63	-	3	1	-	-	-	-	-	5	12	-	-	4	-	-	-	-	-	-	5	4	7	-	4	45
Magh (m. Jan-m. Feb)	1963	-	1	-	-	10	-	-	3	-	10	6	-	-	-	-	1	-	-	2	9	4	6	-	-	52
Fagun (m. Feb-m. Mar)	1963	-	1	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-	-	7	4	7	-	-	28
Chait (m. Mar-m. Apr)	1963	-	1	-	1	-	-	-	-	-	9	-	2	7	-	4	-	-	-	-	5	10	11	-	-	50
	2020																									
Baisakh (m. Apr-m. May)	1963	-	5	-	-	-	-	2	4	1	5	4	-	1	-	-	-	-	-	-	5	3	14	-	-	44
Jeth (m. May-m. June)	1963	-	-	-	-	-	-	-	-	1	8	-	-	8	-	-	-	2	-	-	1	-	8	-	-	28
Asar (m. June-m. July	1963	-	8	-	-	-	-	-	-	-	8	-	-	2	-	-	-	-	-	-	4	7	1	-	-	30
Savan (m. July-m. Aug)	1963	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-	-	-	1	-	3	2	2	-	-	12
		1	53	2	1	14	1	21	27	18	191	10	9	33	1	4	3	2	1	11	66	97	100	9	5	681

Source: Department of Tourism, Kathmandu.

Table 13
Air Traffic, 1960
Route: Kathmandu-Pokhara-Bhairawa and
Bhairawa-Pokhara-Kathmandu

Month	Passengers			Freight (in lbs.)		
	KTM/BHW	BHW/KTM	Total	KTM/BHW	BHW/KTM	Total
January	789	993	1,782	32,366	4,809	37,175
February	893	1,023	1,916	37,100	7,809	44,909
March	160	179	339	3,855	332	7,187
April	713	849	1,562	18,668	9,293	27,961
May	714	714	1,428	19,195	3,832	23,027
June	529	721	1,350	28,493	14,431	43,924
July	224	386	610	20,714	1,898	22,612
August	448	662	1,110	30,560	28,177	58,737
September	514	562	1,076	13,640	962	14,602
October	776	642	1,418	11,213	5,276	16,489
November	817	820	1,637	14,014	2,888	16,902
December	740	696	1,436	11,880	5,220	17,100
Total	7,317	8,247	15,654	241,698	84,927	330,625
Per cent	47.4	52.6	25.0	74.4	25.6	14.0
Nepal			61,995			2,382,558

Source: Royal Nepal Airlines Corporation, Kathmandu.

Urban Geography

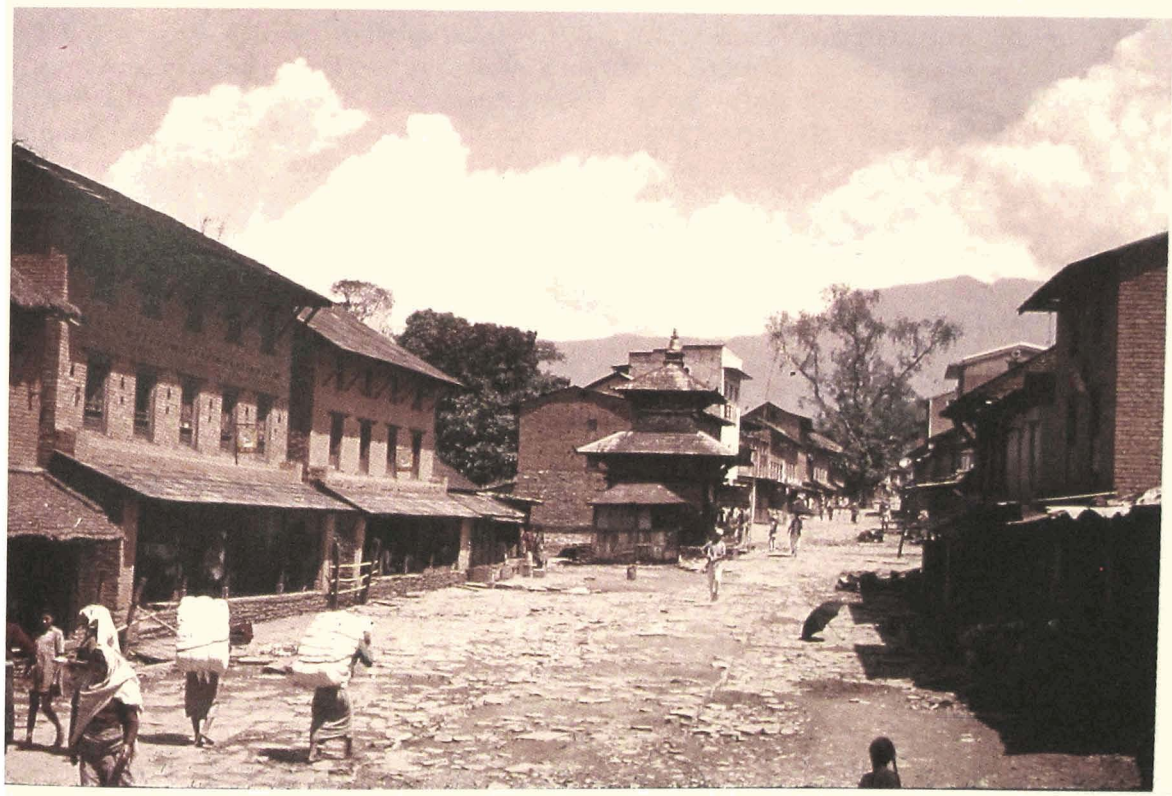

Plate G: Pokhara town centre. Bhimsen temple from Nalamukh. Note the lone tall concrete building and shade tree of Lamo-chautara. December, 1962.

Urban Geography

1. Growth of Pokhara Town
2. Urban Land Use

Pokhara town dominates all other bazars within the region in size, functional diversity and regional importance. Its commercial and service functions, population structure and administrative concentration all give it a distinct urban character.

1. Growth of Pokhara Town

Pokhara town is situated on a gently-sloping high terrace near the narrow gap between the hills of Sarankot (5,223 ft.) and Kahun (4,736 ft.). The old bridge-point over the Seti between Pokhara bazar and Ranipouwa bazar is advantageously placed and connects the town with other settlements on the plain (Fig. 30). The intersection of east-west and north-south arterial routes has given the place a nodal character. It acts as a contact point between the highland and lowland regions and subsists on the exchange of their diverse products.

Pokhara was less important than the surrounding hill forts due to its exposed location during the turbulent medieval period. Though some form of indigenous settlement might have existed at the bridge-head, it was only after the 18th century that Pokhara gained in political importance. In 1752, the then Kaski ruler settled in the place the first Newars from Bhatgaon as metal workers and traders. The urban architecture of the bazar was entirely due to these early Newar migrants. The houses of their descendants still form the nucleus of the town, of Bhimsen temple, the patron deity of Newars, occupies the most central location in the town(Plate G). By early 19th century, as recorded by Hamilton (1819), Pokhara had become a "considerable town...a mart frequented by merchants from Nepal (Kathmandu), Palpa, Malebum, etc., and afforded duties that in so poor a country was reckoned considerable". Six decades later, Oldfield described it, from hearsay, as a large city, "well-inhabited and contains plenty of supplies and grain of all sorts. Famous for its copper manufactures". A pictorial record to be found in Landon's book illustrates the central part of the town with two-storeyed tile and thatch houses. With increasing affluence, the same place is now re-built with four-storeyed buildings of slate or tin roofs. A similar evolution has been going on in other parts of the town as well as in smaller bazars.

According to the records of Nepal Malaria Eradication Organisation, the eight core localities of Pokhara bazar had a total population of 3,245 in 1959 (Table 14). Of these, 56.3 per cent were male and 44.8 per cent adults. Thus, there was a preponderance of males by sex and of dependents by age group. The centrally located Terchhapati and Nalamukh together accounted for 39 per cent of the total bazar population. In a survey carried out by this researcher, the localities with predominantly urban activities, shown in box in Fig. 31, had a population of 9,650 (Table 15). The records of Pokhara municipality for the same year, on the other hand, had a total population of 14,264 (Fig. 31). The latter larger population is due to the inclusion of six rural wards among the 13 wards incorporated within the municipal area. In other words, nearly a third of the municipal population was rural in functional character. The writer's survey of eight bazars of the Valley in 1962 recorded a total population of 16,189 (Table 15). Pokhara's core bazar accounted for 59.6

Table 14: Pokhara Bazar, Population 1959

S. No.	*Tol* or Locality	Adult		Children		Infant		Total		Total
		Male	Female	Male	Female	Male	Female	Male	Female	
1.	Sangumukh	200	108	8	18	16	6	224	132	356
2.	Terchhapati	478	278	23	54	25	17	526	349	875
3.	Nalamukh	183	150	29	29	12	6	224	185	409
4.	Bhairab-tol	133	148	57	34	15	5	205	187	392
5.	Mohariya-tol	185	179	89	68	23	11	297	258	555
6.	Sinhnath-tol	60	65	28	17	2	-	90	82	172
7.	Bagar-bazar	117	119	28	25	5	-	150	144	394
8.	Nadipur-patan	119	80	15	18	3	4	137	102	239
	Total	1475	1,127	277	263	104	49	1,856	1,439	3,295

Source: Nepal Malaria Eradication Organisation, Pokhara.

per cent of the urban population. The bazar population is progressively smaller as one moves further eastwards from Pokhara town (Fig. 14).

The alignment of the buildings along the three converging roads has led to a ribbon development of the town. The total length of the bazar along the roads is almost three miles. The central hub occurs at Nalamukh, the point where the Kathmandu road joins the Butwal-Tukche road. Here also are to be found the oldest houses and as well as the bigger business establishments. Each neighbourhood (*tol*) has its own temple and some of the neighbourhood names are derived from the names of local deities. There are no secondary lanes connecting the neighbourhoods as communication is maintained along the main street. Within the bazar limits, the streets are liberally endowed with *chautara*.

A detailed survey of 480 houses of Pokhara town in March 1963 provided the following characteristics. The predominant building material was brick (57%), and stone buildings accounted for 34 per cent of the total (Fig. 33A). About 2 per cent had stone base and brick-finished walls. The rest were made of wattle, wood, bamboo, and tin sheets.

The biggest group of houses (37%) had corrugated tin roof and 24 per cent had slate roofs. Slate is imported from Bharabhure, 12 miles north of the town and tin-sheets from India. A quarter of the houses were thatched and six per cent had combinations of tin, slate, and thatch, the most common being the tin-slate combination (Fig. 33B). Eighteen per cent of the houses were four-storeyed, 33 per cent three-storeyed, 25 per cent two-storeyed, and less than a quarter single-storeyed huts (Fig. 33C). The tallest building in town was five storeyed and stands 33 feet above the street level.

Over 22 per cent of the buildings were put up within the last five years (Fig 32). The new buildings are usually built in the interstices of the old buildings and there is no significant outward expansion. Morever, the transient nature of the buildings due to recurrent fires caused new buildings to be supplanted over the foundations of the old ones. Thus, the main process determining the morphology of the town has been gradual filling-up of the intervening space and, therefore, leading to more compactness.

Table 15: Valley Bazar Population, 1962

S.No.	Bazar	Thum	Population	Per cent
1.	Pokhara	Sarankot	9,650	59.6
2.	Kundahar	Kahun-Kundahar	2,520	15.6
3.	Arghounpouwa	Arghoun	2,293	14.2
4.	Ranipouwa	Kahun-Kundahar	997	6.2
5.	Sisuwa	Arghoun	639	3.9
6.	Khudi	Begnas	485	3.0
7.	Pardi	Sarankot	474	2.9
8.	Satmuhane	Rupakot	131	0.8
	Total	Pokhara Valley	16,189	100.0

Source: Field Survey.

The traditional pattern of trade in the town has been influenced by two recent factors. Firstly, the introduction of air transport has intensified business. Goods which would have taken a week from Bhairawa on a porter's back can now be delivered by air in 28 minutes. However, the import of consumer goods by air has greatly raised the price level.

Secondly, the establishment of pension camps by India in 1952 and by Britain in 1961 has led to the extra flow of cash in the bazars causing inflation in consumer goods (Plate E). The pension paid by India alone has soared from Rs. 18,000 (Indian currency) in 1954/55 to Rs. 36 lakhs (Indian currency) in 1961/62. The two banks in town handled over Rs. 99 lakhs (Indian currency) during 1962/63 even though a considerable amount of Indian currency goes directly into the hands of the business community.

2. Urban Land Use

A detailed analysis of land use within Pokhara town provides the best indication of its urban character. A sample profile of 480 houses in the central part of the town underlines the third dimension in the townscape. Note was also made of the adjacent lands and their crops. These constitute transverse strips of farmland stretching away from arterial roads. It is only in the rural section between the fork of the two southern roads that this transverse pattern does not occur (Fig. 34).

Typical of a commercial locality, various combinations of use are found on the same piece of land and often in the same building. There is a vertical stratification of functions, the most common being residential buildings with business establishments on the ground floor. The functions performed include distribution, exchange, processing and production of goods and a variety of services for the people of a wide area. The survey identified eight categories of land use in the core area of Pokhara bazar. These were commercial, administrative, industrial, educational/cultural, recreational, transport, residential and vacant (Table 16).

(i) The most important function was commercial, accounting for 60 per cent of the total establishments. These included 200 shops, 47 tea stalls, 27 services, 16 godowns, and 2 banks. The main shopping centre is in Bhimsen-Bhairabh Tol with a secondary cluster at Sangumukh. All the shops are on the ground floor, facing the main street. The retail shops in order of importance are hardware (26%), metalware (24%), cloth (14%), spices (4%), medicine (3%), grain (2%), and cigarettes (1%). Some shops specialise in bangles, furniture, kerosene, earthenware, stationery and shoes. The paucity of grain

Table 16: Pokhara Bazar, Land Use, 1963

	Category	No. of structures	Per cent
1.	*Commercial*	*286*	*59.4*
	Shops	200	
	Tea stalls	41	
	Services	27	
	Godowns	16	
	Banks	2	
2.	*Administrative*	*17*	*3.5*
	Central Govt. offices	7	
	District offices	5	
	Local offices	5	
3.	*Industrial*	*17*	*3.5*
	Metal works	9	
	Rice-parching works	6	
	Woodworks	1	
	Soda factory	1	
4.	*Education and Cultural*	*13*	*1.4*
	School	1	
	Library	3	
	Temple/shrine	9	
5.	*Recreational*	*2*	*0.4*
	Cinema	1	
	Theatre	1	
6.	*Transport*	*14*	*1.4*
	Chautara	10	
	Rest house	4	
7.	*Residential*	*122*	*25.4*
8.	*Vacant*	*26*	*5.4*
	Total	480	100.0

Source: Field Survey, March 1963.

shops suggest that most of the residents grow their own farm produce.

(ii) Services contribute 13.5 per cent of the commercial functions. Tailors, shoe-makers, blacksmiths, washer-men, butchers and barbers provide professional services, and two watch-repairers and one photographer provide specialised services. There is also a press which publishes a magazine, and the two banks manage finance, insurance and real estate. Except for the two segregated localities, Kasaintol (of butchers) there is no evidence of similar services clustering together. It was observed, though, that the tailors were generally attached to some large cloth store.

There were 16 godowns on the ground floor for storing bulk goods. The goods are mainly cotton cloth pieces and raw wool in transit for the trans-Himalayan trade. Commodities for local consumption are normally stored on the upper floors

The concentration of refreshment shops at Bhimsen-Bhairav Tol and Sangumukh give further proof of the thriving business of these two neighbourhoods. Small tea-houses are numerous but there are only three hotels with accommodation.

(iii) There were 17 administrative offices, half of which were local and the other half central government offices (Fig. 35). The concentration of offices at Sangumukh includes the Survey Department, Regional Transport Office, Education Department, Panchayat Department, Police Headquarters, Malaria Eradication Office, and Airlines Office. The other locality for offices is the adjacent Terchhapati with the Municipality, Post Office, Publicity Office and a bank.

The chief industrial establishment of the town is of metalwork at Terchhapati and Ramkrishna Tol. At Sangumukh, six Newar families specialise in preparing parboiled rice for sale. The latest industries are two furniture works and a soda factory at Terchhapati.

(iv) Educational buildings include three public libraries and one school. Nine Hindu temples and one Buddhist shrine strung along the main road are the chief cultural features. Commercialised recreation is made up by one cinema hall in the town centre. A theatre at Terchhapati was destroyed by fire a few years ago.

(v) Transport function is represented by four rest-houses and ten *chautaras*. With the exception of 26 houses (5.4%) left vacant, the town houses put to other functions are used for residence as well.

(vi) A quarter of the town houses were entirely residential. West of Sangumukh, a group of modern bungalows establishes it as a new upper-class residential area.

In brief, there is no separation of work from the place of residence. Functional differentiation occurs instead according to the number of floors of the structure. The plots of land attached to the building all grow maize and market gardening is still unimportant. There is ascendancy of newcomers who have no farmland but derive their wealth from commerce against old residents who own such land.

Conclusion

Plate H: South-west view of Pokhara plain from Pachbaiya Danda. The stream flowing right to left is the outlet of Begnas Tal. November, 1962.

Conclusion

1. Systematic Analysis
2. Geographic Synthesis

1. Systematic analysis

The preceding topical chapters examine the specific content of the region. Before attempting a regional synthesis, the basic findings are recapitulated below (Fig. 36).

i) *Location:* The study area is an intermont valley in the middle stretch of the Seti river of Central Nepal. It falls in the hill country (*pahar*) bounded by the Himalayan range in the north and the Mahabharat Lekh in the south. Altitudinally, the region rises from below 2,000 feet in the south-east to 8,900 feet in the north. The significant levels encountered are low valleys (*bensi*), sub-montane hills (*pahar*), and montane highlands (*lekh*).

ii) *Orogeny and Glaciation:* Lying within the Himalayan mobile welt and in close proximity to glaciated highlands, the region has been exposed to the physical processes of uplift and glaciation. Intermittent uplift is indicated by the series of river terraces and stream profiles. There are three main terrace levels and the stream profiles are irregular. The region may not have experienced direct glaciation but the outwash deposits of the plain suggest a strong influence of peri-glacial regime in the past.

iii) *Structure:* The regional geology is derived from two main nappe systems superimposed over a para-autochthonous zone. The structural axis of the nappes is north-west to south-east and that of the para-autochthonous 'Pokhara zone' south-west to north-east. The erosion of nappe sheets has exposed the 'Pokhara zone' as a tectonic window. In addition, 48 square miles of the main valley is covered by superficial gravel deposits. The average thickness of the strata decreases downstream: 400 feet to 200 feet. The bedding is large-scale and gently dipping south. The diversity in content and the morphology both suggest a rapid deposition under abnormal diluvial conditions.

iv) *Geomorphology:* The physiographic components are an extensive plain enclosed by a maze of hills and the terrain types range from nearly flat plain to slopes of varying declivity. The plain slopes gently southwards and its gradient also decreases in the same direction. On average, the plain falls 100 feet in a mile and comparison of its morphology with other mountain areas indicate it to be a valley train in origin. An anticlinal axis running east-west just above the town demarcates two landscape zones. The hills south of the anticlinal axis form parallel strike-ridges with their gentler slopes facing south. The northern highlands are more rugged with pronounced spur development with steep slopes.

v) *Hydrography:* Structural control is seen in the rectangular pattern of the larger streams and parallel pattern of the tributary streams. The plain has low stream density but higher stream order. The stream profiles, hyperbolic with steep upper reaches, indicate their extreme youth, and the irregularities prove their descent over an uplifted land surface. Discharge of the streams vary greatly between winter trickle and monsoon deluge. The lakes are all located on the edge of the plain and were formed by

the damming-up of tributary streams by a valley train along the main Seti valley. The smaller lakes are diminishing in size by silting. Phewa Tal has been enlarged by damming for irrigation and for generating hydro-electricity. The water table on the plain is very low due to the porous gravel.

vi) *Climate:* The climate is humid sub-tropical. The mean temperature on the plain is always above 56°F, and summer means exceed 73°F. The annual average range is 20.4°F with high diurnal variation during winter. The January minima is 46°F and May maxima 88°F. Snow falls above 6,000 feet during the winter with frost lower down. The annual rainfall averages 141 inches and 82 per cent of precipitation occurs during the summer monsoon. Local convection hailstorms in autumn and strong winds during the dry spring are the limiting factors to certain crops. The seasonal cycle is cool-warm-hot-warm. The agricultural activity conforms to the seasonal rhythm and the vagaries of monsoon affect the farmer's poverty or prosperity.

(vii) *Vegetation:* Plant associations of great variety are zonally distributed from the tropical to temperate zones. Shorea robusta occurs in the tropical belt and Schima wallichi-Castanopsis indica predominate on the sub-tropical hills. Forests of oak and rhododendron cover continuous blocks in the northern highlands. Natural grasslands are extensive along the Seti river terraces and sometimes overlap with riverain Acacia Catechu and Salmalia malabaricum. Plantations for shade, shelter, fodder, and fuel have also much changed the vegetation on the plain. Shifting cultivation, overgrazing, fire, and lopping have resulted in the depletion of forests. In the sub-tropical zone, forests are most vulnerable to destruction and forests have been left only on the steep slopes.

(viii) *Soil:* The method of soil evaluation employed is of a purely comparative character. Immaturity is the chief characteristic of the soils. The brown forest soil is heavy loam in texture and fairly fertile. The red earths with varying degree of laterisation necessitates manuring for farming. The preferred soil for cultivation is recent alluvia of sandy loam with good internal drainage. The soil on the plain derived from the underlying gravel has a thin humus layer and its water-holding capacity is poor. With steep slopes, occasional thunderstorms, and deforestation, soil erosion is an acute problem.

(ix) *Population:* The density of population is 483 persons per square mile for the region and 3,450 persons per square mile within the municipal area. About 18 per cent of the total population live in bazars, and there is a sharp fall in density above the 5,000- foot contour level. There is a preponderance of females and the age structure is one of rapid rate of population growth. There has been a population increase of 10 per cent during the period 1954-1961. The greatest gain has been in the bazars, indicating a trend towards urbanisation. The exodus from the hills is directed both towards the bazars as well as new settlement areas in the tarai.

(x) *Health and Education:* Diseases of the digestive system are the most prevalent. Endemic goitre is common in the highlands. Eradication of malaria in the lower valleys has greatly reduced morbidity and mortality. Dissemination of health services is of recent origin and three hospitals serve a large area. Even in 1954 when there were only a few schools, Kaski district registered the highest literacy rate outside Kathmandu. At present, over a quarter of the population in Pokhara region are considered literate. The fact that 52 per cent of the literate fall within the child age-group indicates the impact of education as a new phenomenon. The conversion of old hill fortresses (*kot*) into schools is symbolic of the dominance of this modern innovation.

(xi) *Culture:* The highlands are inhabited by Mongoloid tribes, using Bodic dialects and subscribing to shamanistic Lamaism. The sub-montane area is peopled mainly by caste-stratified Caucasoid caste people who use the Indo-Aryan Nepali language and profess Hinduism. The contact zone of the two culture areas lies at about the 4,500-feet level. The tribal area is pronounced for localisation of culture and in its interaction with Hindu culture, the political advantage of the latter wields a great influence. The returning Gurkha soldiers have also been a potent medium for the spread of Hinduistic values in their tribal area. The process of transition from tribe to caste has led to the gradual erosion of tribal culture to which the physical isolation of its montane habitat alone provides the last prop. The formation of a multi-ethnic Nepalese society is seen as a process of mixing of diverse peoples within the geographic confinement provided by the Himalayan range and Mahabharat Lekh. Acculturation is most intense in the low hills where the downward

tribal and upward Hindu population movements coalesce. Bazars are focal points of assimilation where an urban milieu is in the making.

(xii) *Settlement:* The density of villages is 2 per square mile and that of houses 91 per square mile. On average there are 10 villages and 500 houses in each *thum*. Over 84 per cent settlements are sited on the hills and the plain, covering 27 percent of the total area, supports only 15 percent settlements. The settlement net is highest between 2,000-5,000 feet. Settlements are distributed by site as follows: sunny aspect hill, 55%; shady aspect hill, 21%; ridge-top, 8%; and valley bottom, 15%. Nucleation increases with altitude and the distance between settlements also increases in the highlands.

Bazars with retail shops are all confined to the plain along the main roads. Their size decreases with increase of distance from metropolitan Pokhara. The town of Pokhara is primarily a commercial centre aligned 2¾ miles along three converging roads. Its neighbourhoods are centred around roadside shrines and *chautaras*. It has since grown in importance as an administrative centre. The typical rural house is rectangular in plan and two-storeyed. The lowland houses are invariably thatched and plastered with lateritic earth. In the highlands, both thatch and slate are used and white-washing is preferred to red plaster. The bazar house is usually a three-storeyed brickbuilding with slate or tin roof. The emphasis is on tin roof because of the recurrent fires in the bazars. The *kots* probably represent an old settlement form and occupy defensive sites.

(xiii) *Circulation:* The town of Pokhara is a trans-Himalayan trade depot as well as an important staging-point for east-west communication within Nepal. The main roads are served by local tracks. The total mileage of roads and tracks is 320, with the hills claiming 52 per cent. Most roads are however seasonal and there is a sharp contrast between the deserted roads in summer and the winter influx when all roads lead to the bazars and fairs. The growth of bazars has divorced the fairs of their earlier commercial function and led to their decline. Man is still the essential beast of burden. The introduction of modern transport has been in an inverted sequence: first airplane, then jeep, and finally bullock cart. Air transport has arrested road development by diverting potential surface traffic.

(xiv) *Agriculture and Livestock:* The primitive agrarian structure is the heritage of an archaic land system. The burden of taxation is heavier on the paddy land and this has led to the extension of dry cropland at the expense of forests. Farming is characterised by high labour input, little capital investment and low productivity. Food crops account for 90 per cent of the total agricultural produce. In spite of heavier taxation, paddy enjoys a premium over other crops both in acreage and value. Maize is the most important dry crop. Orange for the market is grown in two plain villages. Truck-gardening in the bazars has been introduced only recently. Livestock rearing is an integral part of crop farming as animals provide manure and draft power. Pasturage remains an acute problem in the lowlands. In the highlands, sheep are raised which yield surplus dairy products and wool.

(xv) *Industry:* The plentiful supply of labour and small inadequate holdings make subsidiary employment essential. Porter-work is widely accepted and mercenary service remains the most valued profession Native industries differ between the highlands and the lowlands according to the availability of raw materials. Apart from the weaving industry of the Gurung, the highlanders also engage in basket-making and extraction of forest products. Artisan castes specialise in certain primary industries. Brick-making is confined to the plain bazars. Newly introduced industries include furniture-making, rice milling and a match factory. Tourism is the latest modern industry.

(xvi) *Land Use:* The degree of slope puts an obvious limit to the amount of productive land and, in spite of the adverse slope, most suitable lands are already being utilised. The maximum degree of slope on which fields occur do not exceed 32 degrees. Terracing has extended cropland on steep slopes. Terraces are of two types: flat-surface for irrigation crops and sloping surface for dry crops. The seven major categories of land use according to areal dominance are: woodland (43%), cropland (41%), pasture (5.8%), unproductive land (3.7%), lakes and marshes (2.1%), settlement (1%), and orchard (1%). One-third of the woodland is overgrazed scrub forest. About 57 per cent of the cropland is terraced, and pasture grasslands are all confined along the Seti river terraces. Lakes cover a total of 4 square miles, the largest being Phewa Tal with 1.85 square miles. Unproductive land includes stretches of sand

and boulders, and associated non-agricultural land all occupy the meadows on the plain. The land use in Pokhara bazar by houses reveals 60 per cent as commercial, 25 per cent residential, 5 per cent vacant, 3.5 per cent administrative, 3.5 per cent industry, one per cent each cultural/educational, and transport. The bazar houses have vertical stratification in function with shops on the ground floor and residence on the upper floors

(xvii) *Land use change:* Change in land use is most intense in the zone between arable farming and grazing, and between farms and forests. The extension in cropland creates a chain reaction of contraction of pastureland and the overgrazing of woodlands. The land utilisation evolution is clearing of cropland for dry crops and the subsequent conversion of unirrigated land into irrigated land. There has been an increase of 8.3 per cent in irrigated land over the last 30 years. Recent developments in large-scale irrigation works on the plain has upgraded the value of the plain for cultivation and settlement. The new trends in land occupancy are the intensification in operation and extension in cropland by reclamation. The growth of bazars with a market economy has further enhanced the scope for the rapid development of the plain.

2. Geographic Synthesis

Intermont plains, like monadnocks, are conspicuous by their location. The vale of Pokhara in Central Nepal is one such topographic variant in the Himalayan complex. The analysis of its physical and cultural phenomena yield certain site-complexes in their areal interrelationship (Fig. 36). The subdued topography and tropical climate of the sub-montane *pahar* zone differ markedly from the rugged relief of the temperate montane *lekh*. They reveal corresponding ditferences in human ecology and economy. In the *lekh* zone, nature is more dominant and man tries to adjust within the limit set by the physical environment. It may even be asked if the orientation of the Mongoloid tribes to the mountain fastness is not due to their instinctive choice for a familiar habitat. On the other hand, man-land relationship in the *pahar* zone is one of manÆs conscious adaptation of nature for his own needs. The impact of man in the spoliation of an ecological setting may be seen in the extensive deforestation of the *pahar* zone. In socio-economic parlance, the intrusive Hindus represent a stage of feudally organised agrarian society while the indigenous tribes represent a stage of clan-peasantry with some pastoralism.

With this environmental background, one might proceed to examine the processes of functional relationship between the two ecological zones. If the rearing of large flocks of animals was profitable in the montane zone, the sub-montane zone capitalised on the best agricultural land, as the local saying goes:

Arba ko ghari (Forest of Arba)
Baidam ko bari (Gardens of Baidam)
Majthan ko tari (Terraces of Majhthan)

The difference in human operation is evident in the exchange of agricultural and pastoral/forest products as an important aspect of trade. In the past, when the raiding of paddy harvest by the highlanders was not unknown, periodic fairs marked peaceful exchange of goods. But with political stability and administrative control, the mere circulation of goods was followed by demographic mobility from one zone to another.

The evolution of human occupance in the Pokhara region was primarily one of descent to the lower elevations. The movement to the upper limits of cultivation and settlement, signifying expansion of the 'oikoumene', is much less evident than the downward drift. In fact, the highland villages are primary nucleation of greater antiquity compared to the lowland villages which represent a secondary dispersal with agricultural extension. The tertiary development in settlement, the growth of bazars, was the result of increase in circulation. In the past, humid and malarial conditions conspired to make the lowest elevations (*bensi*) less favourable for permanent occupation. The movement of population to the *bensi* level was forced by the deterioration in man/land ratio with the increase of population in the hills and the trend has been accelerated recently by malaria eradication. The plain, once a negative zone of occupance, is now the focus of settlement. The shift from small-scale irrigation to large-scale irrigation farming aided by government-directed projects has been a significant factor in the development of the plain. Technological innovations and the central function of the town has further enhanced the importance of the plain for economic growth.

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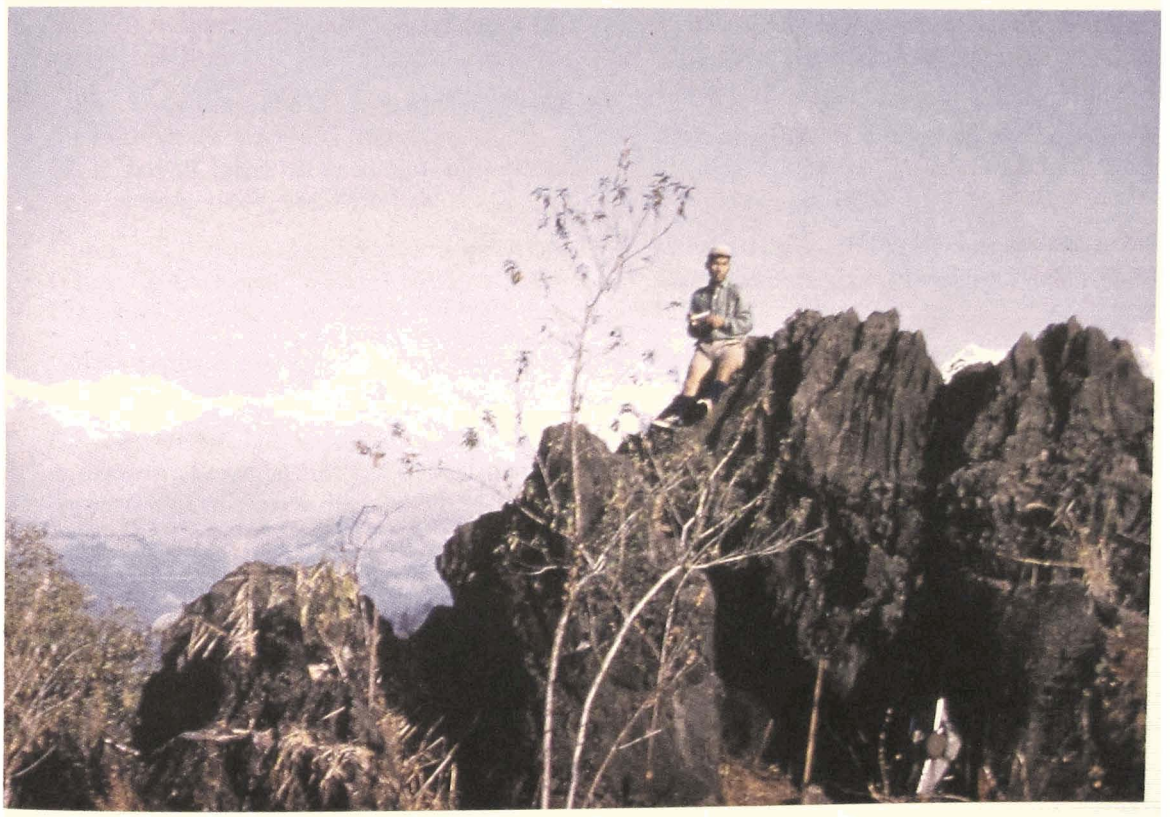

Plate I. Author on conglomerate outcrop, Pachbhaiya. Annapurna-I and Machhapuchhre on the left and Annapurna-II summit peeping over rock on the right. March, 1963.

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Appendix A
Place-name Derivatives in Nepali

Descriptive terms in Nepalese place-names are derived from topographic salients, water bodies, time and space dimensions, direction and distance, relative and specific locations, tribes and castes, and cultural features. Some incorporate Tibeto-Burman terms such as 'di' (stream) from Magar, and 'tiñ' (house) from Gurung. In the following list mainly from Pokhara area, generic terms are indicated by 'p' for prefix, 's' for suffix and 'x' when applicable either way.

Nepali		Meaning
Ayera	p	hunting- ground
Awaliyā		malarial
Ban	s	woodland
Bāñge	p	angular, bent
Bāri	s	enclosed field
Bāṭo	s	road
Bāṭule	p	circular
Bazār	s	market
Beñsi	x	valley bottom
Bhanjyāng	s	pass, saddle
Bhir	p	precipice
Bhitri		inner
Bhoṭ		trans-Himalaya, Tibetan region
Birtā		grant land
Boṭ	s	tree
Chaur	s	level ground
Chautārā		rest-platform
Chiso	p	cold
Chok	s	courtyard
Chorbāṭo		short-cut
Ḍahar		entrenched lane
Ḍañrā	x	hill, range
Deorāli	p	pass, saddle
Ḍhāb	s	swamp
Dhār		crest
Dhārā	p	spring
Ḍhik	s	hillock
Ḍhuñge	x	rocky
Ḍil	s	edge
Dobhān		stream confluence
Ekle	p	isolated
Gāḍ	s	recess, re-entrant
Gāoñ	s	village
Gaṇḍaki	s	large river
Gauchar		grazing ground
Gauñḍā	s	narrow defile
Ghar	s	house
Ghāri	x	thicket
Ghaṭṭe	p	water-mill
Giri	s	mountain
Goreṭo	p	trail
Goṭh	s	corral, cowshed
Haṭiā		small market
Himāl	s	snowy mountain
Jong	s	hill-top
Kachhāṛ		sub-montane
Kāli	p	black, dark
Kamero		chalk, lime
Karāñs		lane
Khān or Khāni	x	quarry or mine
Kharga		alpine pasture
Khel	s	meadow
Khet	s	cropland (irrigated)

Kholā	s	stream
Khor	s	enclosure
Khoriyā		forest clearing for shifting cultivation
Kosi	s	large river
Kot	x	fortress
Kulo		irrigation channel
Kunā	s	corner, nook
Kuriyo		household
Lāmo	p	long, extended
Lekh		montane level with winter snow
Madhes		plain
Mājh	p	central
Māṭo	x	soil
Mukh	s	facing
Muṛhā	s	stump
Muni	s	below
Nayā, nuwā	p	new
Oḍhār	x	cave
Pahāṛ		hill
Pākho		cropland (unirrigated)
Pallo	x	thither, far side
Pāni	s	spring
Parti		fallow land
Pātāl		dense forest
Pāṭan	s	flat land
Pāṭi	s	rest-platform
Phedi	x	bottom
Pokhari	x	pond
Pouwā	s	rest-house
Pur	s	large settlement
Purāno	p	old
Rāto, rāte	p	red
Sāñgu	x	bridge
Serā	x	grant land
Seti, Seto	p	white
Sirān	p	at the head
Sim	x	marsh
Syāno	p	small
Swāñrā	s	terraced slope (unirrigated)
Ṭākura	p	summit
Tāl	s	lake
Tallo	x	lower
Ṭār	s	dry flats, terrace
Ṭāri	s	terrace slope (rain-irrigated)
Terchhā	p	oblique, slanting
Thān	x	shrine
Ṭhāñṭi	s	rest-place with roofed structure
Thar	s	caste neighbourhood
Ṭhulo	p	large
Thum		revenue division
Thumko	s	hillock
Ṭol	s	urban neighbourhood
Tuñdikhel		parade ground
Upallo	x	upper
Wallo	x	hither
Wāri	x	near side

Appendix B
Sample Gurung Place-Names

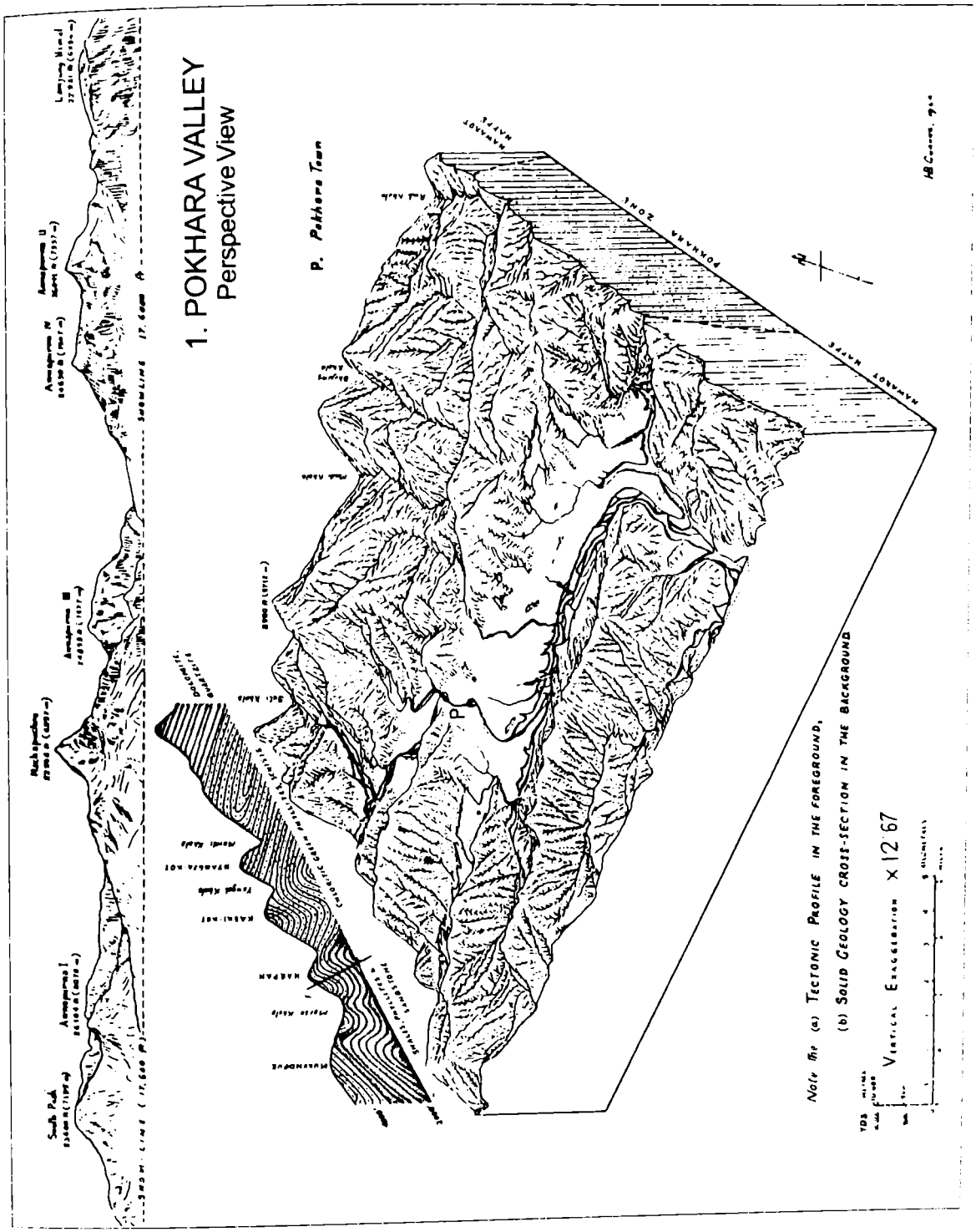
	Nepali	Gurung	District
1.	Aṇṭighar	Āṭhghari	Kaski
2.	Armalā	Nwāl	Kaski
3.	Bāglunpāni	Syāur	Lamjung
4.	Bhāchok	Pājo	Kaski
5.	Bhirpustun	Paiñthi	Lamjung
6.	Bhoñje	pHoñje	lamjung
7.	Bhujung	pHājoñ	Lamjung
8.	Bijayapur	Bijku	Kaski
9.	Charāgāoñ	Charā	Lamjung
10.	Chaur	Chor	Lamjung
11.	Chhachok	Chheju	Kaski
12.	Ḍaḍuwā	tHādwā	Lamjung
13.	Ḍahre	Pāje	Lamjung
14.	Gahate	Gāde	Lamjung
15.	Ghalegāoñ	Poñju	Lamjung
16.	Ghāmrang	Komroñ	Lamjung
17.	Ghāndruk	Koñḍa	Parbet
18.	Ghanpokharā	Poñju	Lamjung
19.	Gilung	Klihnu	Lamjung
20.	Jahreboṭ	Konās	Lamjung
21.	Kapurgāoñ	Kone	Kaski
22.	Khāsur	Khāsu	Lamjung
23.	Khilāng	Khiluñ	Kaski
24.	Kupreḍhunghā	Nauru	Lamjung
25.	Kurāgāoñ	Kohne	Kaski
26.	Labsiboṭ	Honje	Lamjung
27.	Lamdāñdā	Lamdān	Kaski
28.	Ludi	Ṭhore	Lamjung
29.	Māling	Mhili	Lamjung
30.	Manjāng	Mhañjā	Lamjung
31.	Mapyāng	Mabyoñ	Lamjung
32.	Maujā	Mhujā	Kaski
33.	Nāgidhār	Nedā	Lamjung
34.	Nālmā	Ngādā	Lamjung
35.	Nauthar	Kalje	Lamjung
36.	Nawalḍāñḍā	Neul	Kaski
37.	Nayāgāoñ	Nhayoñ	Kaski
38.	Niuregāoñ	Kaisduñ	Lamjung
39.	Pakhriboṭ	Parwe	Kaski
40.	Pākhurikhor	Pārkhu	Kaski
41.	Pārje	Pāje	Kaski
42.	Pasgāoñ	Paigoñ	Lamjung
43.	Rāginās	Rayunās	lamjung
44.	Rāwalḍāñḍā	Rewaikoñ	Lamjung
45.	Sābet	Sābe	Parbat
46.	Sanjabā	Soñbu	Lamjung
47.	Sirbrān	Sere	Lamjung
48.	Siklis	Chili	Kaski
49.	Siñdi	Sidi	Lamjung
50.	Ṭaksār	Tasā	Lamjung
51.	Tañdiñ	Toñde	Lamjung
52.	Tāñklichok	Toñjo	Lamjung
53.	Tārāchok	Ṭāhjo	Lamjung
54.	Tarāñche	Ngadi	Lamjung
55.	Thāk	Thoñsu	Kaski
56.	Ustā	Siñgu	Lamjung
57.	Wārchok	Whājo	Kaski
58.	Yañjākoṭ	Yojgaiñ	Lamjung

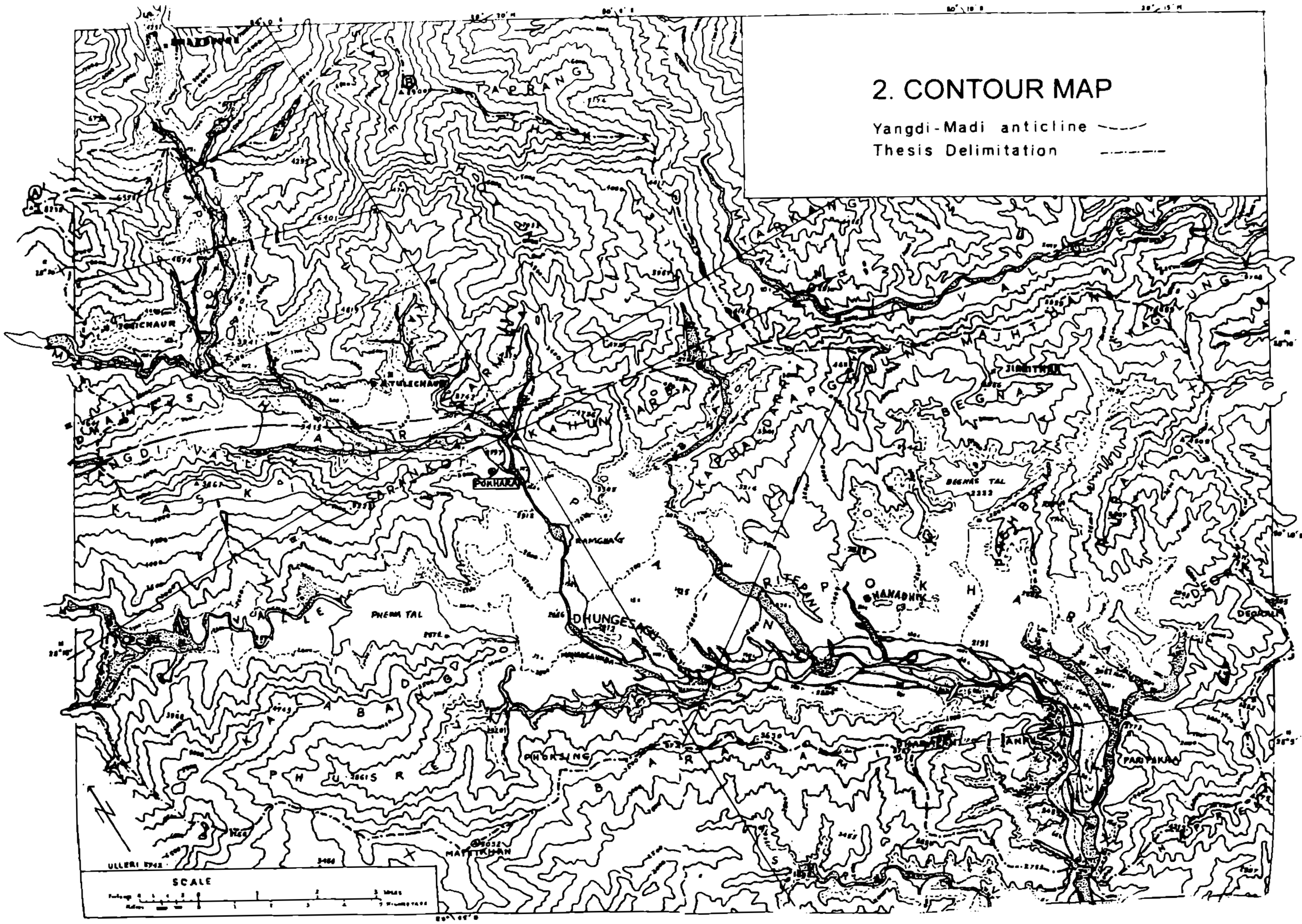
Source: Field survey, 1962-63

Maps and Diagrams

(By the author)

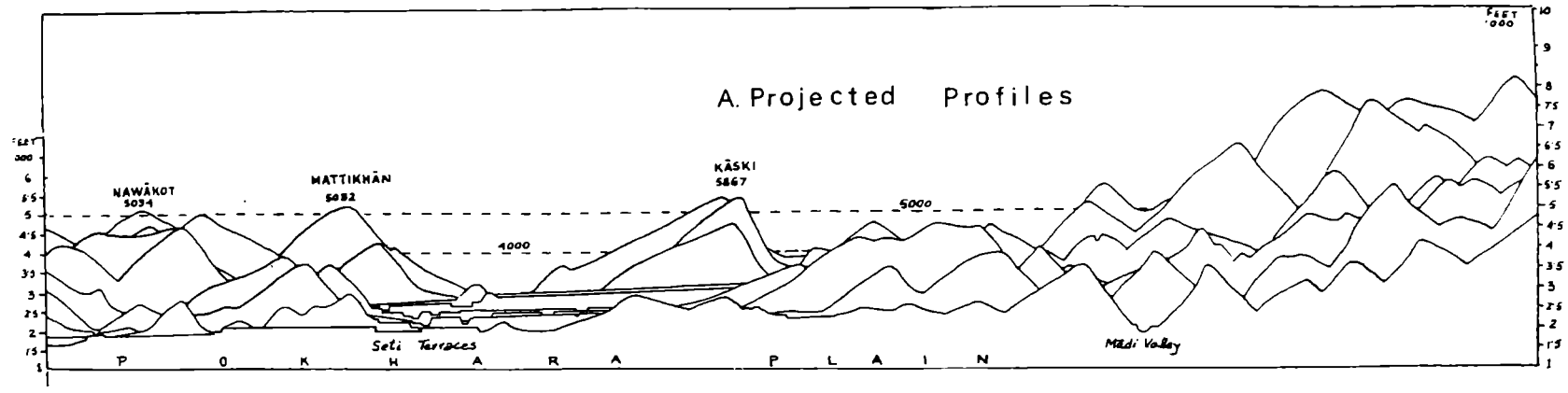
Plate J: Aerial photograph of Pokhara Valley (western section). Note Phewa Tal on the left, three sections of Seti gorge from Dip to Dhungesangu, and forests on north-facing hill slopes. 1956-58. Scale 1:40,000.

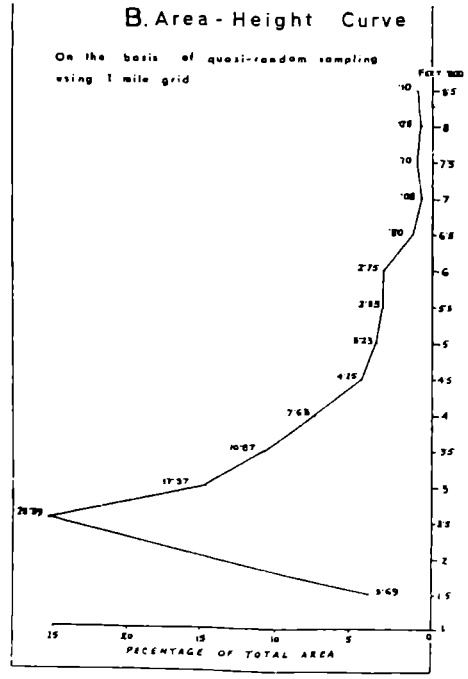

1. POKHARA VALLEY
Perspective View
P. Pokhara Town
Note the (a) Tectonic Profile in the foreground,
(b) Solid Geology cross-section in the background
Vertical Exaggeration ×12·67

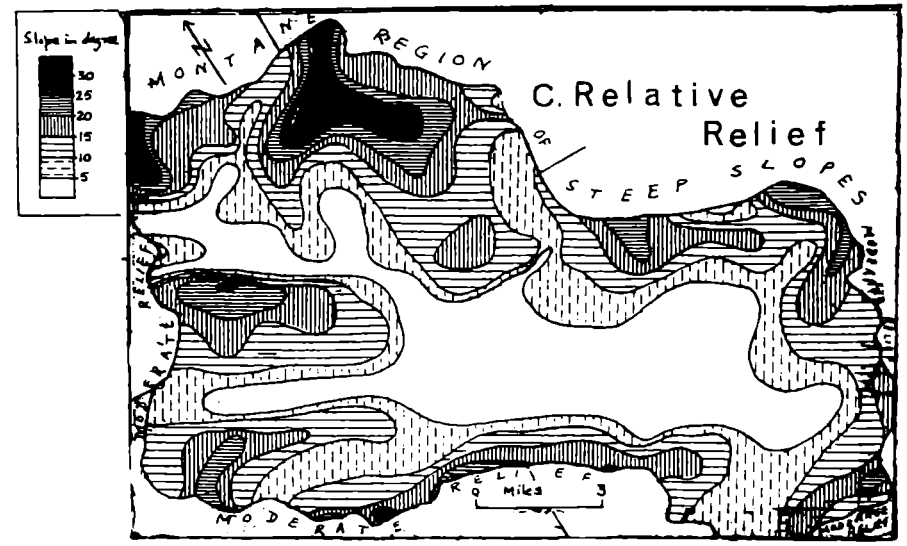


Source : One Inch maps, Sheets 62P/15, 62 P/16, 71 D/3 & 71 D/4, 1958-59.

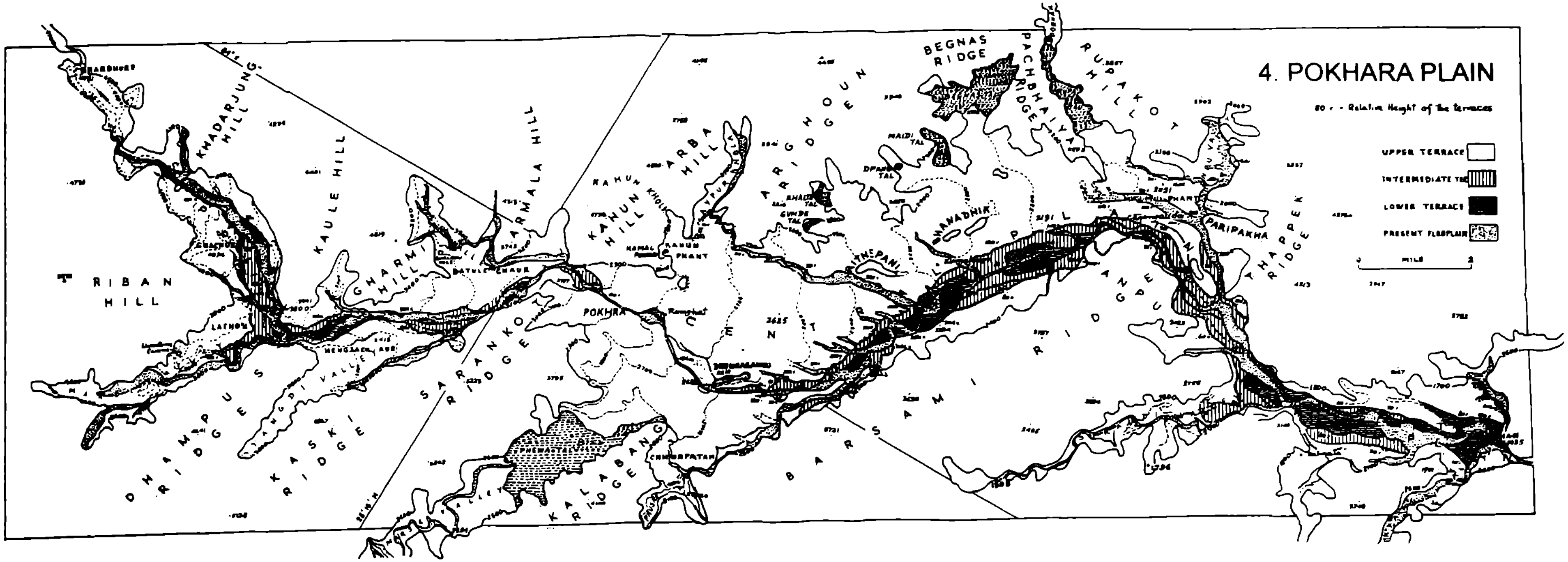
3. RELIEF EXPRESSIONS



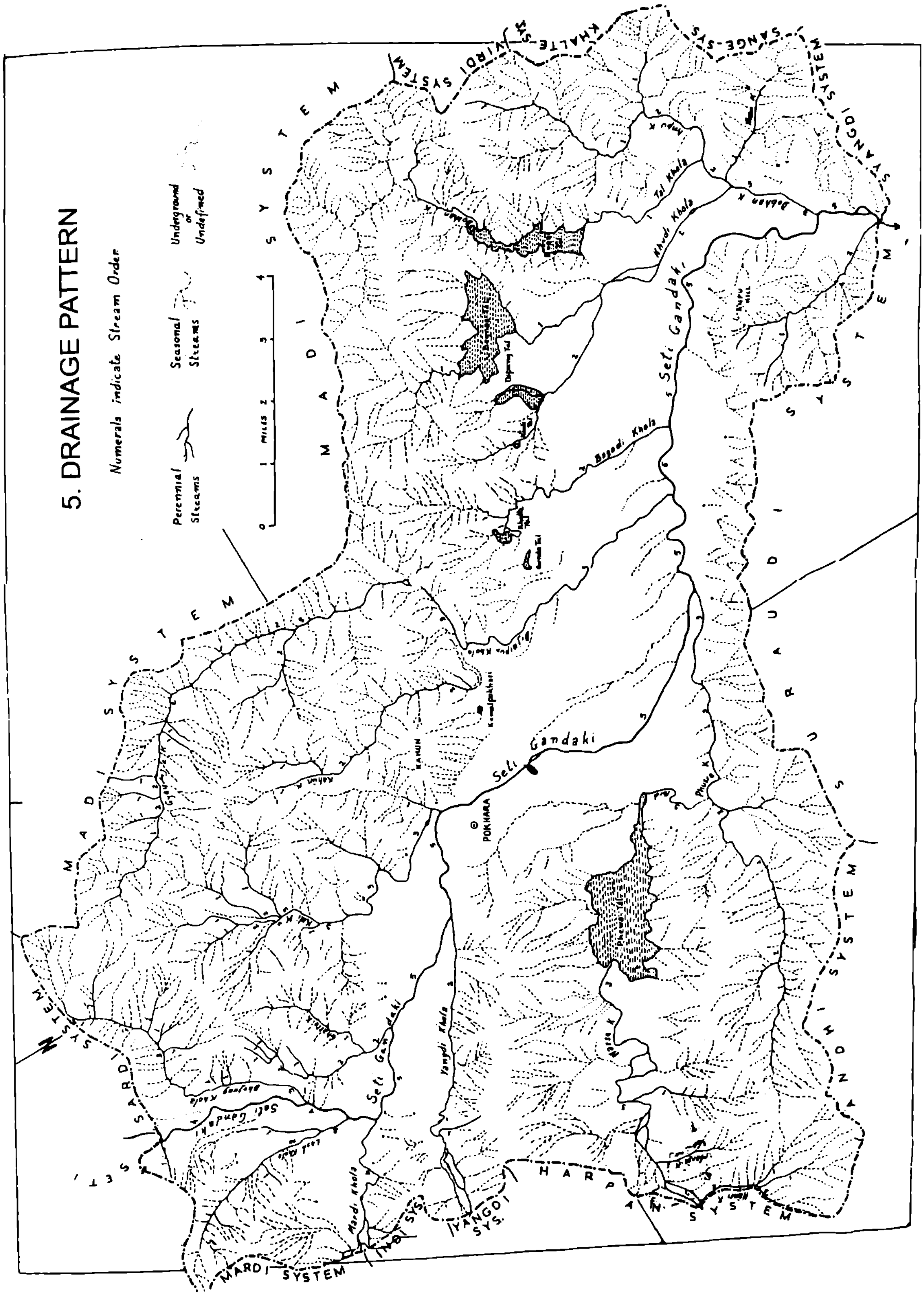




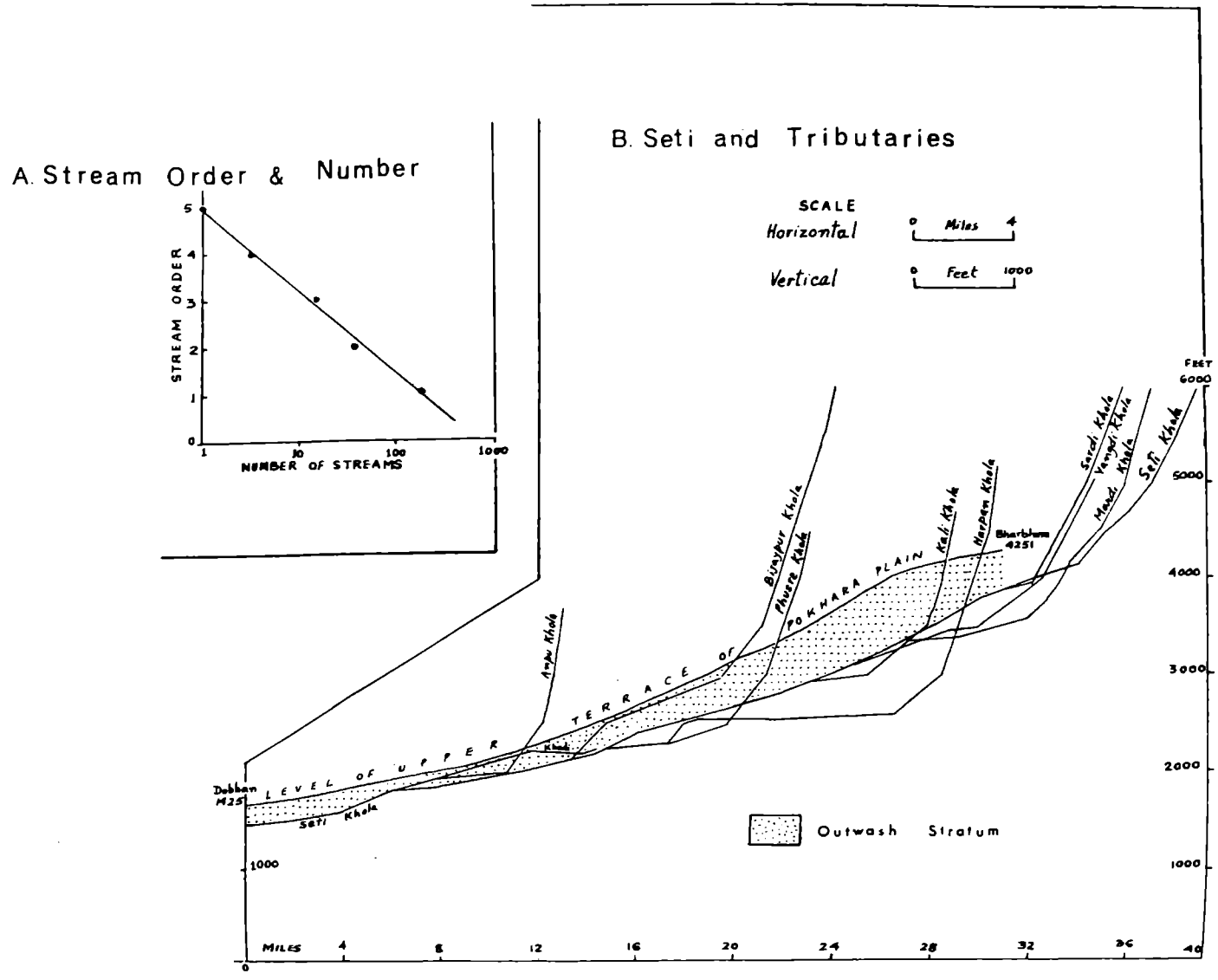
Source : Contour map.



4. POKHARA PLAIN
UPPER TERRACE
INTERMEDIATE TE
LOWER TERRACE
PRESENT FLOODPLAIN
MILE
BEGNAS RIDGE
PACHBHAIYA RIDGE
RUPAKOT HILL
PARIPAKHA
THAPPEK RIDGE
ANPU RIDGE
BARSAMI RIDGE
ARGHOUN RIDGE
ARBA HILL
KAHUN HILL
KAHUN KHOLA
KAHUN PHANT
MAIDI TAL
DIPANG TAL
KHAST TAL
GUNDE TAL
RHEPANI
POKHRA
CENT
KALABANG RIDGE
SARANKOT RIDGE
ARMALA HILL
GHARMI HILL
KAULE HILL
KHADARJUNG HILL
RIBAN HILL
DHAMPUS RIDGE
KASKI RIDGE
BATULE CHAUR
LATHOK
CHHORPATAN


5. DRAINAGE PATTERN
Numerals indicate Stream Order
Perennial Streams
Seasonal Streams
Underground or Undefined
MILES
MADI SYSTEM
SETI SYSTEM
MARDI SYSTEM
YANGDI SYS.
HARPAN SYSTEM
ANDHI SYSTEM
SYANGDI SYSTEM
SARDI SYSTEM
Seti Gandaki
POKHARA

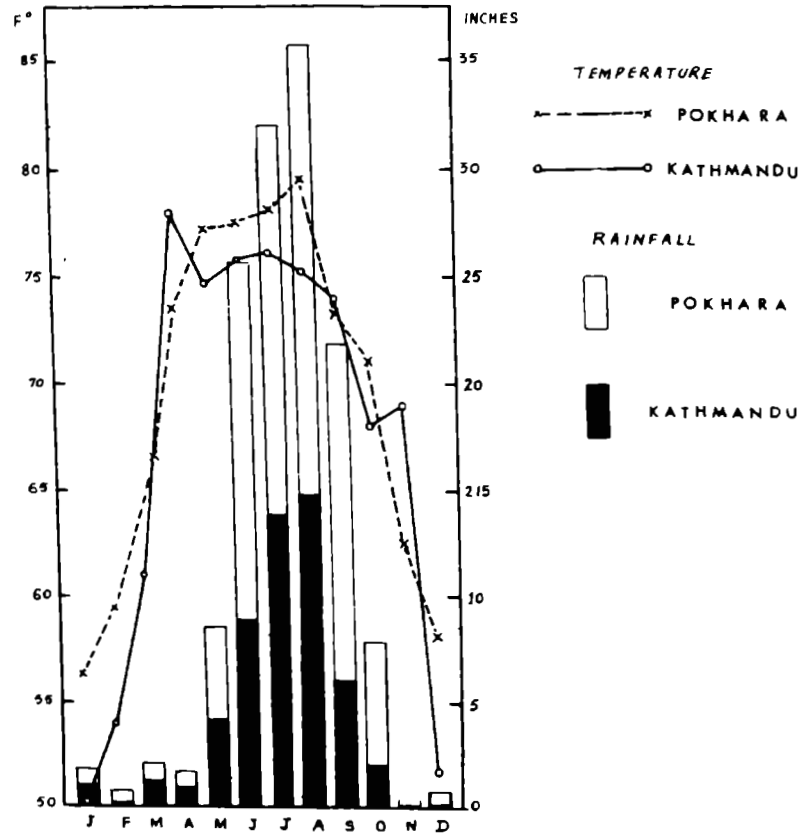
6. STREAM ORDER AND PROFILE



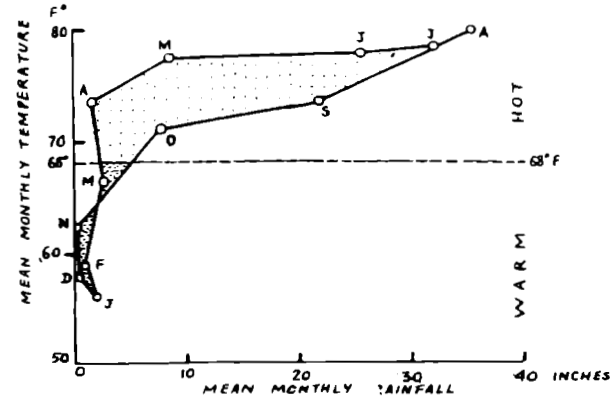
Source : Topographic maps.

7. CLIMATIC ASPECTS

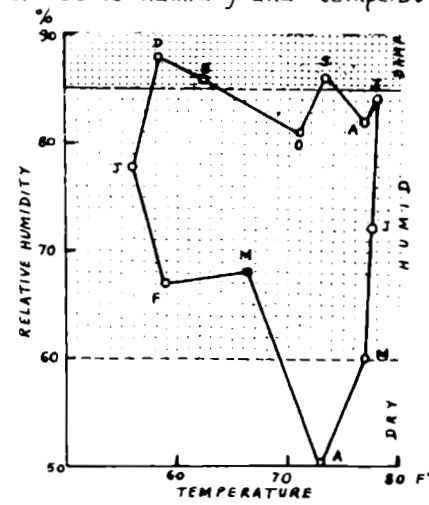
A. Comparison with Kathmandu



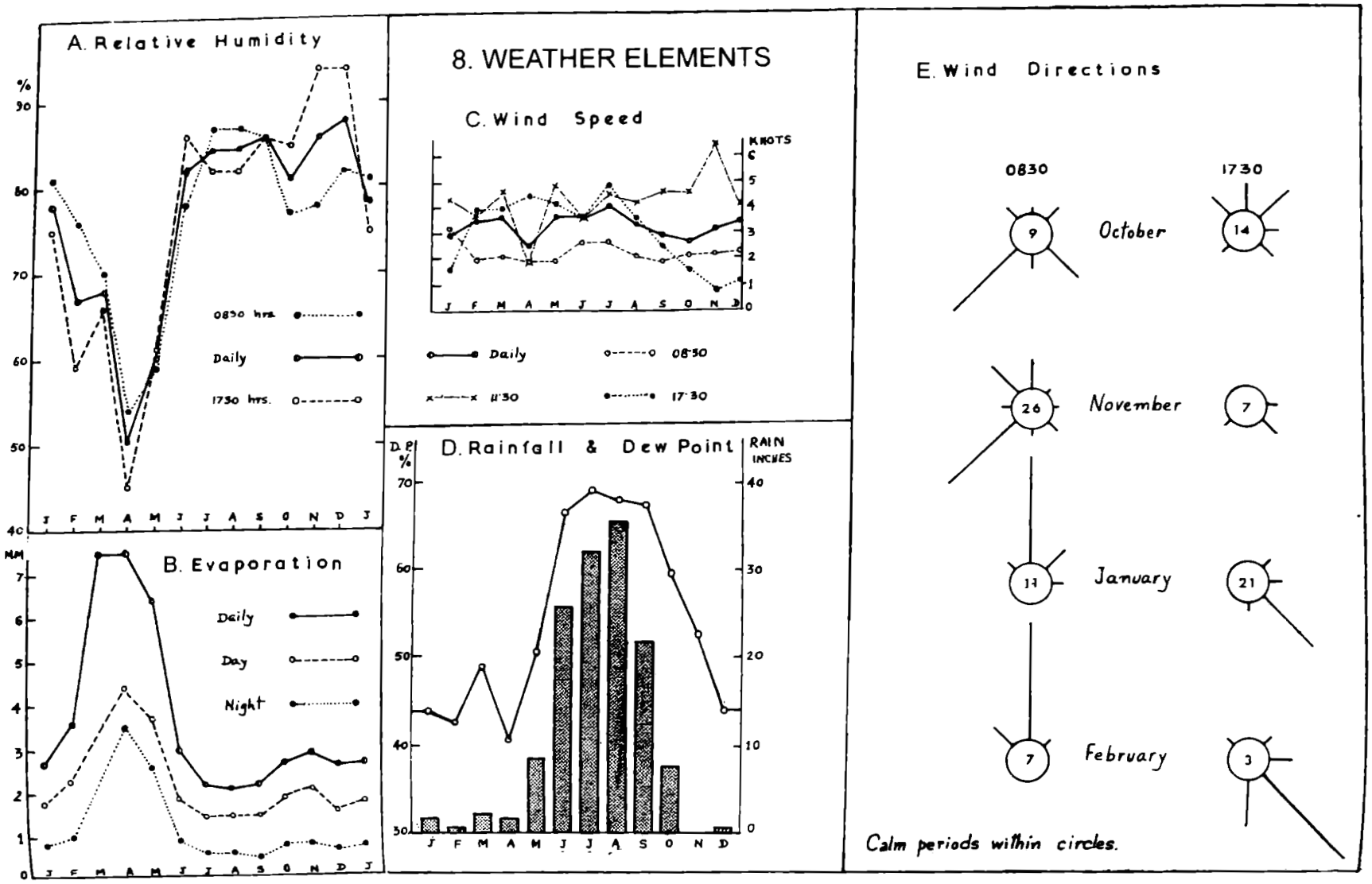
B. Temperature/ Precipitation

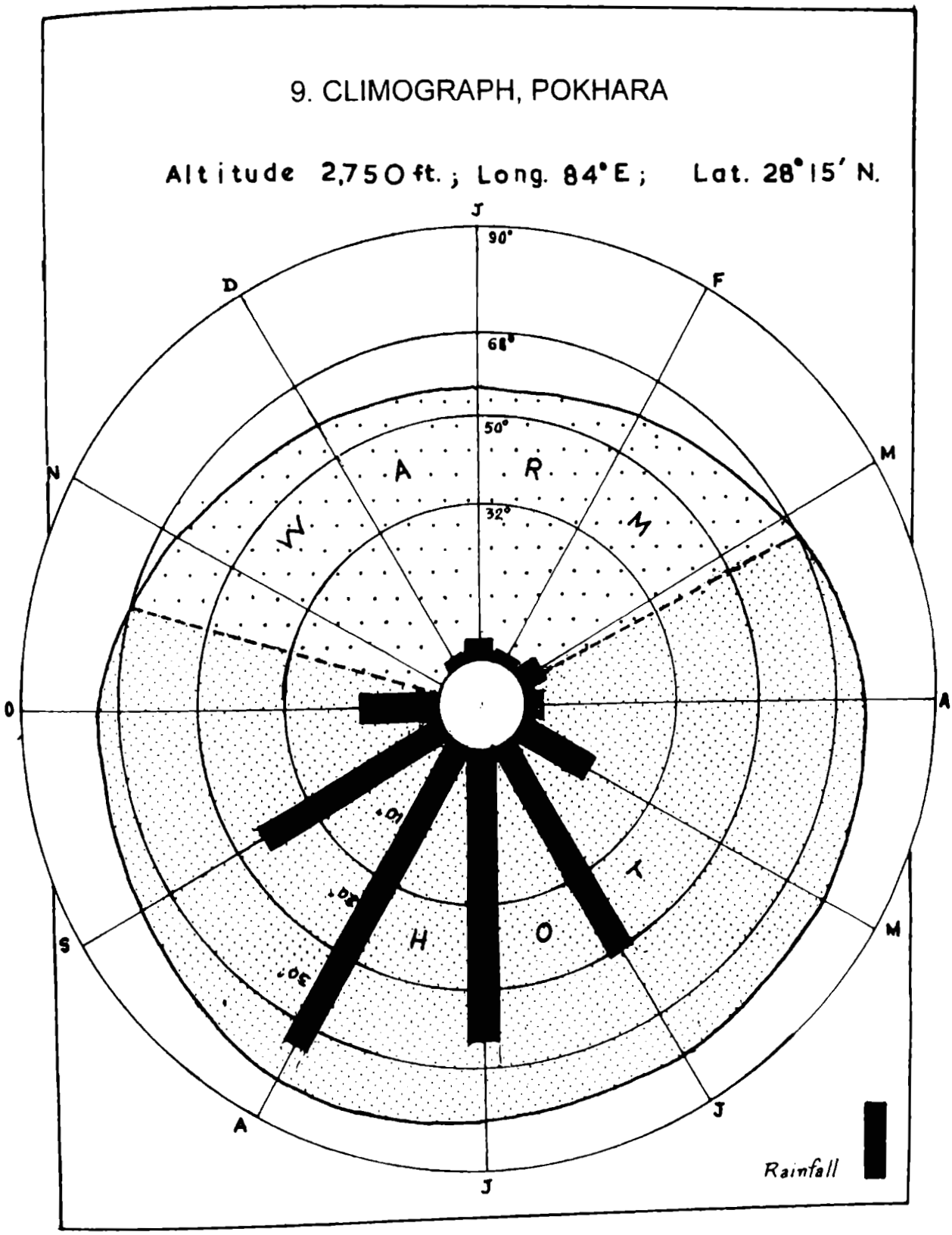


C. Climograph representing the correlation of monthly averages of relative humidity and temperature.

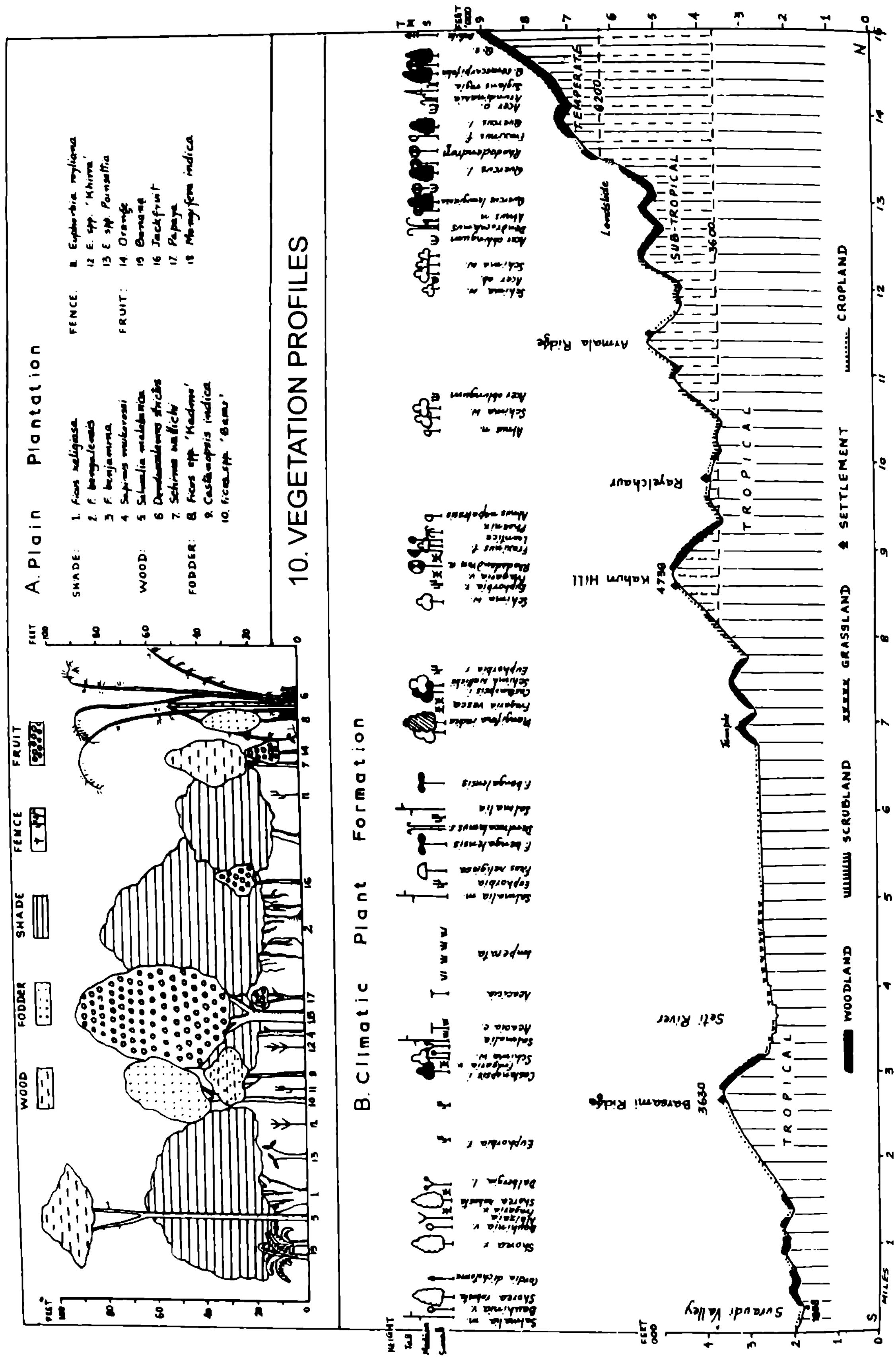


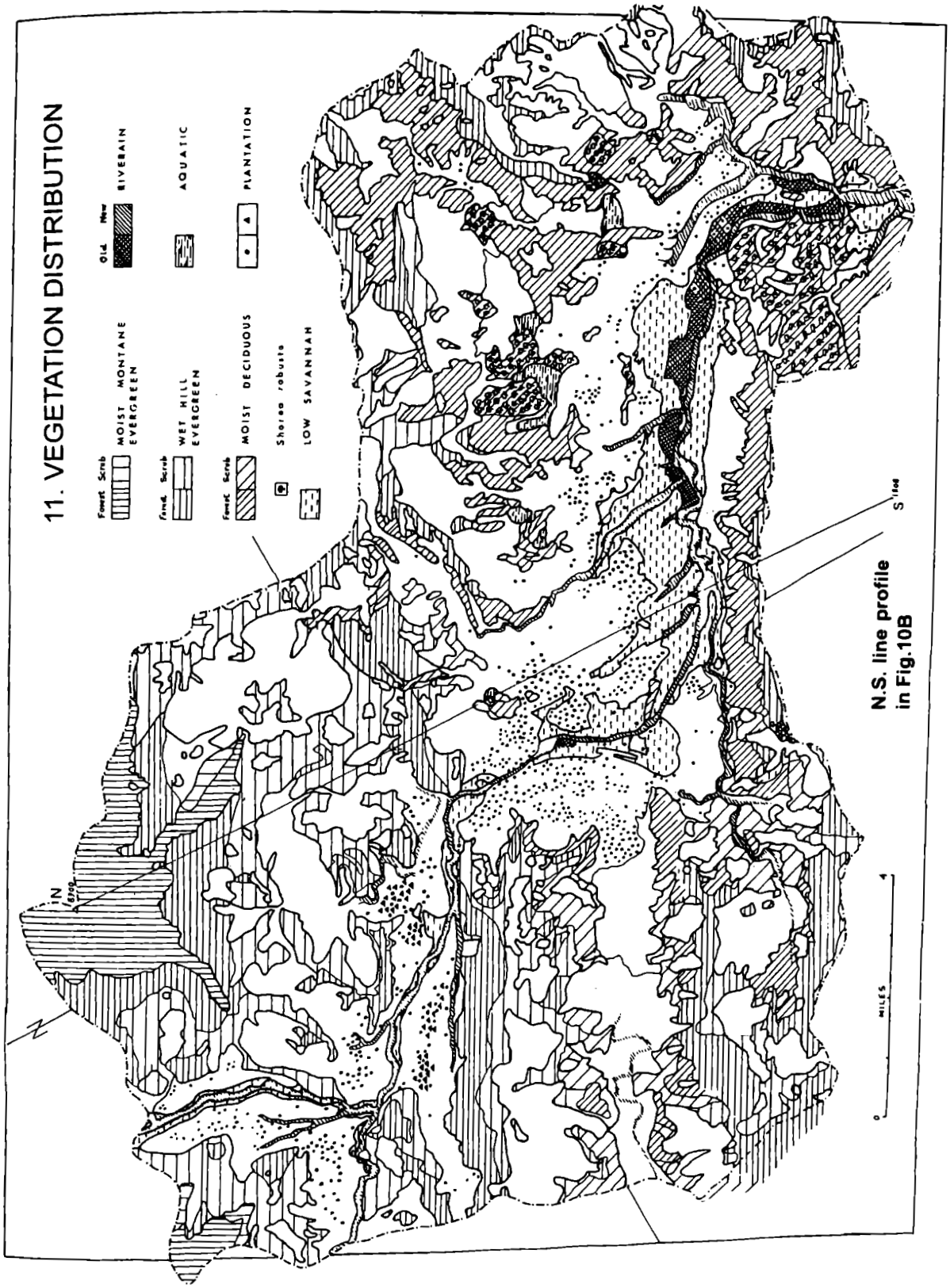
Source : Tables 2 & 3.

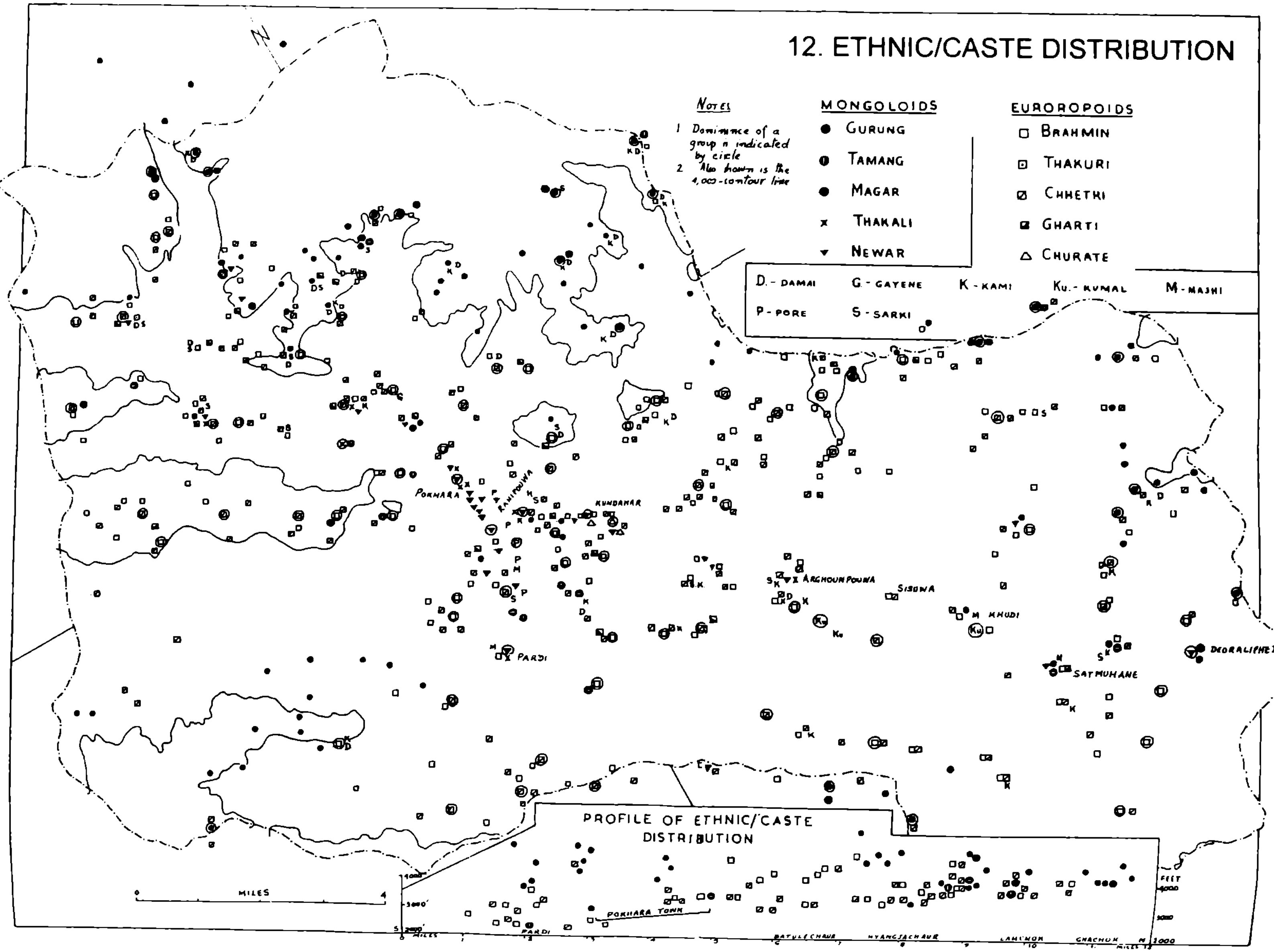

8. WEATHER ELEMENTS
A. Relative Humidity
%
0830 hrs.
Daily
1730 hrs.
J F M A M J J A S O N D J
B. Evaporation
MM
Daily
Day
Night
C. Wind Speed
KNOTS
Daily
08·30
11·30
17·30
D. Rainfall & Dew Point
D.P. %
RAIN INCHES
E. Wind Directions
0830
1730
October
9
14
November
26
7
January
11
21
February
7
3
Calm periods within circles.

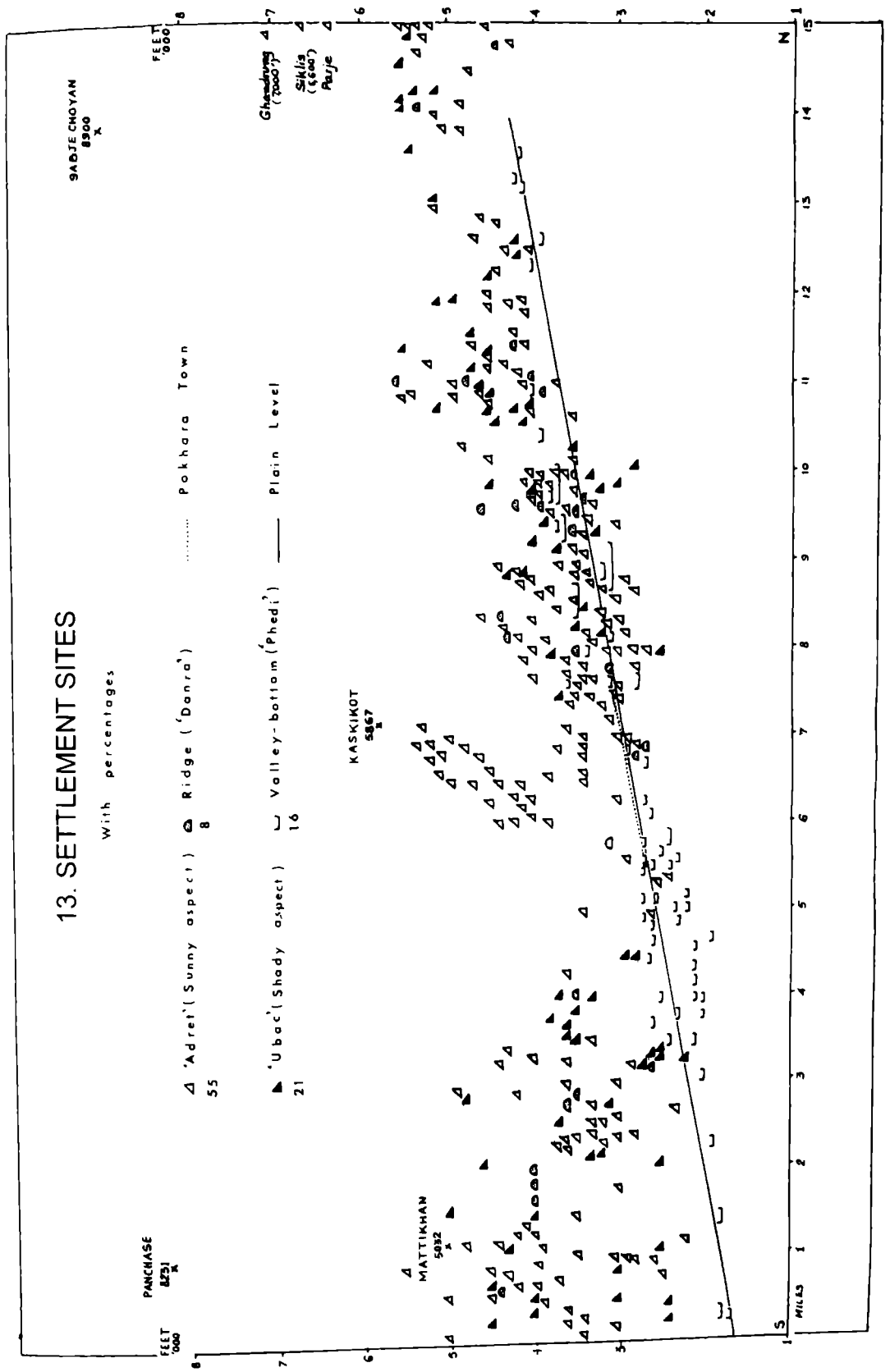


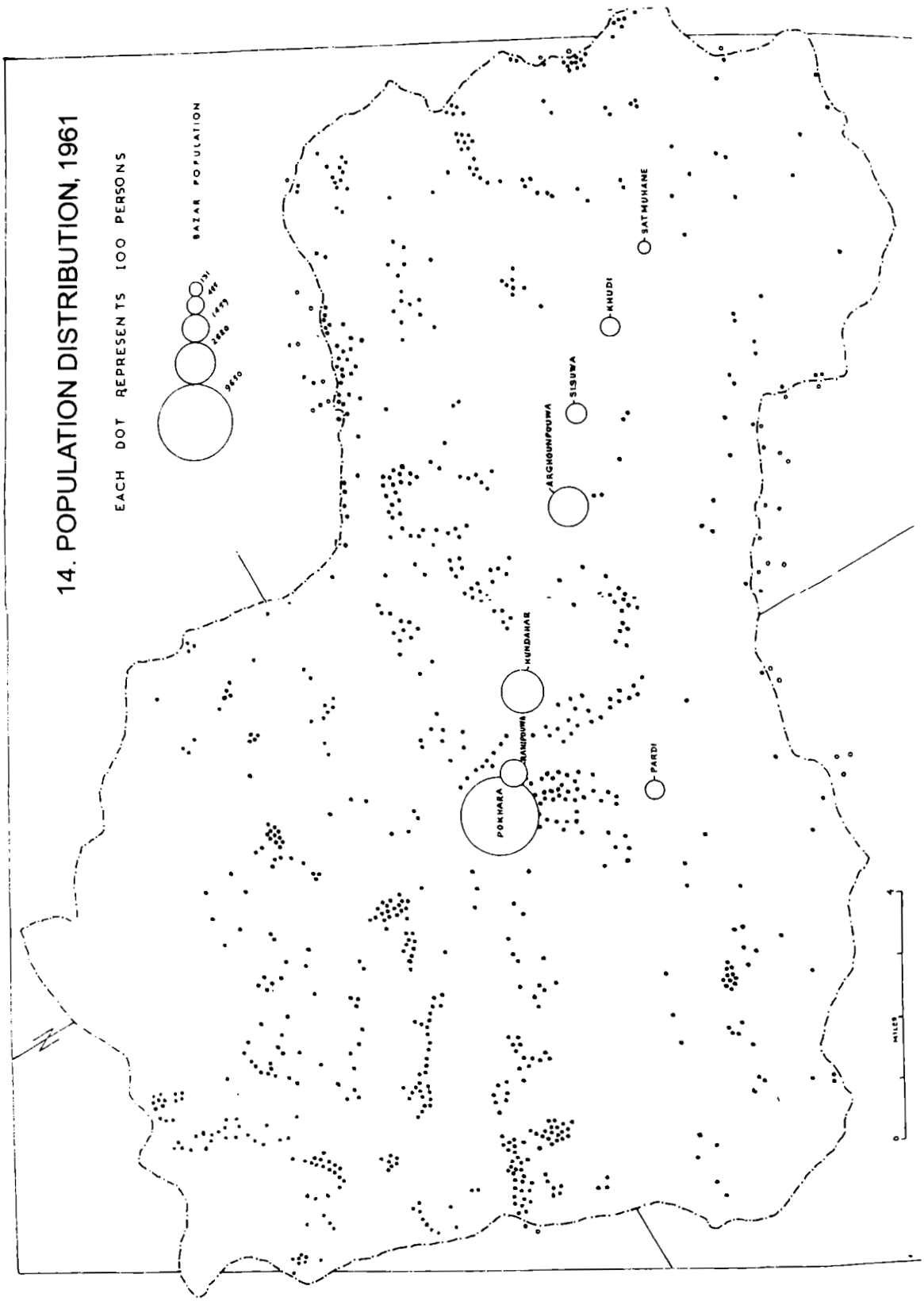
Source : Tables 2 & 3.

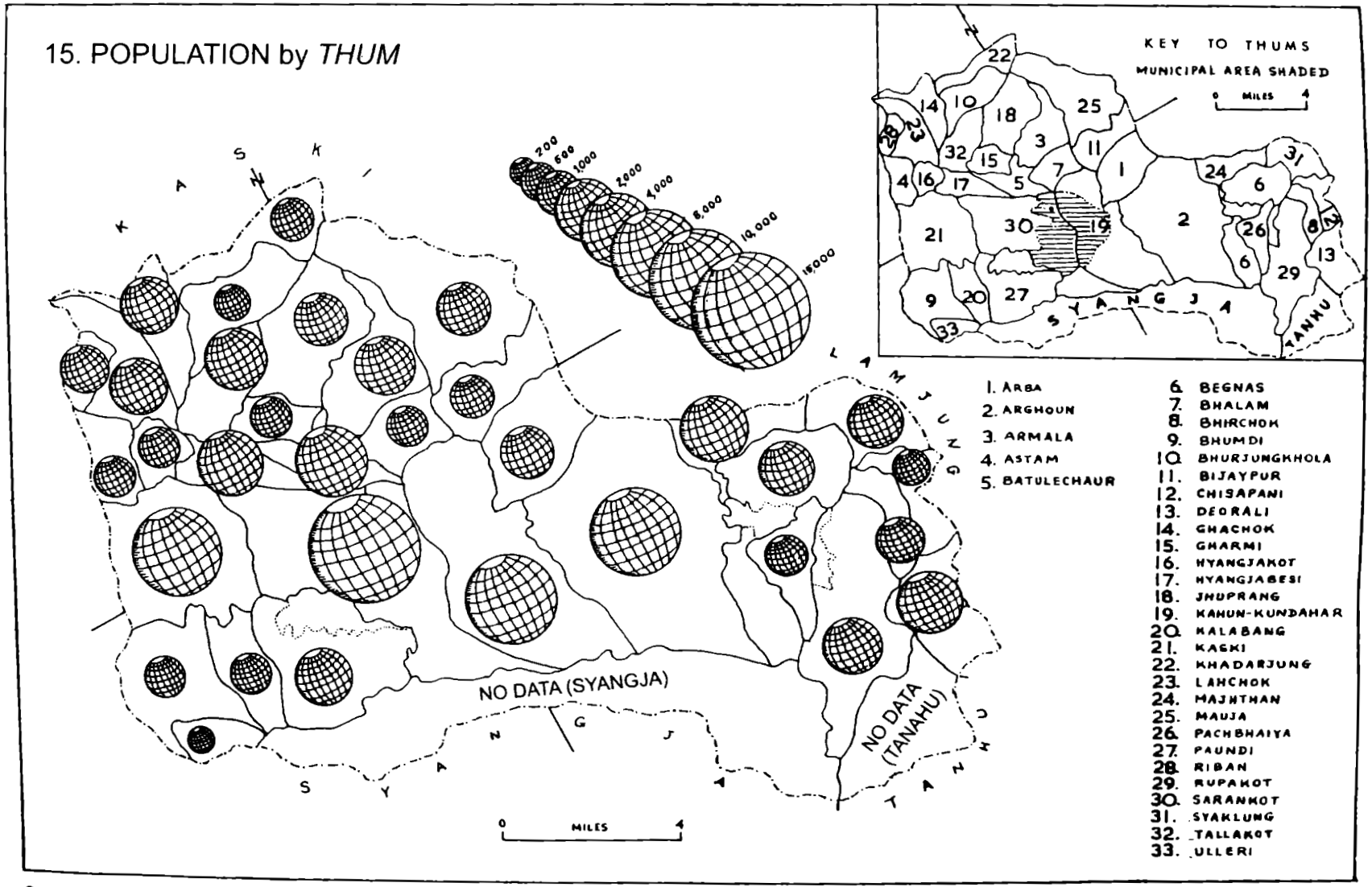

10. VEGETATION PROFILES
A. Plain Plantation
SHADE: 1. Ficus religiosa 2. F. bengalensis 3. F. benjamina
WOOD:
FODDER:
FENCE:
FRUIT: 14 Orange 15 Banana 16 Jackfruit 17 Papaya 18 Mangifera indica
WOOD FODDER SHADE FENCE FRUIT
B. Climatic Plant Formation
TROPICAL
SUB-TROPICAL
TEMPERATE
Suraudi Valley
Baraawmi Ridge
Seti River
Kahun Hill
Rayelchaur
Armala Ridge
Landslide
WOODLAND SCRUBLAND GRASSLAND SETTLEMENT CROPLAND
MILES
FEET 000


11. VEGETATION DISTRIBUTION
Forest Scrub
MOIST MONTANE EVERGREEN
Old New
RIVERAIN
Forest Scrub
WET HILL EVERGREEN
AQUATIC
Forest Scrub
MOIST DECIDUOUS
PLANTATION
Shorea robusta
LOW SAVANNAH
N.S. line profile in Fig.10B
MILES

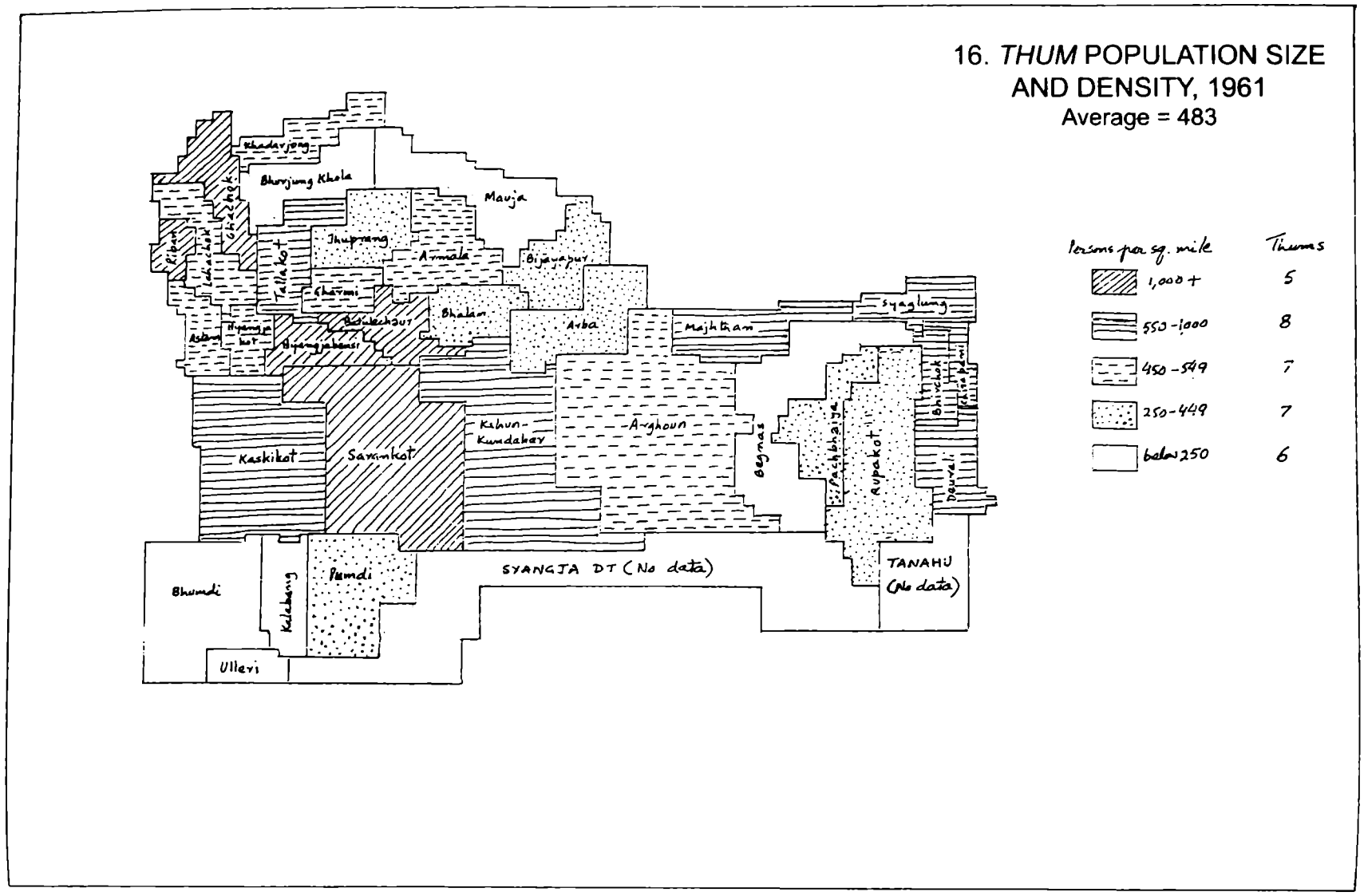

12. ETHNIC/CASTE DISTRIBUTION
Notes
1 Dominance of a group is indicated by circle
2 Also shown is the 4,000-contour line
MONGOLOIDS
GURUNG
TAMANG
MAGAR
THAKALI
NEWAR
EUROROPOIDS
BRAHMIN
THAKURI
CHHETRI
GHARTI
CHURATE
D.- DAMAI
G - GAYENE
K - KAMI
Ku.- KUMAL
M - MAJHI
P - PORE
S - SARKI
POKHARA
KUNDAHAR
ARGHOUN POUWA
SISUWA
KHUDI
PARDI
SATMUHANE
DEORALIPHED
PROFILE OF ETHNIC/CASTE DISTRIBUTION
MILES
POKHARA TOWN
FEET


13. SETTLEMENT SITES
With percentages
'Adrel' (Sunny aspect) 55
Ridge ('Danra') 8
Pokhara Town
'Ubac' (Shady aspect) 21
Valley-bottom ('Phedi') 16
Plain Level
SABJE CHOYAN 8300
Ghandrung (7000 ft)
Sikles (5600) Pasje
KASKIKOT 5867
MATTIKHAN 5032
PANCHASE 8231
FEET '000
MILES
N
S

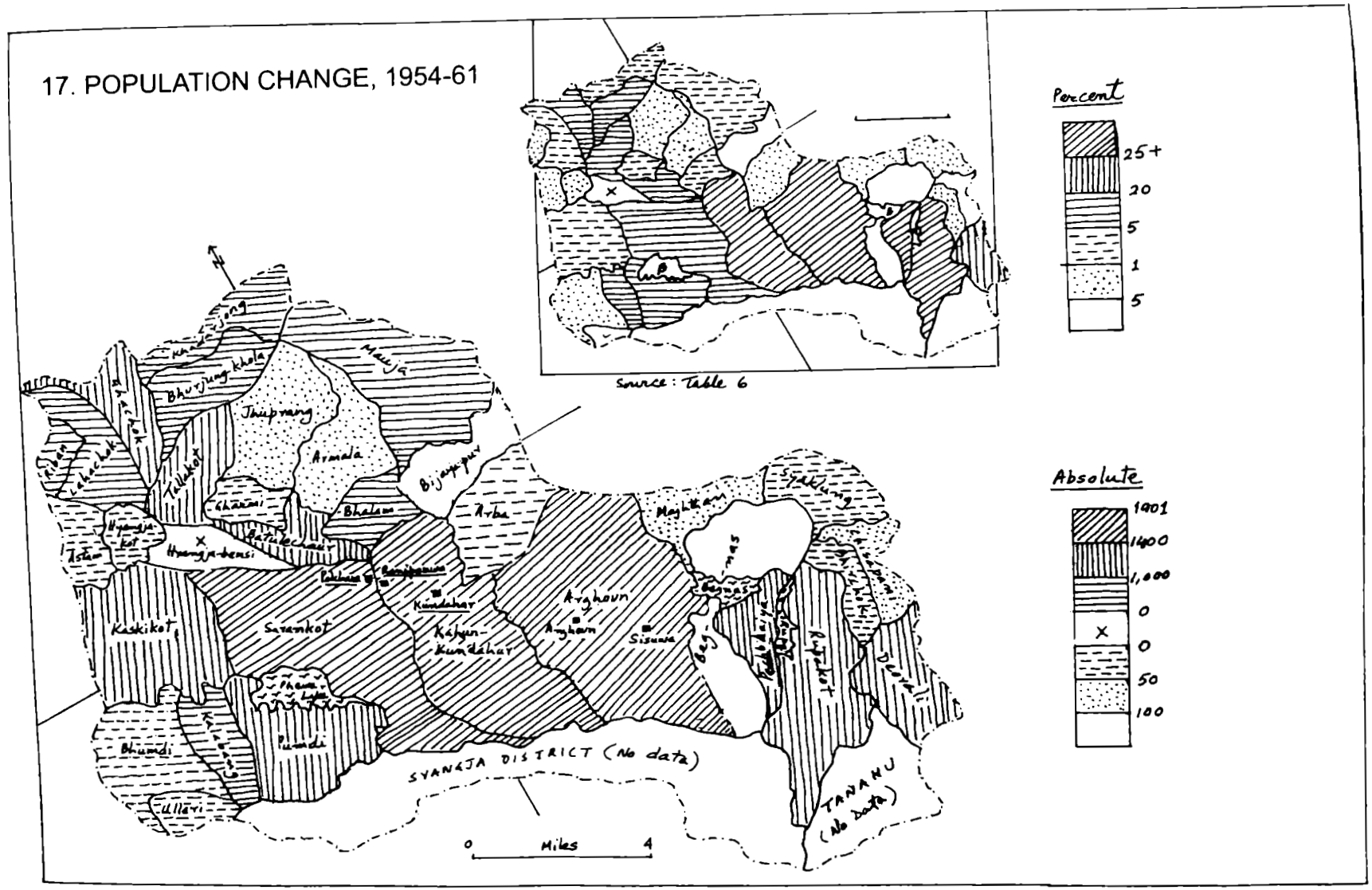

14. POPULATION DISTRIBUTION, 1961
EACH DOT REPRESENTS 100 PERSONS
BAZAR POPULATION
SATMUHANE
KHUDI
SISUWA
ARGHUNPOUWA
KUNDAHAR
KANIPOUWA
POKHARA
PARDI
MILES



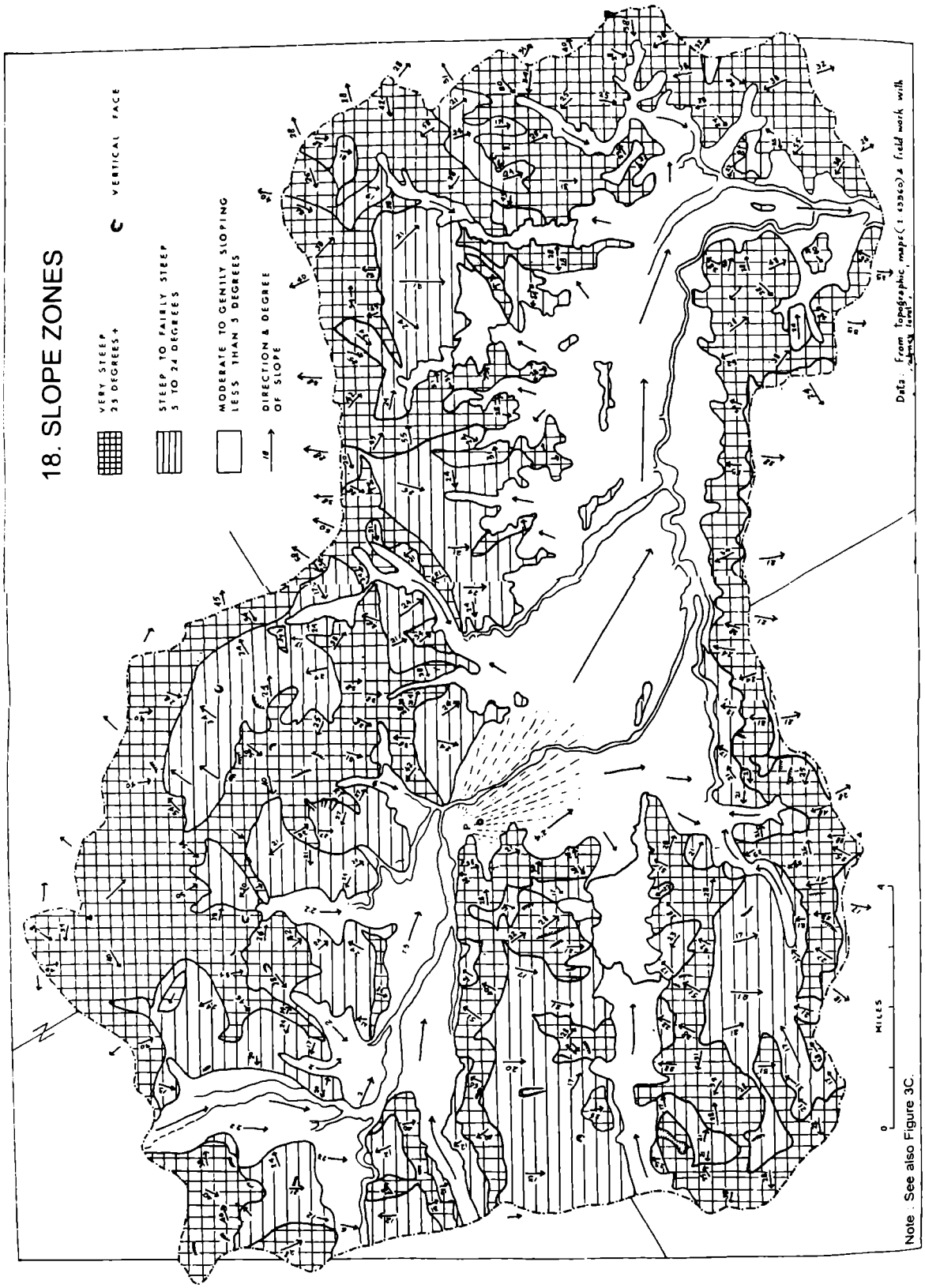
Source : Table 5.

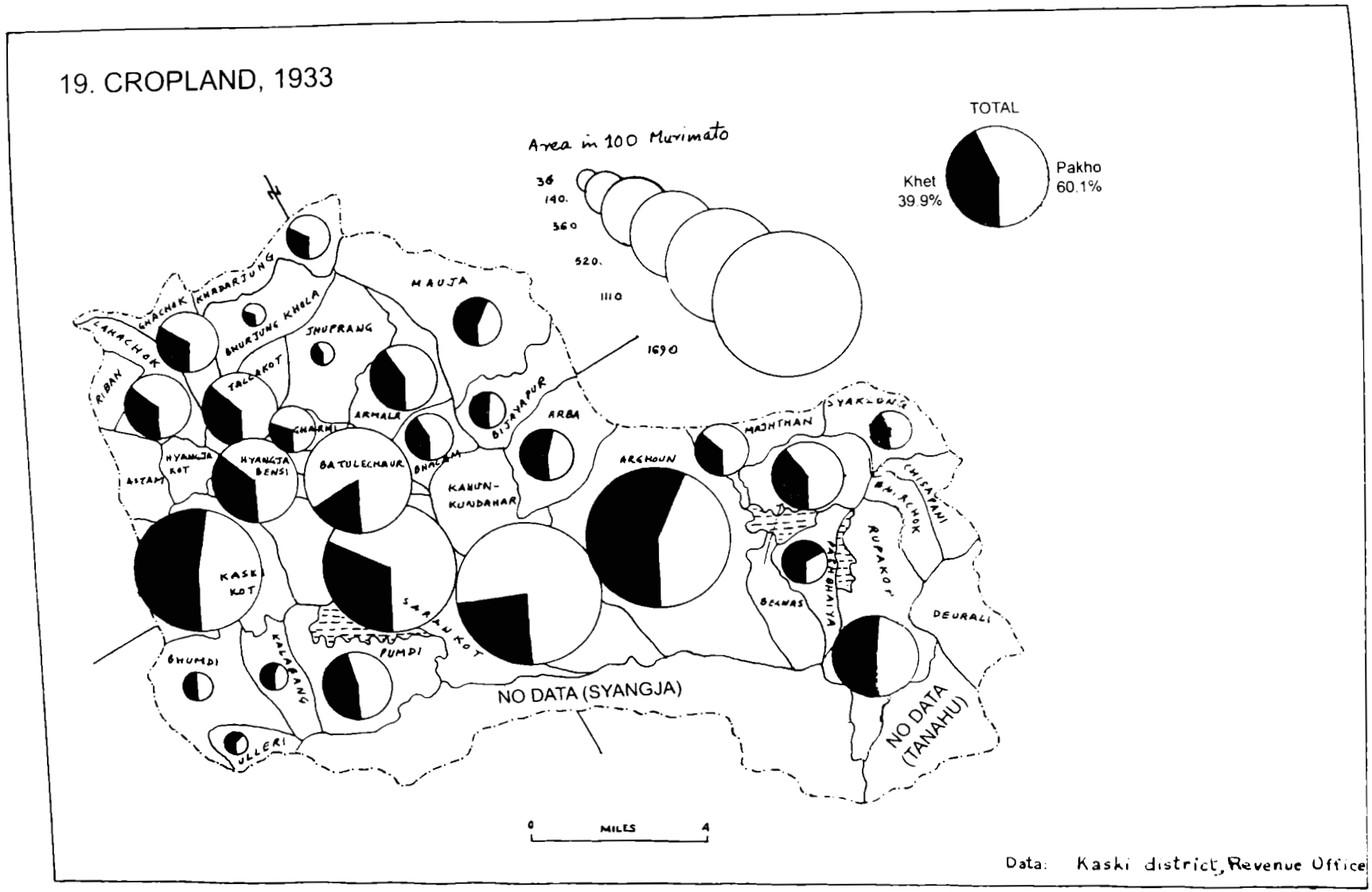


Source : Table 5.

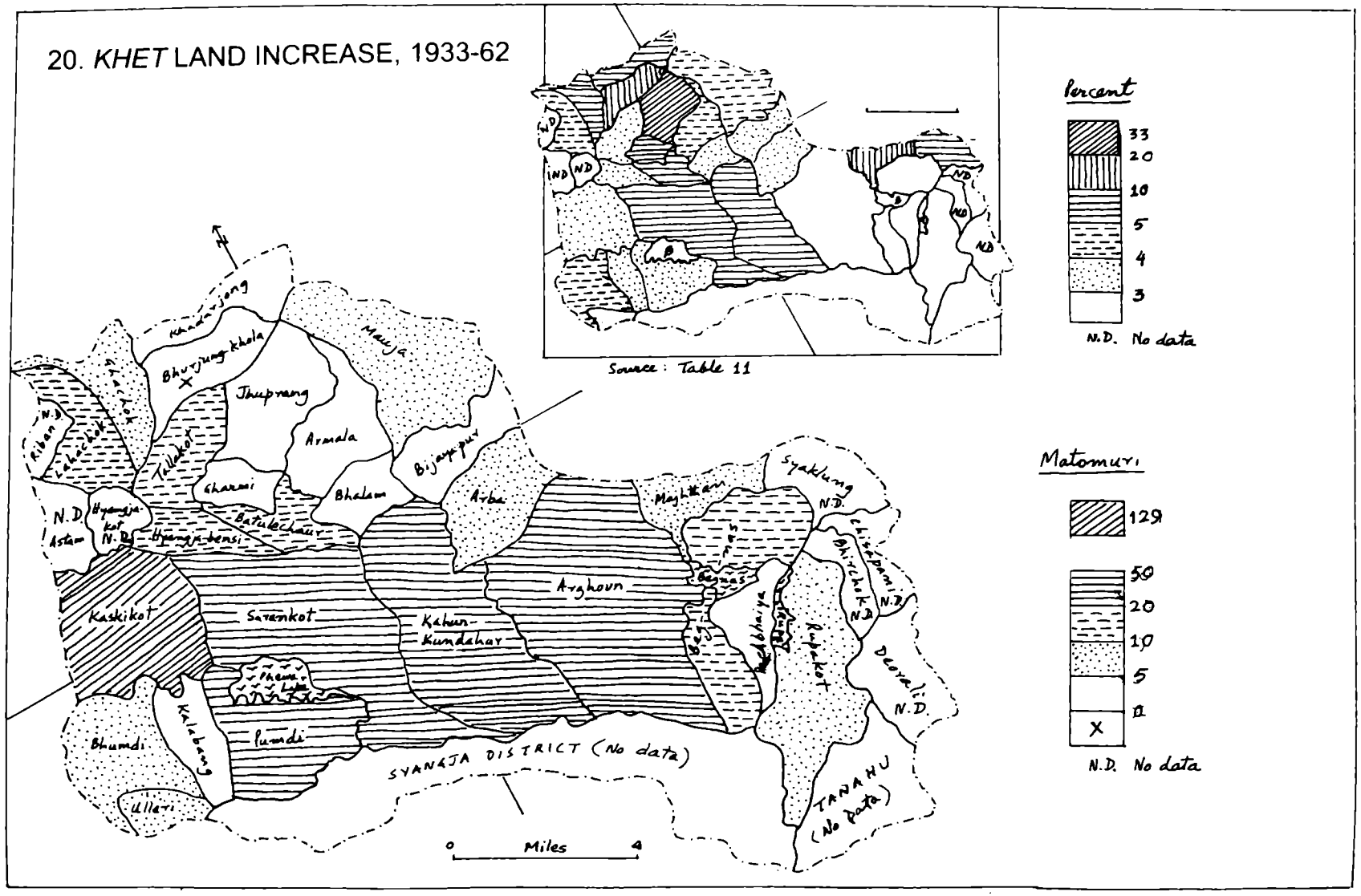


Source: Table 7.

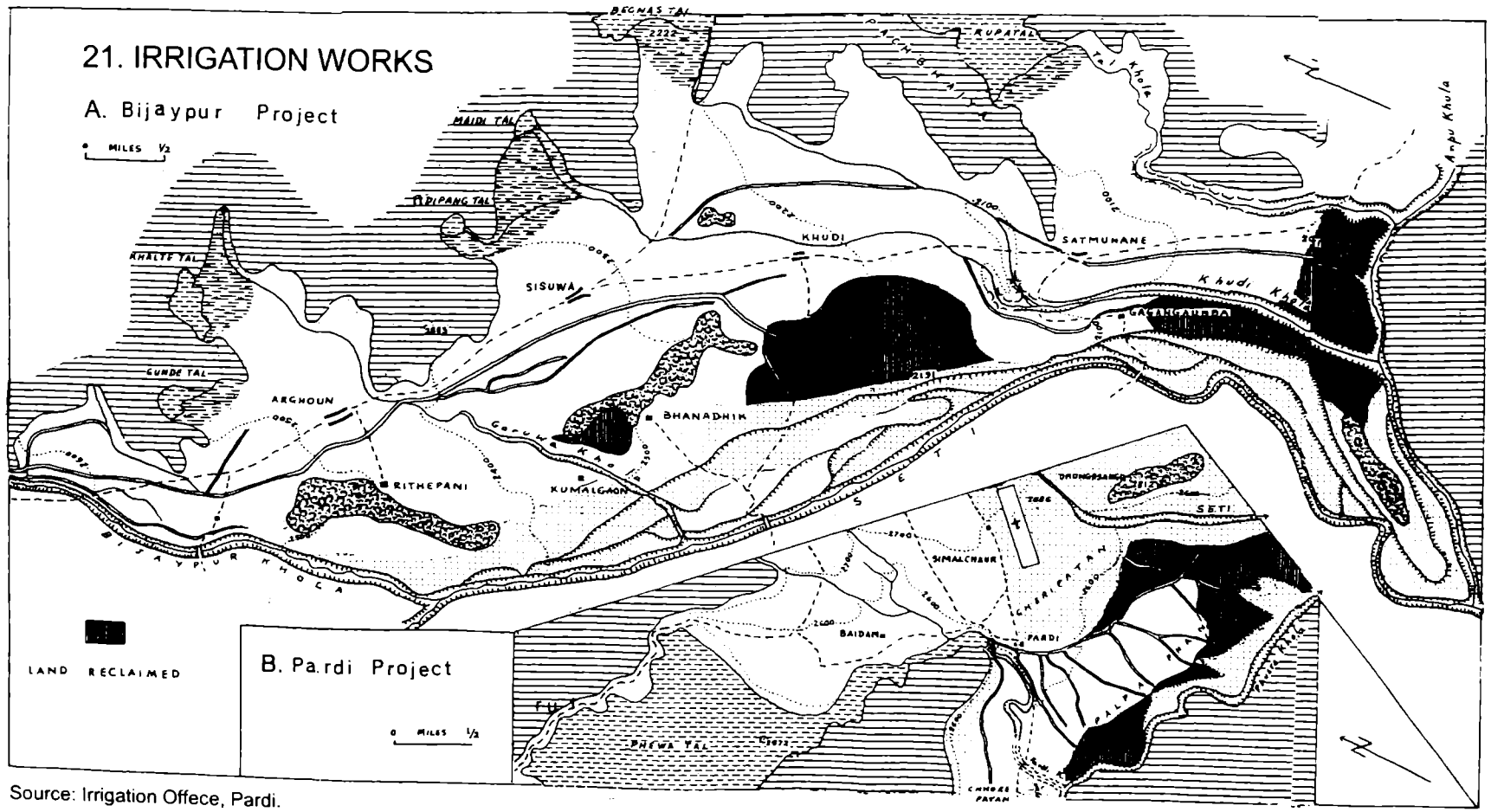

18. SLOPE ZONES
VERY STEEP
25 DEGREES +
VERTICAL FACE
STEEP TO FAIRLY STEEP
5 TO 24 DEGREES
MODERATE TO GENTLY SLOPING
LESS THAN 5 DEGREES
DIRECTION & DEGREE
OF SLOPE
MILES
Data: from topographic maps (1 inch=1 mile) & field work with
Note : See also Figure 3C.



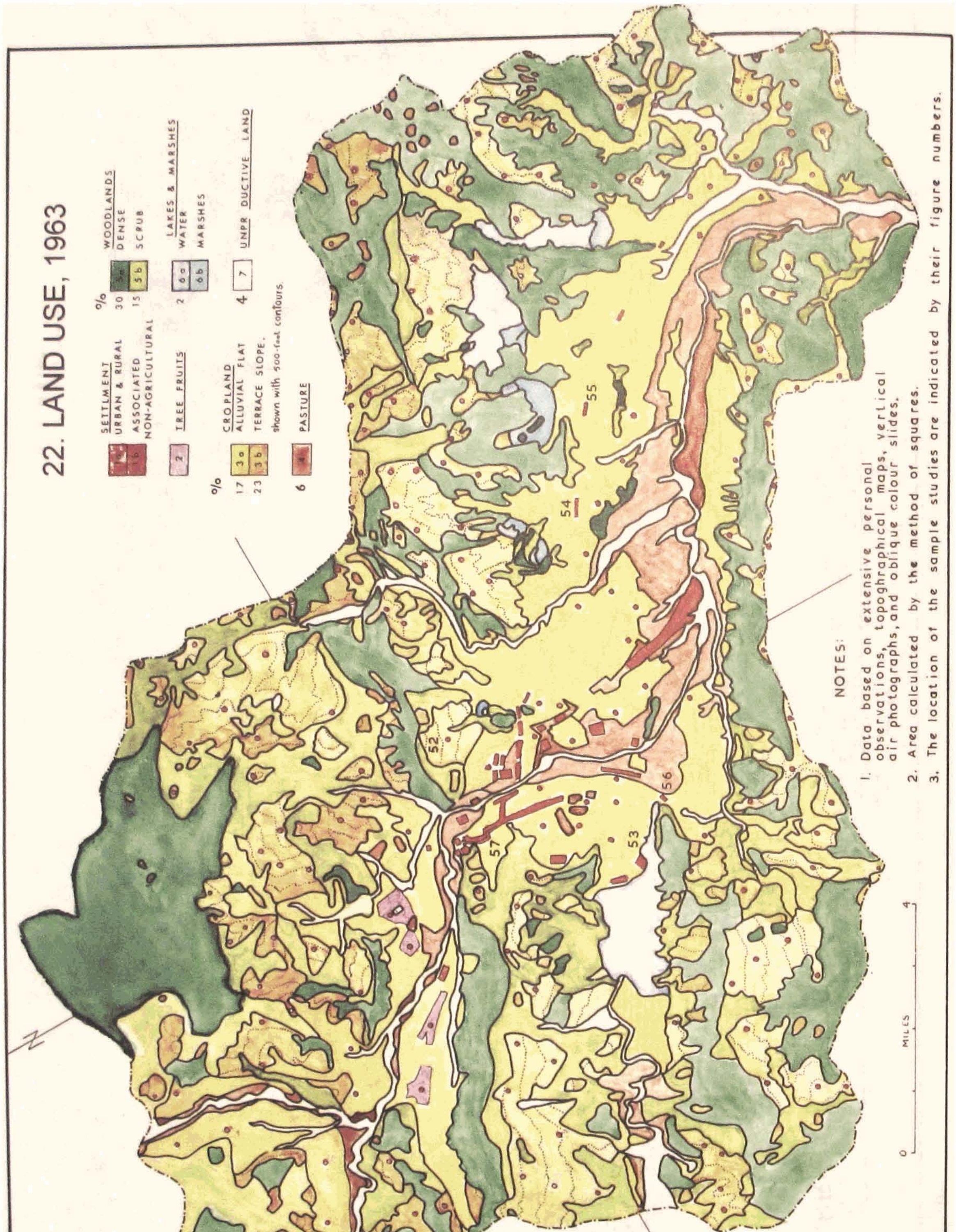
Source : Table 9.

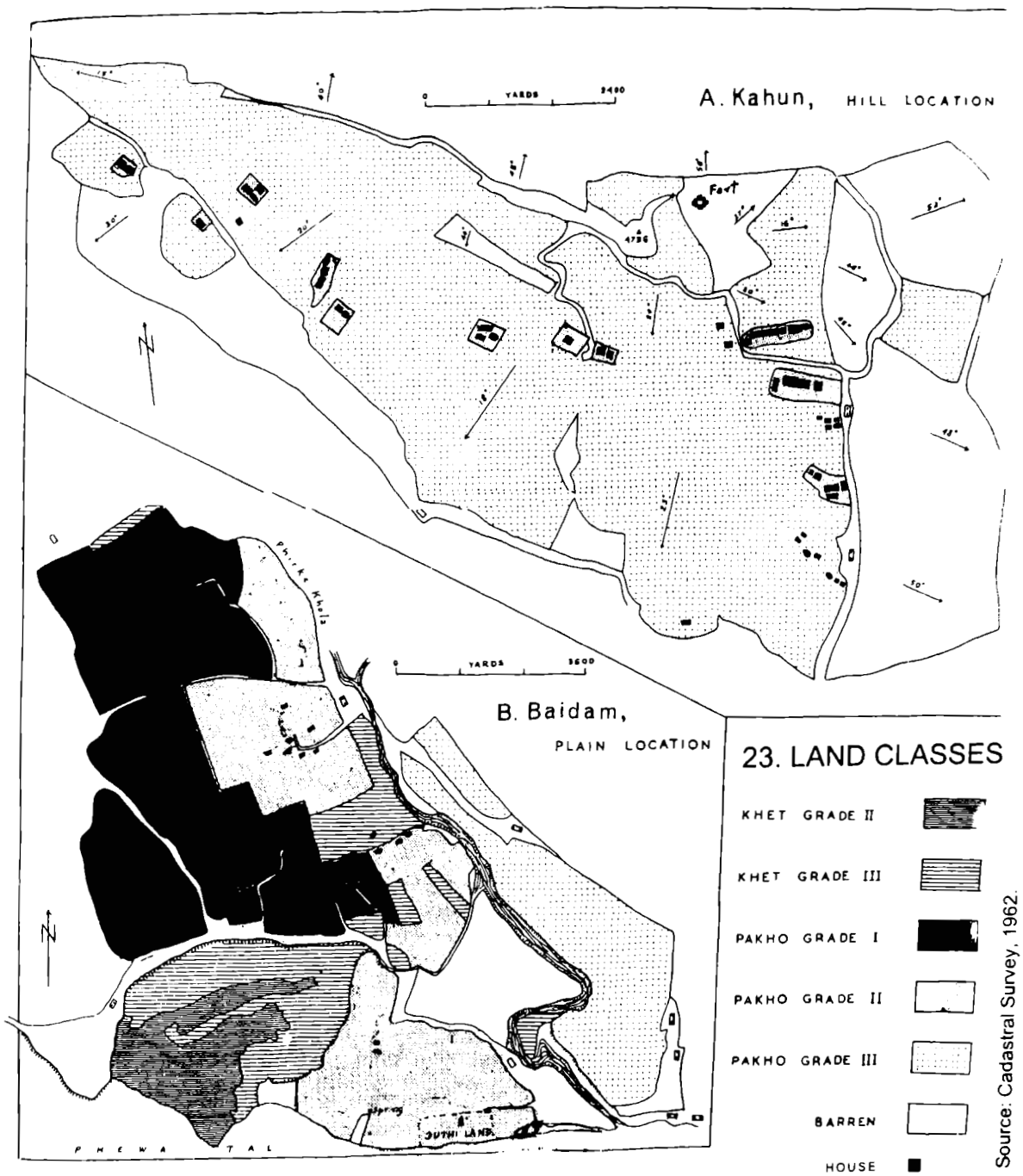


Source: Table 10.

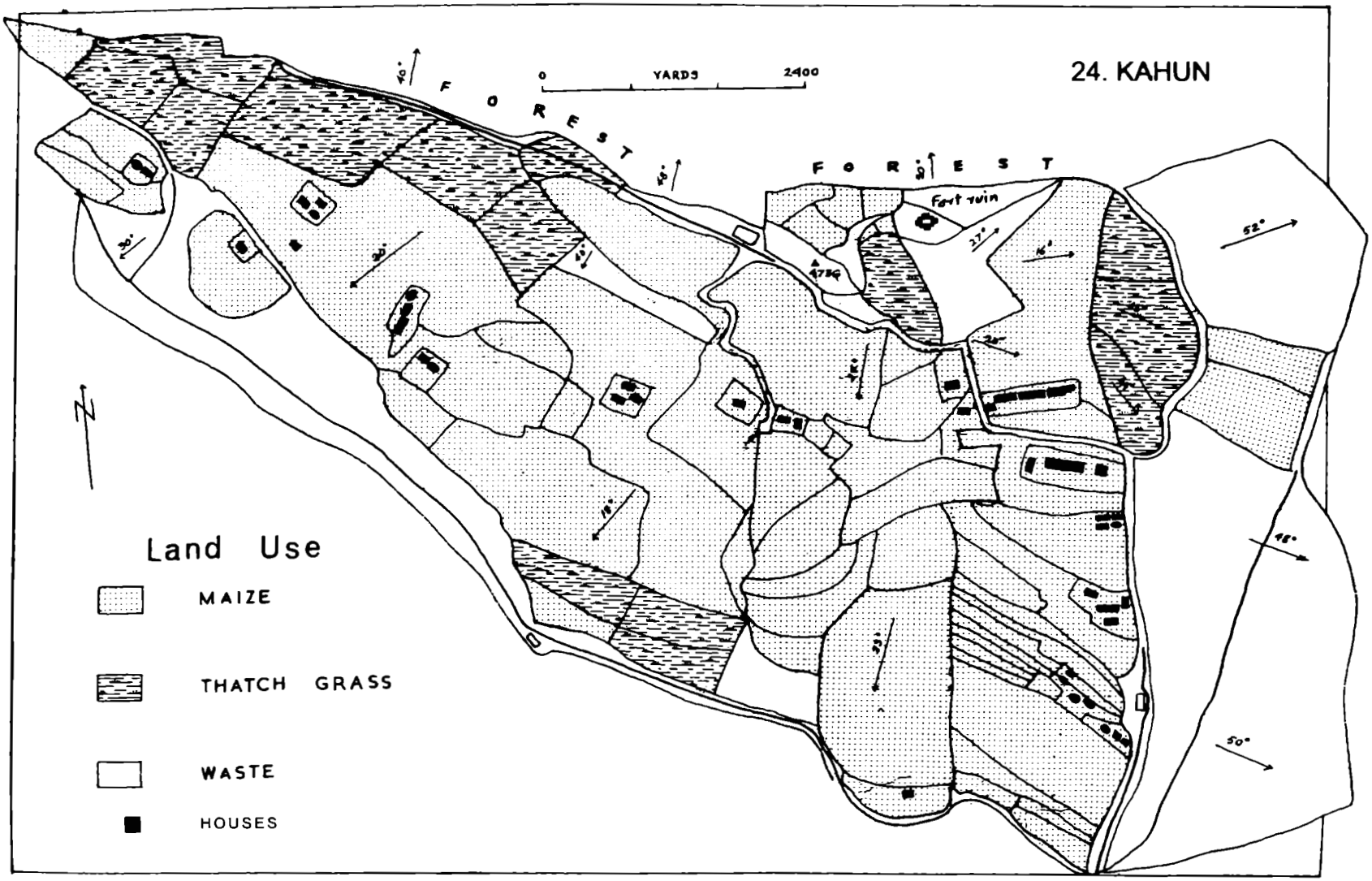


Source: Irrigation Offece, Pardi.

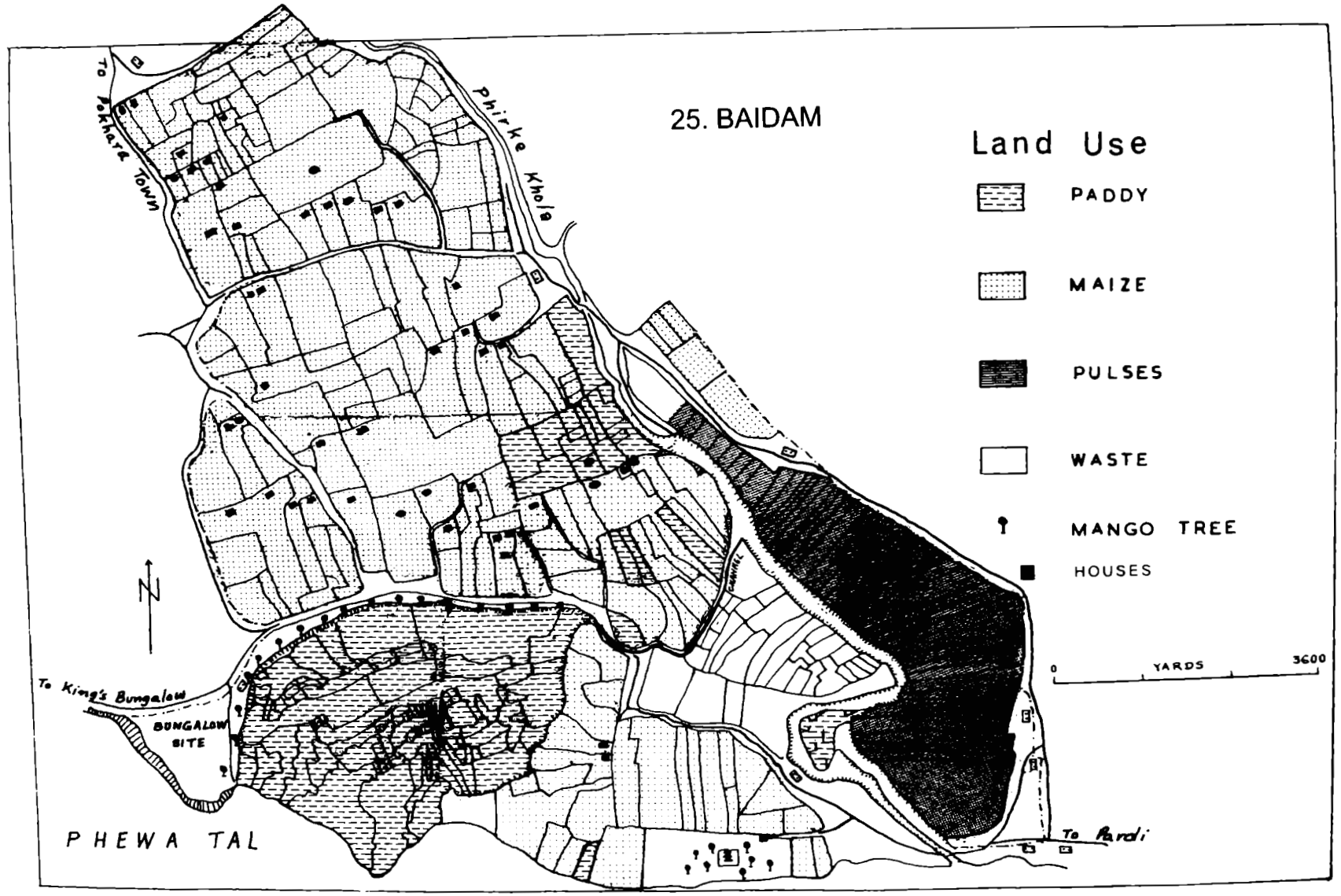

22. LAND USE, 1963
SETTLEMENT
URBAN & RURAL
ASSOCIATED NON-AGRICULTURAL
TREE FRUITS
%
CROPLAND
17 ALLUVIAL FLAT
23 TERRACE SLOPE
shown with 500-foot contours.
6 PASTURE
%
WOODLANDS
30 DENSE
15 SCRUB
LAKES & MARSHES
2 WATER
MARSHES
4 UNPRODUCTIVE LAND
NOTES:
1. Data based on extensive personal observations, topographical maps, vertical air photographs, and oblique colour slides.
2. Area calculated by the method of squares.
3. The location of the sample studies are indicated by their figure numbers.
MILES
0
4
52
53
54
55
56
57



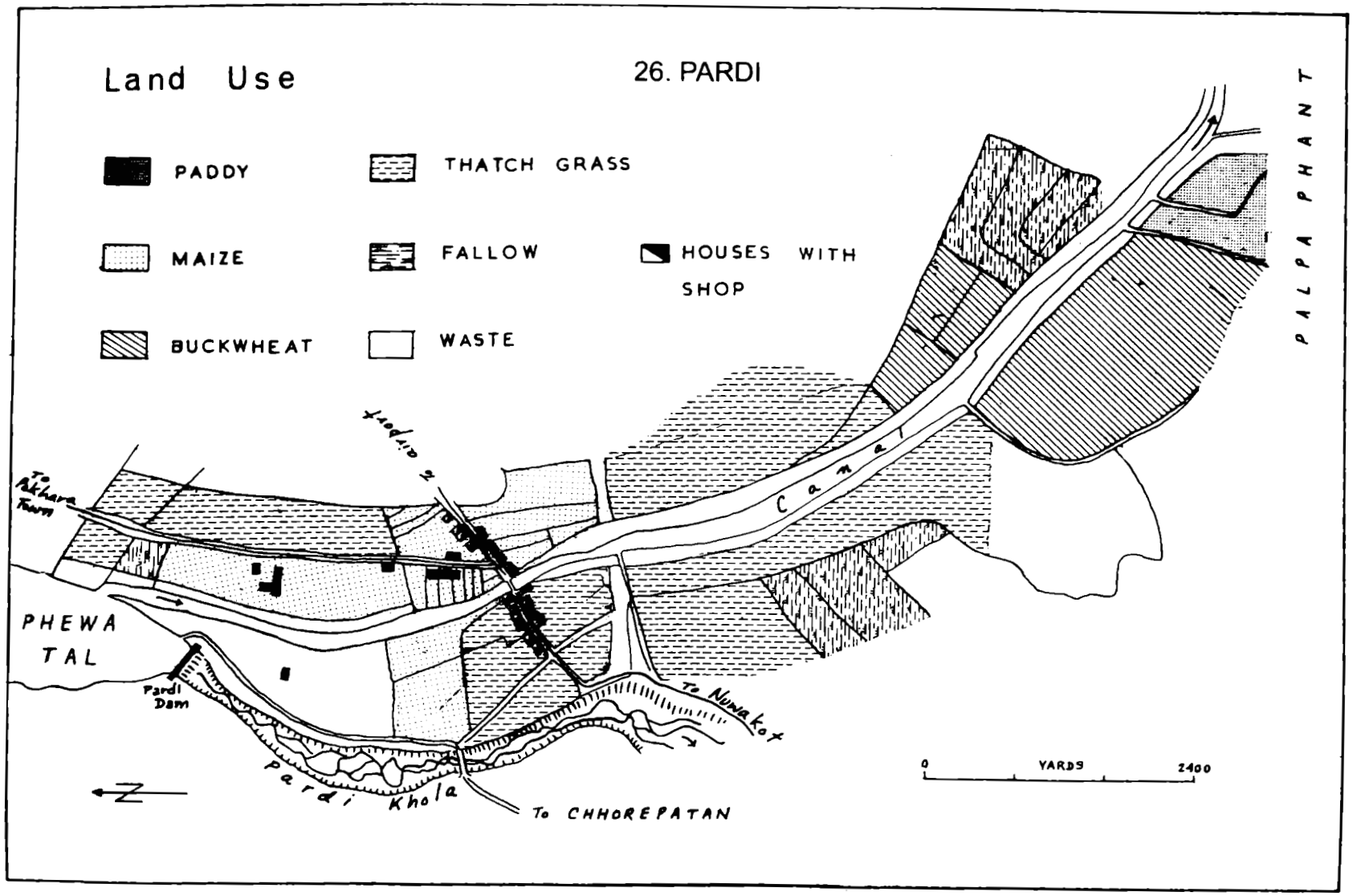
Source: Cadastral Survey, 1962.



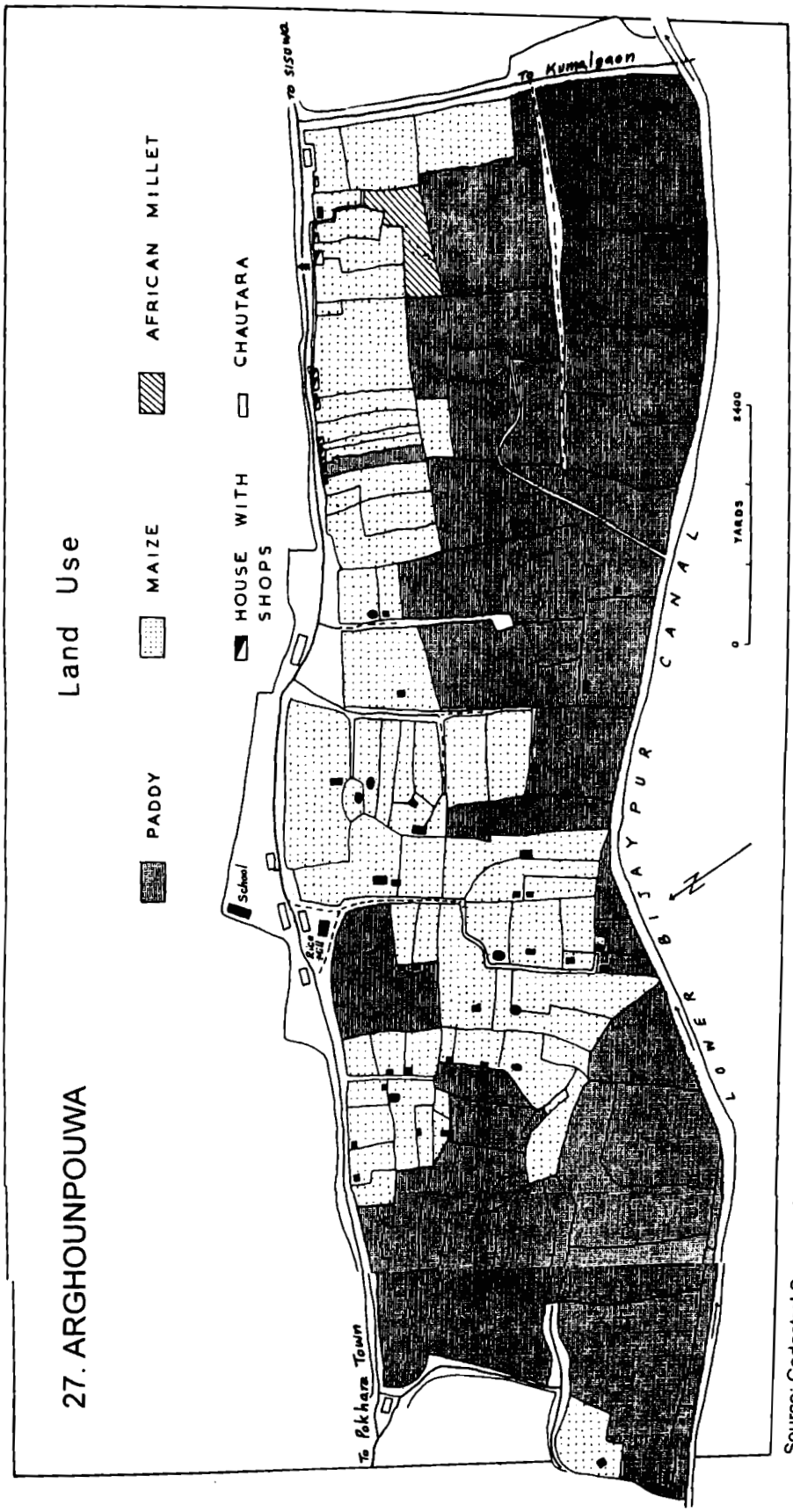
Source: Cadastral Survey, 1962.



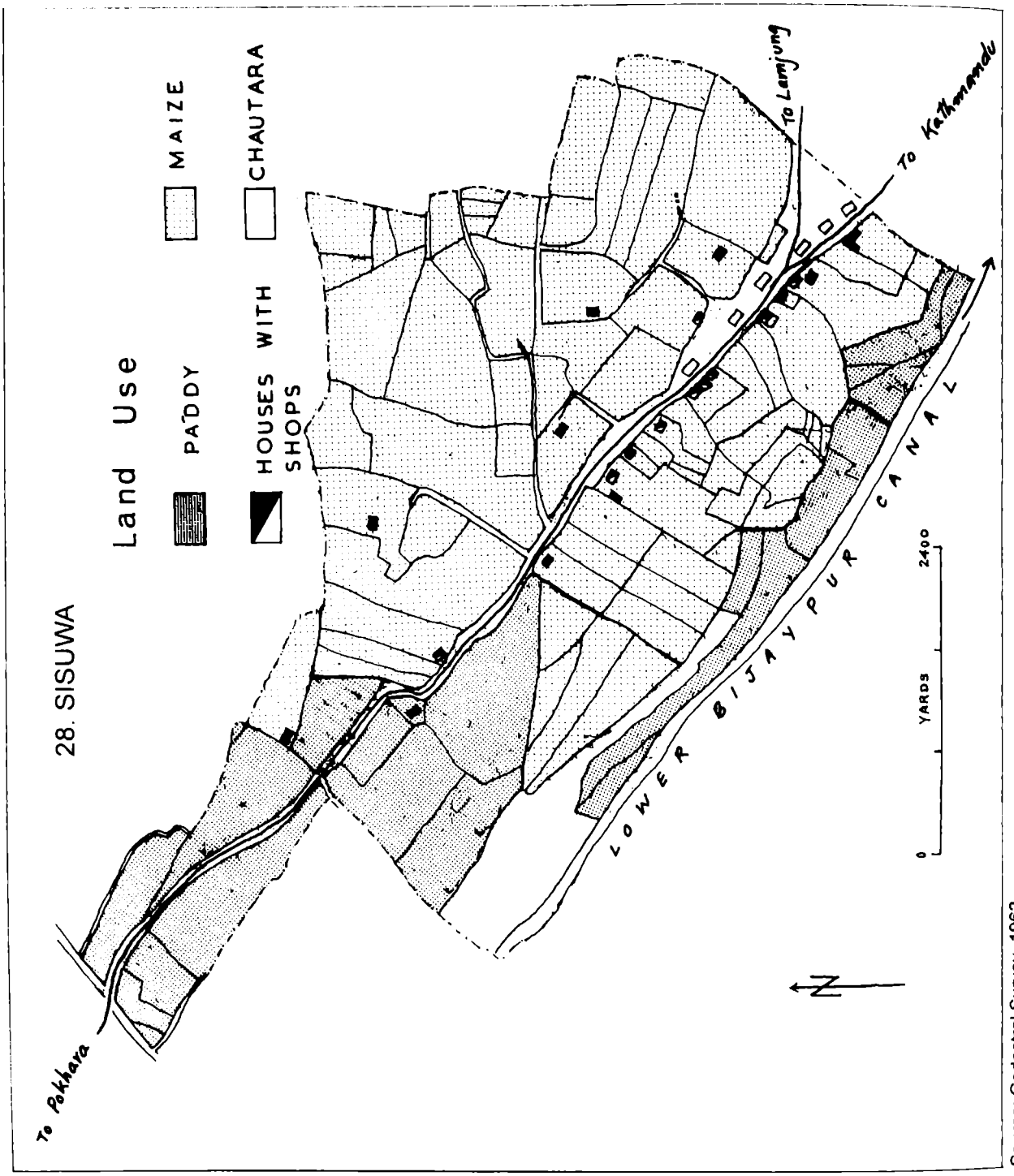
Source: Cadastral Survey, 1962.



Source: Cadastral Survey, 1962.



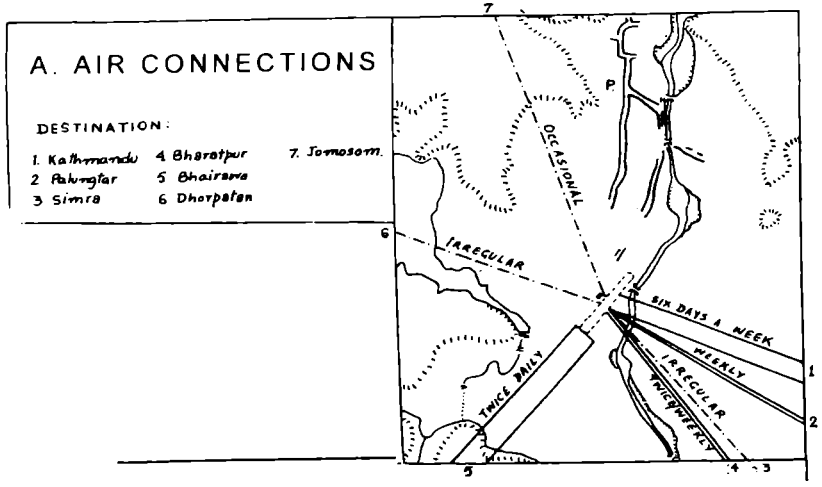
Source: Cadastral Survey, 1962.



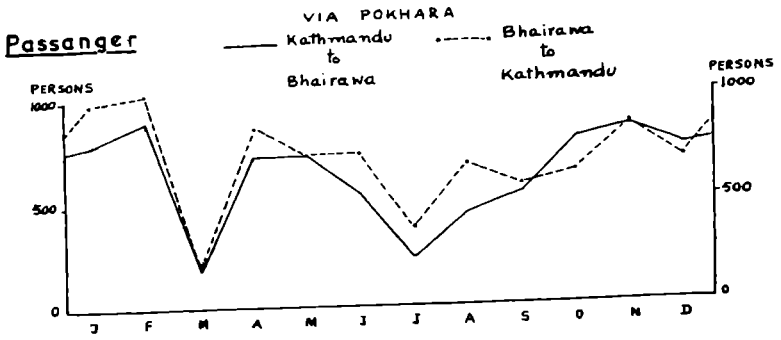
Source: Cadastral Survey, 1962.

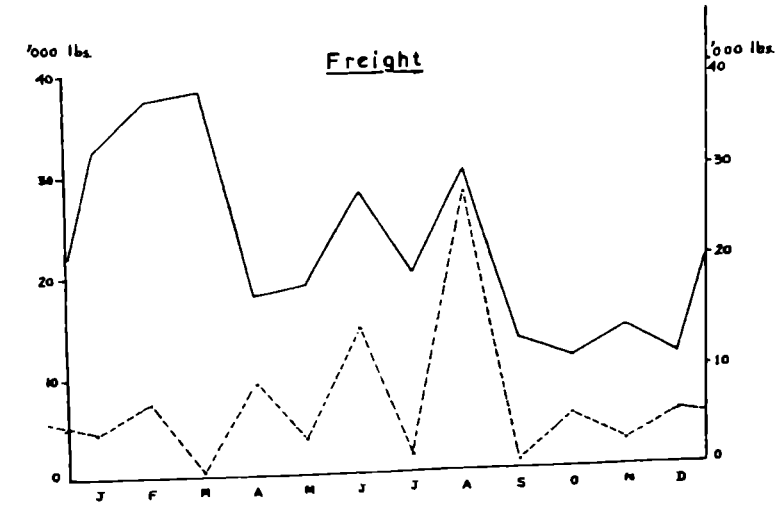
29. AIR TRAFFIC AND TOURISM FLOW

A. AIR CONNECTIONS



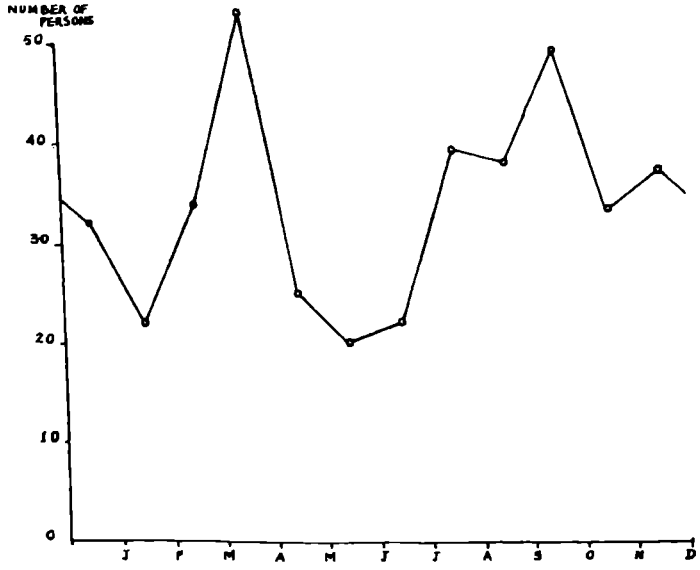
B. AIR TRAFFIC, 1960



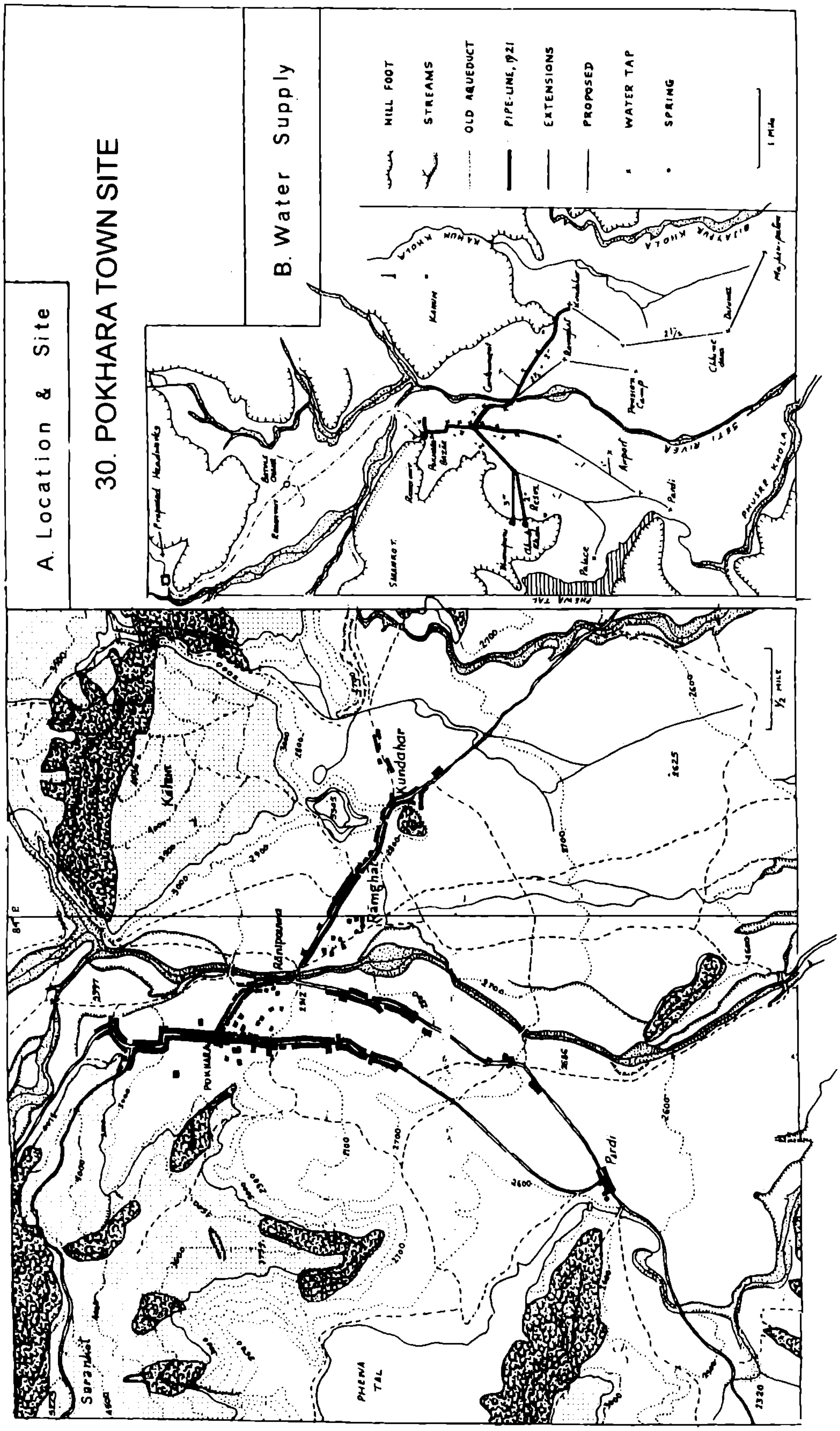


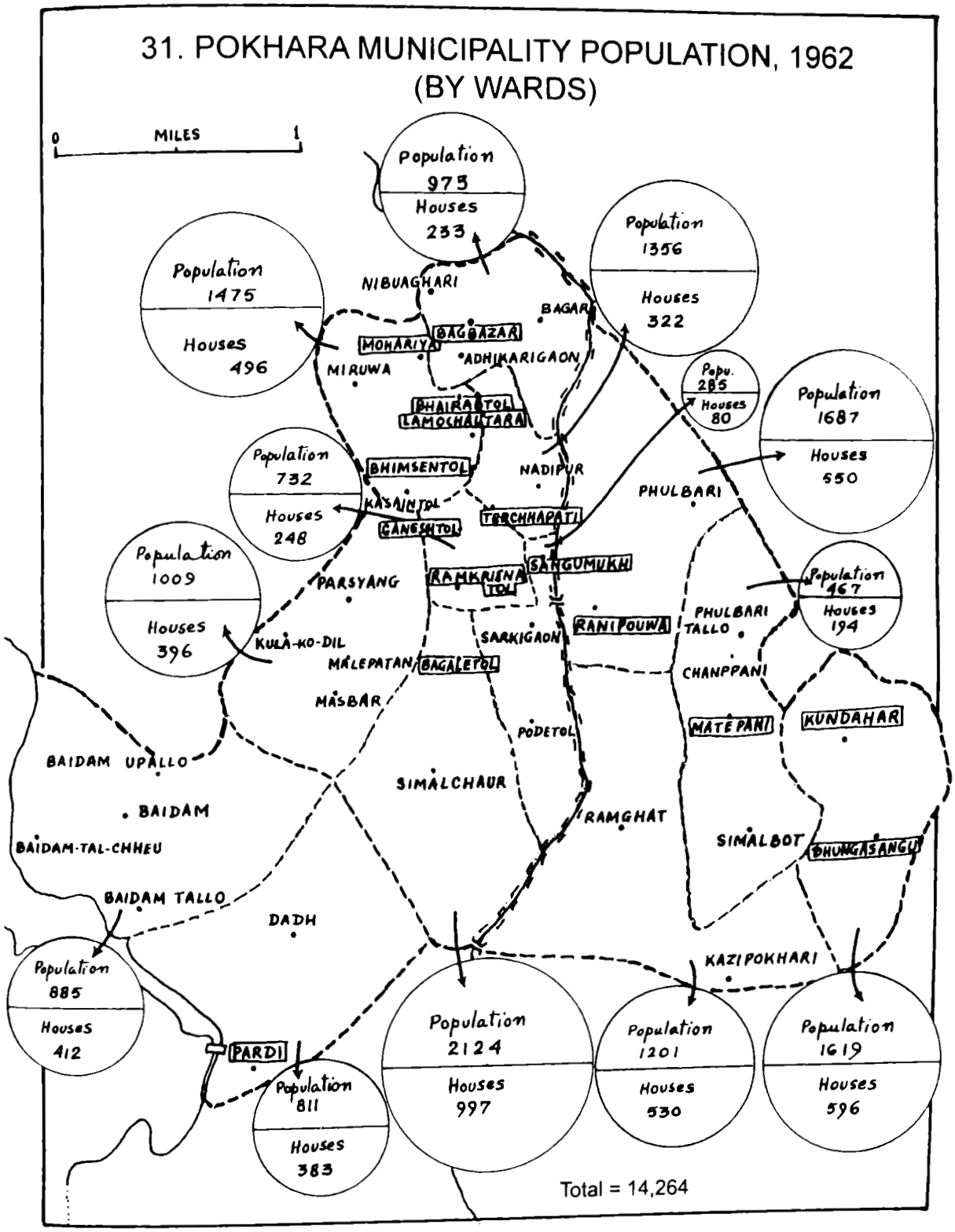
Source: Table 13.

C. TOURIST TRAFFIC, 1962

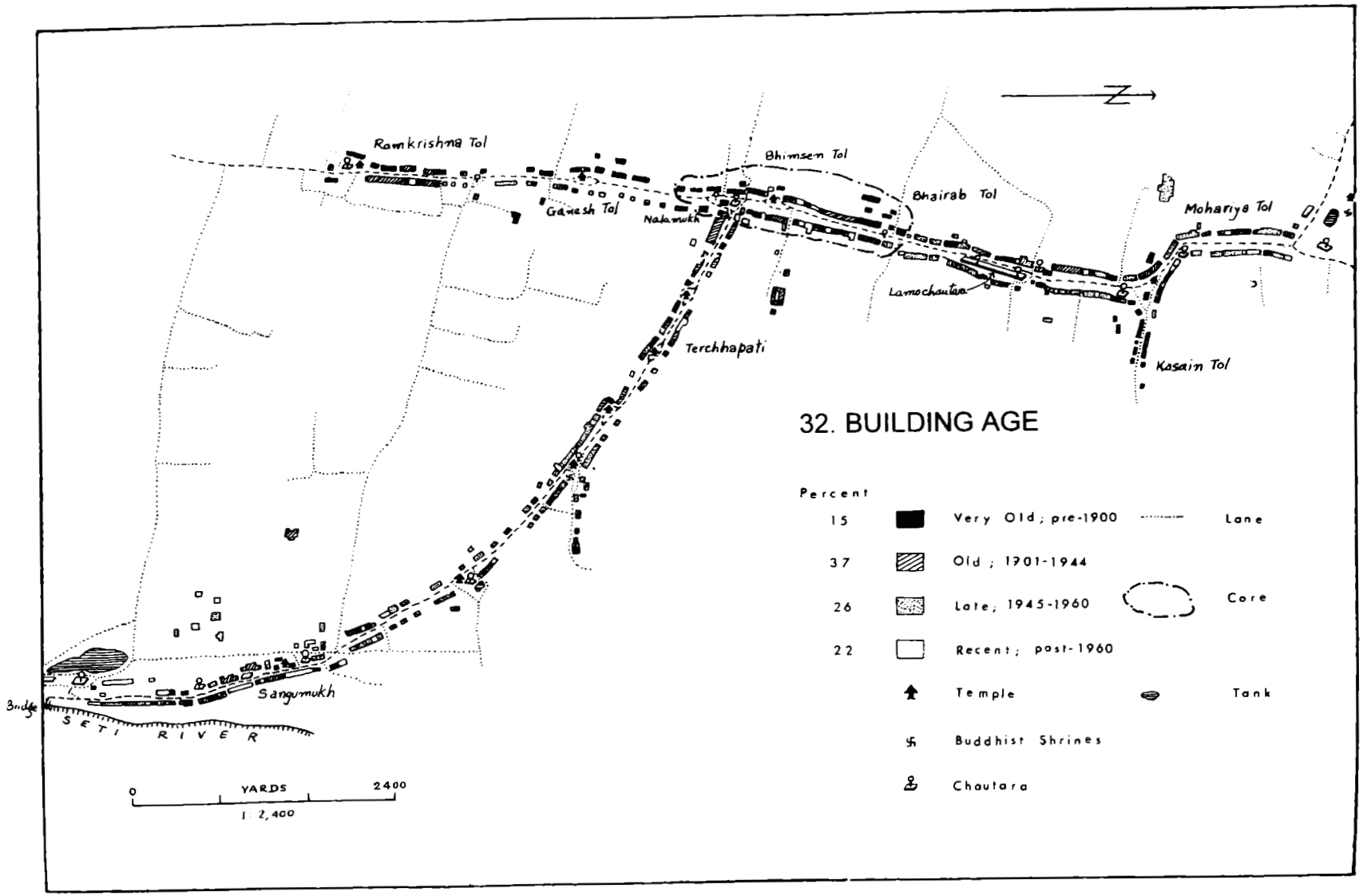


Source: Table 12.

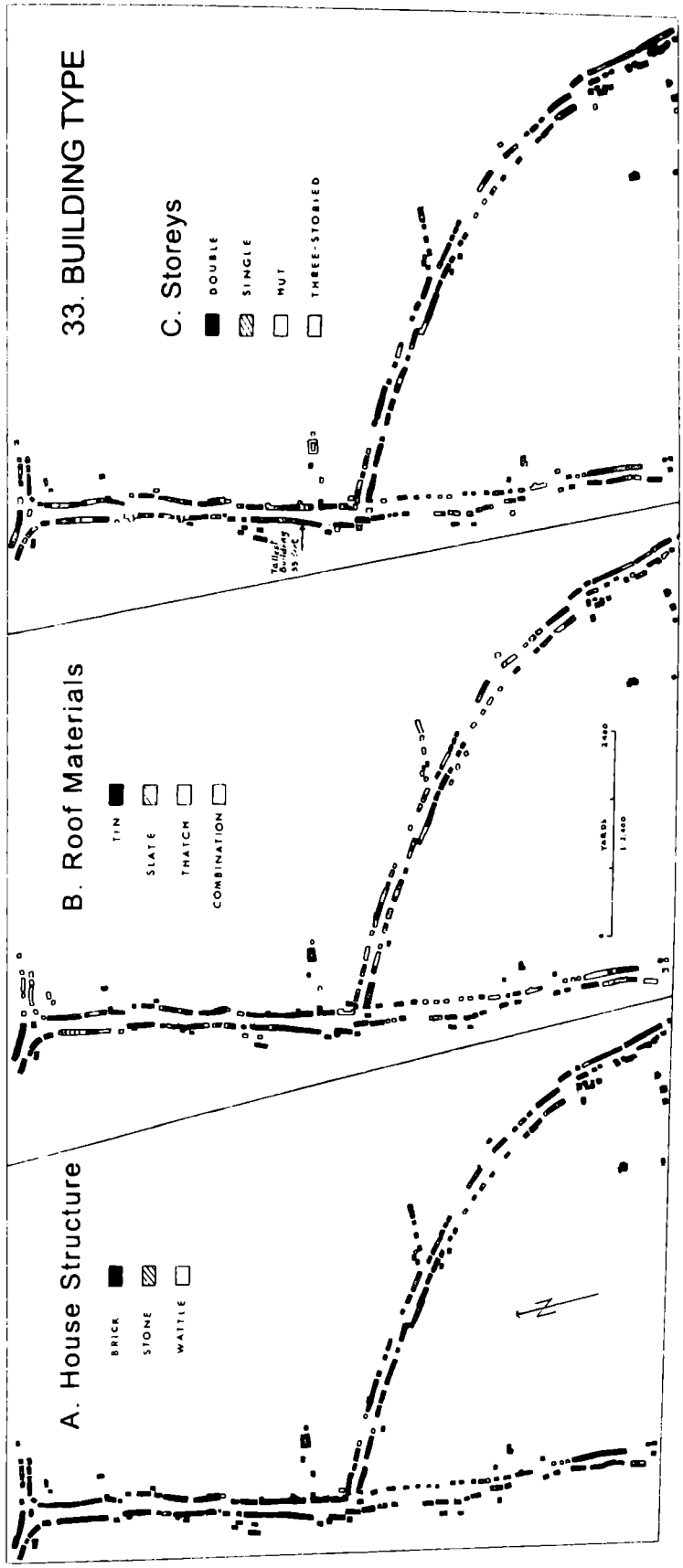

30. POKHARA TOWN SITE
A. Location & Site
B. Water Supply
HILL FOOT
STREAMS
OLD AQUEDUCT
PIPE-LINE, 1921
EXTENSIONS
PROPOSED
WATER TAP
SPRING
1 Mile
SETI RIVER
PHUSRE KHOLA
PHEWA TAL
POKHARA
Ramghat
Kundahar
Ranipauwa
Pardi
Kahun
Sarankot
1/2 MILE

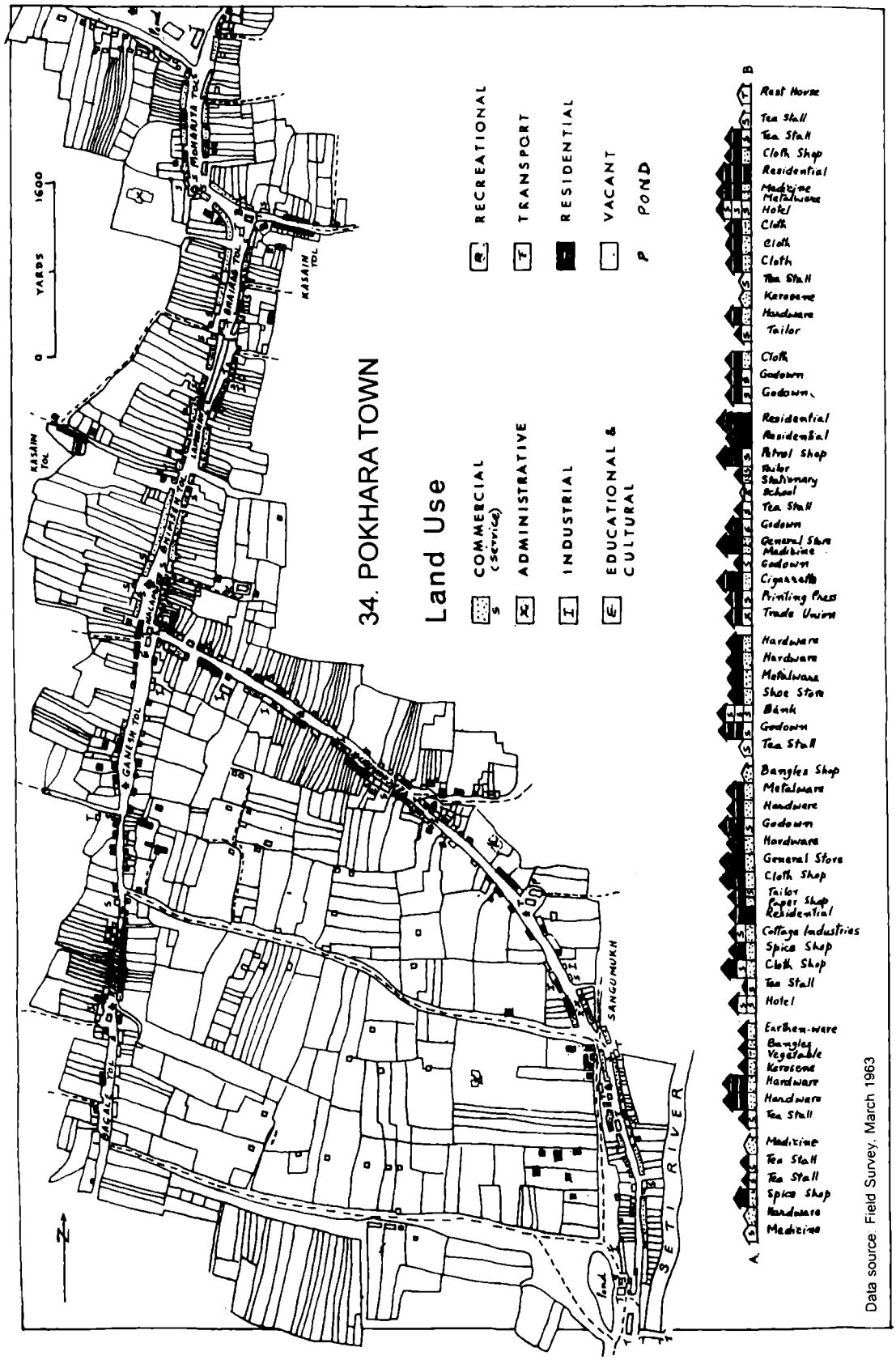


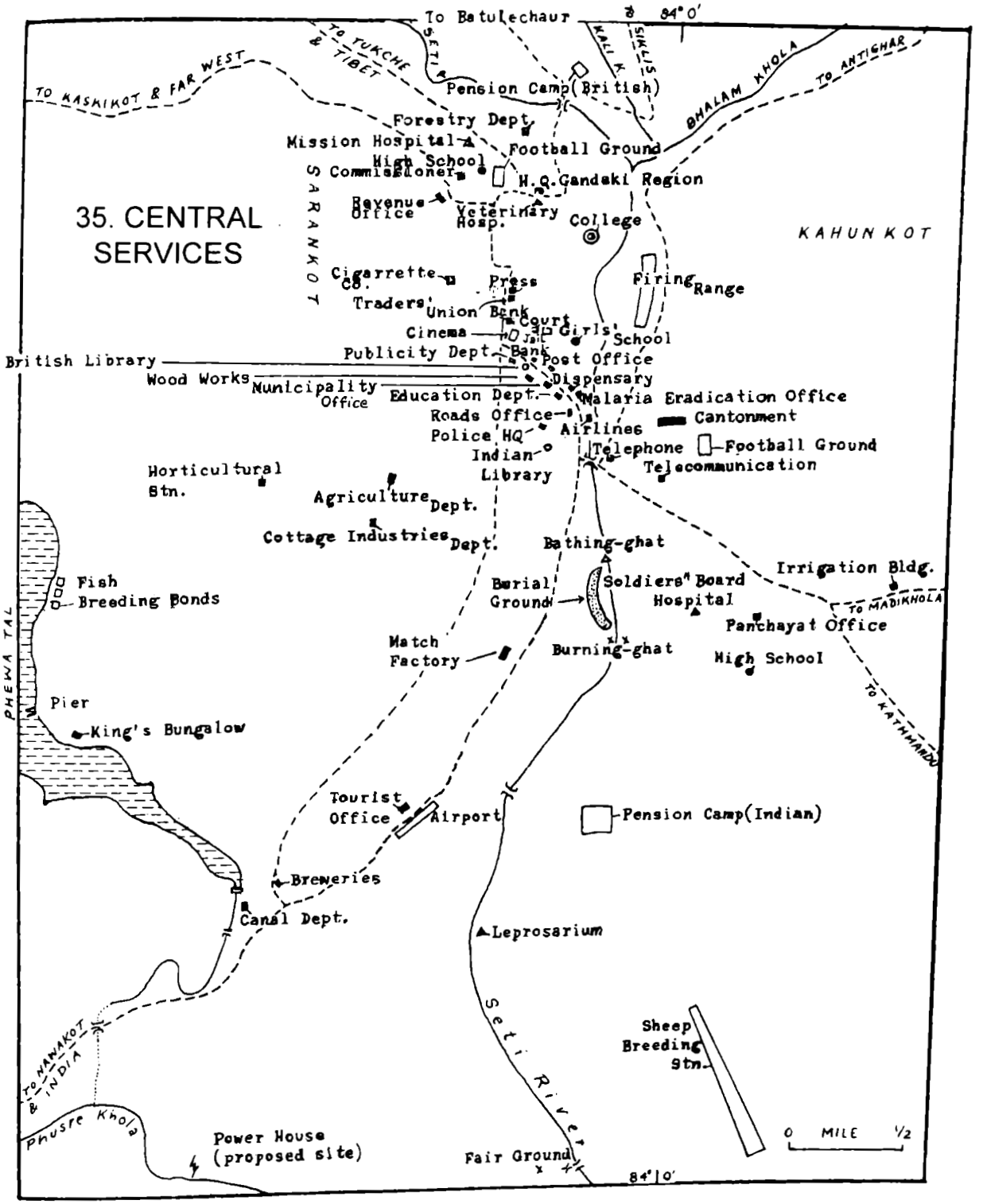
Source: Pokhara Municipality Office.



Source: Field Survey, 1963.


33. BUILDING TYPE
C. Storeys
DOUBLE
SINGLE
HUT
THREE-STORIED
B. Roof Materials
TIN
SLATE
THATCH
COMBINATION
YARDS
A. House Structure
BRICK
STONE
WATTLE

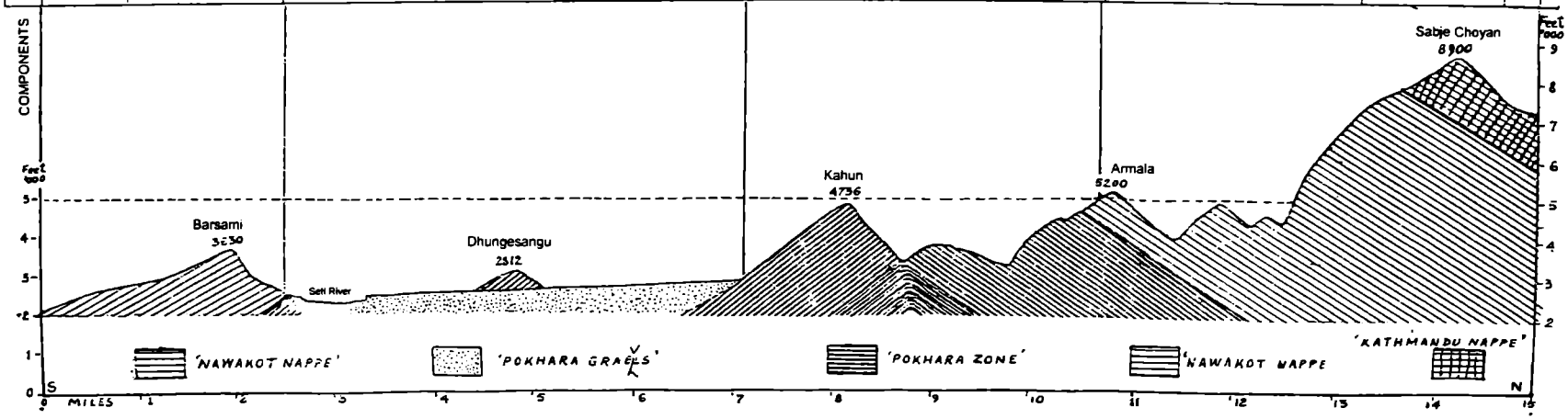

34. POKHARA TOWN
Land Use
COMMERCIAL (Service)
ADMINISTRATIVE
INDUSTRIAL
EDUCATIONAL & CULTURAL
RECREATIONAL
TRANSPORT
RESIDENTIAL
VACANT
POND
0 YARDS 1600
KASAIN TOL
GANESH TOL
SANGUMUKH
SETI RIVER
Rest House
Tea Stall
Tea Stall
Cloth Shop
Residential
Medicine
Metalware
Hotel
Cloth
Cloth
Cloth
Tea Stall
Kerosene
Hardware
Tailor
Cloth
Godown
Godown
Residential
Residential
Petrol Shop
Tailor
Stationary
School
Tea Stall
Godown
General Store
Medicine
Godown
Cigarette
Printing Press
Trade Union
Hardware
Hardware
Metalware
Shoe Store
Bank
Godown
Tea Stall
Bangles Shop
Metalware
Hardware
Godown
Hardware
General Store
Cloth Shop
Tailor
Paper Shop
Residential
Cottage Industries
Spice Shop
Cloth Shop
Tea Stall
Hotel
Earthen-ware
Bangles
Vegetable
Kerosene
Hardware
Hardware
Tea Stall
Medicine
Tea Stall
Tea Stall
Spice Shop
Hardware
Medicine
Data source: Field Survey, March 1963


35. CENTRAL SERVICES
To Batulechaur
84° 0'
TO KASKIKOT & FAR WEST
TO TUKCHE & TIBET
SETI R.
KALI K.
SIKLIS
BHALAM KHOLA
TO ANTICHAR
Pension Camp (British)
Forestry Dept.
Mission Hospital
Football Ground
High School
Commissioner
H.Q. Gandaki Region
Revenue Office
Veterinary Hosp.
College
SARANKOT
KAHUN KOT
Cigarette Co.
Press
Firing Range
Traders' Union Bank
Court
Cinema
Girls' School
Publicity Dept.
Bank
Post Office
British Library
Wood Works
Municipality Office
Dispensary
Education Dept.
Malaria Eradication Office
Roads Office
Cantonment
Police HQ
Airlines
Telephone
Football Ground
Indian Library
Telecommunication
Horticultural Stn.
Agriculture Dept.
Cottage Industries Dept.
Bathing-ghat
Irrigation Bldg.
Fish Breeding Bonds
Burial Ground
Soldiers' Board Hospital
TO MADIKHOLA
Panchayat Office
Match Factory
Burning-ghat
High School
PHEWA TAL
Pier
King's Bungalow
TO KATHMANDU
Tourist Office
Airport
Pension Camp (Indian)
Breweries
Canal Dept.
Leprosarium
Seti River
Sheep Breeding Stn.
TO MANAKOT & INDIA
Phusre Khola
Power House (proposed site)
Fair Ground
84° 10'
0 MILE 1/2

36. REGIONAL TRANSECT

NATURAL REGIONS	PAHAR (Sub-Tropical)																	LEKH (Temperate)			
Sub-Regions	Kachhar (Low Hills)		Bensi (Lowland)				Kachhar (Low Hills)											Lekh High Hills			
ECONOMIC: Land Use	Cropland, Terraced	Wood Land	Pasture on Seb terraces	Cropland (C)	Woodland (W)	Cropland	Cropland terraced	Woodland	C	W	Crop land	Woodland	C	Wood land, Scrub				Cropland	Woodland, Scrub	Woodland, some clearings (Khonyo)	ECONOMIC
ECONOMIC: Industries	Pottery, New Industries in Pokhara Town						Basket Weaving and Cane Works											Woollen Weaving, Forest Products			
ECONOMIC: Agriculture	Maize, Millet, Cattle		Livestock Rearing	Paddy in summer, Fallow in winter			Dry Crops	Grazing	Paddy	Woodland	Maize Millet	Grazing	Paddy	Grazing				Grazing	Millet & Maize	Sheep rearing	
CULTURAL: Population	Moderate Density Some out Migration			Moderate Density with Bazar Nucleus Immigration from Hills			Low Density Out Migration											Sparse			CULTURAL
CULTURAL: Settlement	Partly Nucleated		Rural: Partly-nucleated homesteads Urban: Numerous Bazars				Partly nucleated											Nucleated			
CULTURAL: People	Caucasoid, Hindvised Mongoloid		Caucasoid Hindus (Brahmin, Chhetri) Mixedof people in Bazars				Mainly Mongoloid (Gurung, Magar) with some Europoid											Exclusively Mongoloid			
PHYSICAL & BIOGEOGRAPHICAL: Soil	Red Earths, Latentic		Gravelly Loam, Very Low Water-Table				Red Earths, Partly Latentic											Brown Forest Soils			PHYSICAL & BIOGEOGRAPHICAL
PHYSICAL & BIOGEOGRAPHICAL: Vegetation	Moist Deciduous (Shorea Vobusta)		Low savannah	Plain plantations (shade, shelter, fodder, plants)			Wet Hill Evergreen (Castanopsis India, Schima wallichi)											Moist Montane Evergreen (Oak, Rhododendron Spp.)			
PHYSICAL & BIOGEOGRAPHICAL: Climate	Sub-Tropical		Tropical				Sub-Tropical											Temperate, snowfall above 6,000 ft.			
PHYSICAL & BIOGEOGRAPHICAL: Drainage	Short Seasonal Streams, Springs		Spring Zone	Few perennial streams seasonal streams/springs			Few perennial and numerous seasonal streams											Short but perennial streams, springs, Hot-Springs			
PHYSICAL & BIOGEOMORPHOLOGY: Geomorphology	Scarp, Ridge with Moderate Relief		Gently sloping plain terraces				Anticlinal complex with moderately high relief, Landslides											High relief of steep slope			
PHYSICAL & BIOGEOGRAPHICAL: Geology	Quarzite, Schist, Limestone, Phyllite		Gravel stratum (C. 150ft.) with conglomerate Inliers				Phyllite, Quartizite, Boulder-Bed (Low Metamorphic)											Quartzite, Phyllite, Schist, Limestone, Dolomite, Shale		Quartzite, Schist, Granite, Gneiss (Metamorphic)	

COMPONENTS



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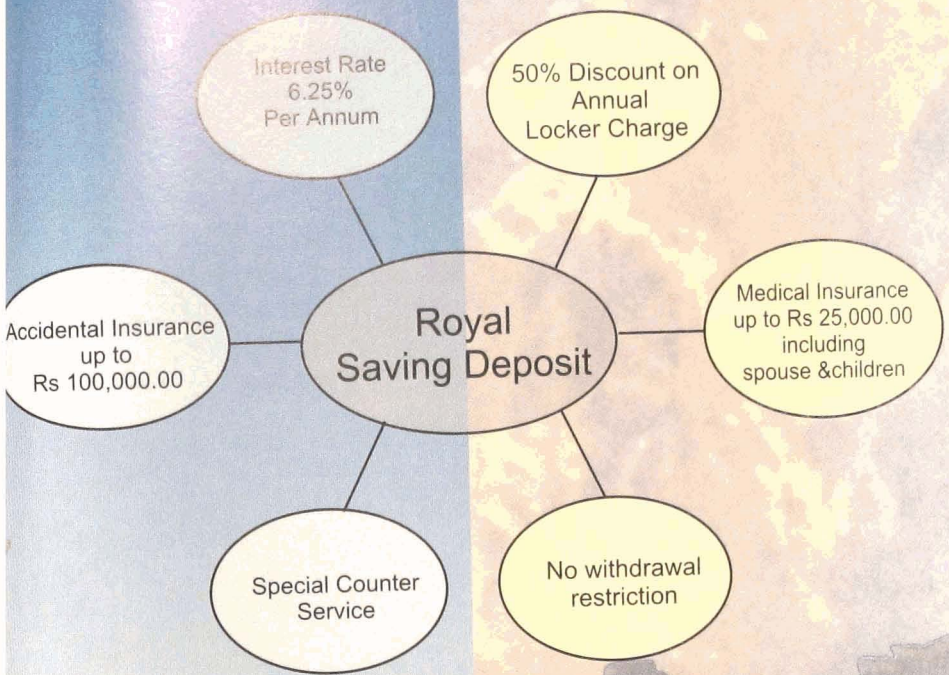

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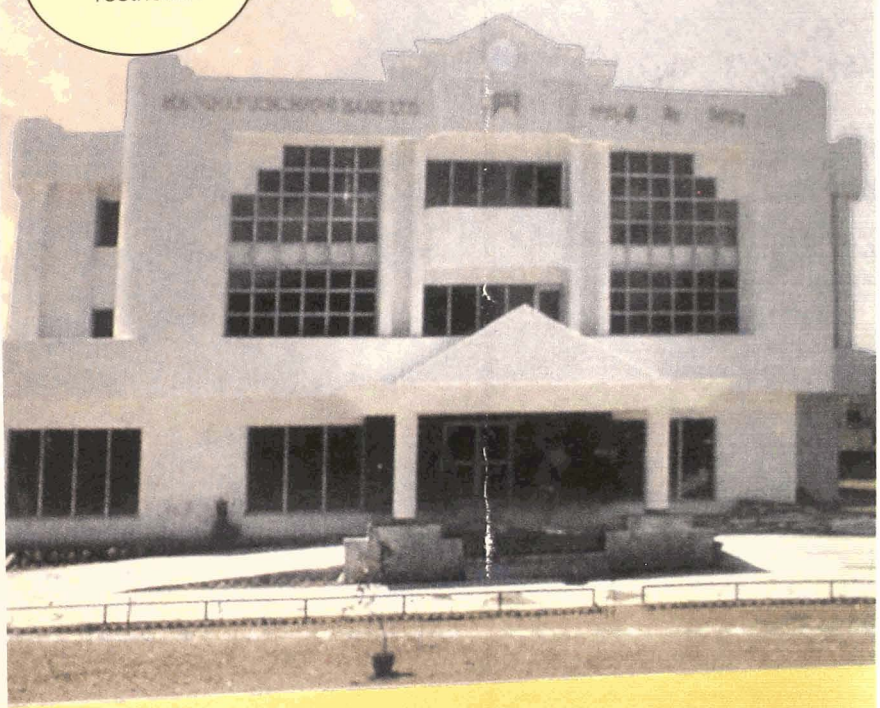

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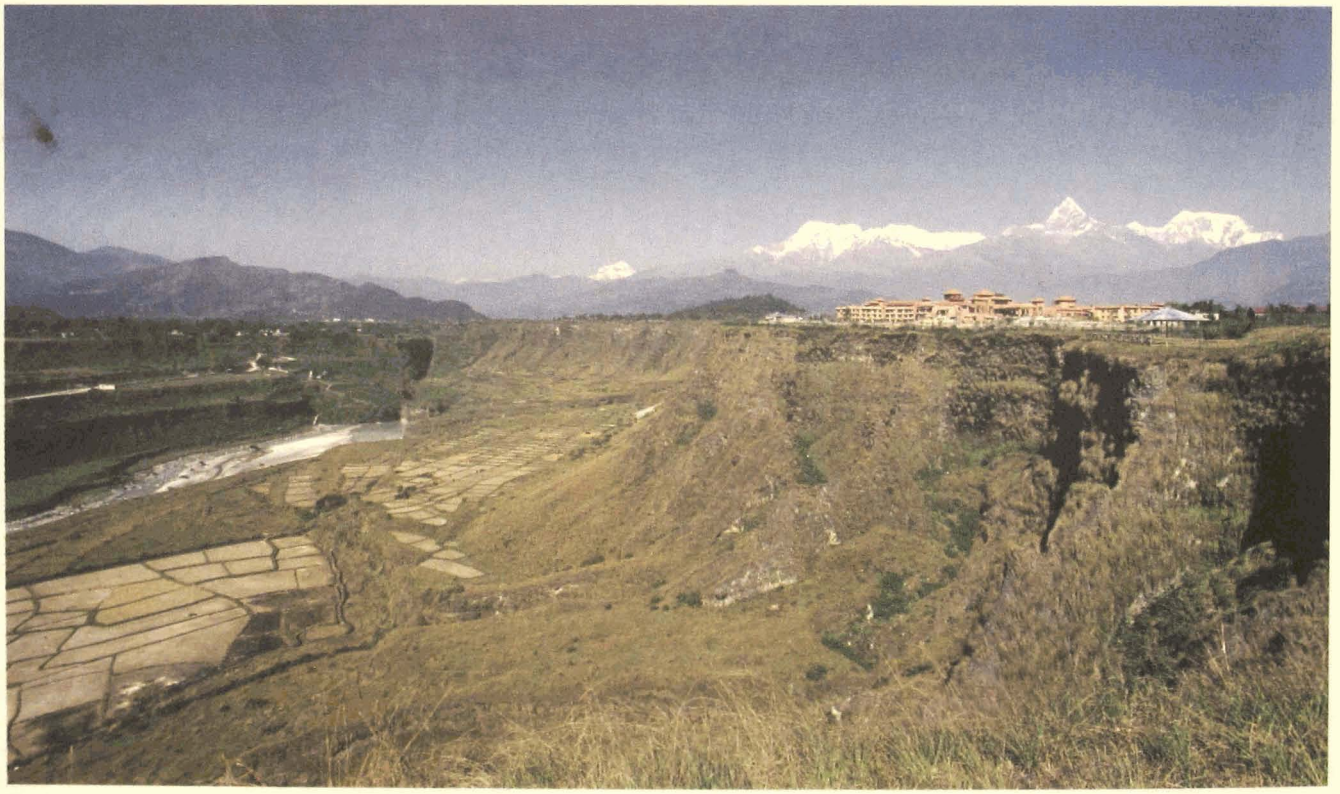
Destination Paradise

Pokhara looked like a town of villas at home, the site being chosen for the beauty of its natural scenery. Bamboo-covered ravines, flower-roofed heights, rich in green foliage, picturesque because of a rushing and winding streams, itself set in the midst of high mountains. Such were the characteristic features of Pokhara ... In all my travels in the Himalayas I saw no scenery so enchanting as that which enraptured me at Pokhara

Ekai Kawaguchi,
Three Years in Tibet,
1909, pp. 42-43

The above observation was made by a Japanese monk who travelled through Pokhara in March 1899. The next visitors to the area were the French to climb Annapurna in 1950. In 1962, Pokhara received 387 tourists. They exceeded 145,000 in 1999. Pokhara had three modest lodges for tourists in 1962. It now has The Fulbari, a resort hotel to match the natural splendour of the place. The Resort provides panoramic views of Seti river canyons to the south and snow ranges to the north. The 180 - acre property includes landscaped gardens, pools with waterfall, a pheasant aviary, and sports facilities including golf. The 165 - room hotel is built in the fine tradition of Newar craftsmanship with replication of Kathmandu *durbars* such as ornate wooden windows, stone carvings, *dabali* platform and a *mandala* entrance. Another speciality is a library as a diversion for rainy days as Pokhara happens to be the wettest place in Nepal. The Fulbari Resort is indeed an ideal destination to appreciate natural beauty in the comfort of creativity.



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