ANATOMY OF TRIBAL ARCHITECTURE
ARAKU VALLEY : ANDHRA PRADESH

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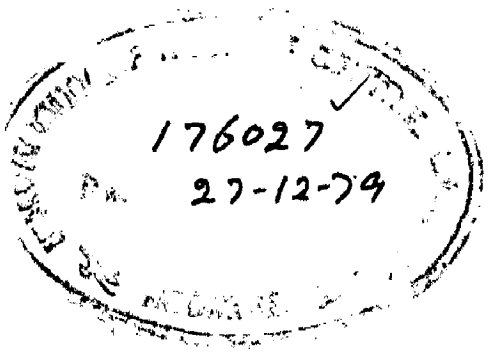

DEPARTMENT OF ARCHITECTURE AND PLANNING
UNIVERSITY OF ROORKEE
ROORKEE (INDIA)

November 1979

C E R T I F I C A T E

Certified that the dissertation entitled "ANATOMY OF TRIBAL ARCHITECTURE : ARAKU VALLEY, ANDHRA PRADESH" which is being submitted by Mr. AJAY KUMAR BOSE, in partial fulfilment for the award of the degree of Master of Architecture of the University of Roorkee, is a record of the student's own work carried out by him under my supervision and guidance. The matter embodied in this dissertation has not been submitted for the award of any other degree or diploma.

This is further to certify that he has worked for a period of 9 months from January 1979 to November 1979 for preparing this dissertation.

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ACKNOWLEDGEMENTS :

I take great pleasure in thanking Prof. R. K. Sahu, who has been the guiding force in shaping this dissertation.

I also thank other members of the faculty of the Department of Architecture, for their valuable suggestions and criticism.

My sincere thanks goes out to two humble people, Mr. P. Jogi Jagannath Raju and Mr. Amitabha Ghosh, who have inspired me to take up this study and will continue to inspire me through life.

To Integrated Tribal Development Agency, for their assistance in the completion of this thesis and to the Tribes of Amaku valley who made it so easy to photograph, so reasonable to believe, yet so mystical to interpret.

Last but not least I express my profound gratitude to my parents, whose understanding and devotion have helped me time and again.

My acknowledgement would not be complete, until I thank all those, who have directly or indirectly helped me during this period.

Roorkee, INDIA. AJAY KUMAR BOSE

"We must identify ourselves with the poor villagers, live as they live, help them to produce what we need and make full use of the local-material local talent and local tools"

- M. K. GANDHI

Om Sri Gurabe Namah.

Dedicated at the Lotus Feet of our
Revered Gurudev

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PREFACE : STUDY OF TRIBAL ARCHITECTURE AND ITS RELEVANCE :

Since architectural history has been rather neglected, particularly in India, we may ask why study tribal architecture in the space age, with its rapid tempo of change ?

One can learn from the past; that study of the past has a philosophic value apart from making us aware of the complexity and overlapping of things. "New has no meaning when it simply breaks with the past" : - C. A. DOXIADIS. We cannot assume that our problems are so different that the past has no meaning for us. While technology may progress, architecture does not necessarily do so.

This is a topic where many disciplines overlap architecture, history, cultural geography, anthropology, behavioural sciences, city planning, and building science. Therefore, this study is rather focused on buildings and their creation, and study the relation of the built environment to man and nature while many of the fields mentioned, are treated as secondary.

The study will throw light on the whole problem of understanding the relation of built form to the culture concerned, in turn making clear the values of cross-cultural analysis in relation to the house and built environment.

There is a danger in applying urban concepts, which represent only one choice among the many possible, to the problem of other areas, instead of looking at them in terms such as local way of life, specific needs, and ways of doing things. A minor example is the problem, encountered in TODA villages of Tamil Nadu. Where the Govt. have constructed prefabricated dwellings which are replicas of the tribal huts in concrete, totally disregarding the cultural background of the tribe.

Modern man has lost the mythological and cosmological orientation which was so important to primitive man, but has substituted new mythologies instead. The desanctification of nature has led to the disintegration of our relationship with the land and the site. At the very least this offers a fruitful field for research.

This study is not concerned with unique cases or with the multiplicity of examples; there would be no attempt to cover the scattered references or vast related bibliography on specific areas, places and topics. Few tribes selected for the study are typical in nature, available in the Machkund basin of Andhra Pradesh and non-influenced by the urban civilisation even its close proximity to urban areas, but approachable by the authorities for various state and national development programmes.

This thesis restrict itself by not becoming involved in unnecessary details while analysing the anatomy of tribal architecture.

CHAPTER - I

1.1 INTRODUCTION

Today, in architecture, there are many branches of advanced development that have produced poor building resulting from a lack of understanding of the basic problems and from the superficial adaptation of appropriate solution. As Dr. S. Radhakrishnan elucidated, "To survive we used a revolution in our thoughts and outlook. From the altar of the past we should take the living fire and not the dead ashes. Let us remember the past, be alive to the present and create the future with courage in our hearts and faith in ourselves".

While our knowledge of science, technology and psychology has increased, we have not applied new techniques and methods to buildings, nor have we substantially increased our understanding of the basic problems of shelter. The problems have been misunderstood and misinterpreted the social and psychological needs of man.

It could be said that a dwelling place was one of Man's basic needs. When Man had solved the problems involved in the search for food and started to cultivate the land as a complement to hunting and fishing, his life became more sedentary and his main concern became

that of creating a roof to shelter his indispensable living space. And it was this rudimentary dwelling that was to become the most elemental expression of architecture.

The simple habitation of the tribal people have much to offer as harmonious, direct and ingenious answer to the problem of man's survival among hostile or indifferent elements. The Vastuka (shelter), man's constructive effort to remain superior to his natural environment, to shelter his family and to house his belongings. Man's behaviour is a product of the physical and social environments that he inhabites, providing specific interpersonal cues and behavioural context.

A house is not only an ensemble of components, but also serves a social and family function. Its construction is always influenced by the climate, the character of the land, the local materials and the building techniques of the tribes in a given place. It expresses the individual in his socio-cultural embodiments. The basic characteristics of these houses are simplicity and integrity. Simplicity means the freedom from unnecessary mannerism and integrity means independence and honesty.

The quality of simple materials and elementry fastenings is difficult to violate. And useless

elaboration are discouraged due to the encumbrance it would impose on the builder or the inhabitant. The integrity of elementry structures is to a degree inherent; their simplicity is enforced. Most primitive structures, having withstood the test of time, are in the strictest sense of good buildings. And primitive Man took pride in his structure. It seems that the neglect of the natural characteristics of a material by primitive man, would eventually lead to an obvious physical failure of the structure, whereas, in modern architecture, with such ready discipline suppressed, the right use of a material demands considerable, sincere intellectual effort. Respect for the quality of materials is one of the most important lessons the primitive builder has to teach us.

Custom is in fact one of the most persistent stimulus to consistent development of building form. In primitive societies, custom would carry a building type not only through many centuries of time, but through a considerable range of physical conditions as well.

In any location there is a limit to the extent to which building forms are controlled by custom, and this limit is generally imposed by surrounding physical conditions. The permanency of styles in tribal vernacular architecture is one of its most outstanding characteristics.

At present, tribal architecture is disappearing owing to lack of conservation and the attitudes and the profound and radical transformation into modern life causing the neglect.

Tribal villages clearly show the importance of the careful choice of site and location, without a doubt, man's freedom is expressed in his ability to choose the place where he wishes to live. "He who thinks least is inclined to consider only practical points, whereas he who thinks more deeply attempts to create beauty as well.'

In our search to improve our conditions, we may look for spiritual guidance to the tribal villages, contained communities similar in size and scale to our rural or semiurban villages. Tribal villages have developed organically within economical and repetitive forms whose roots are similar to our own community structure.

Even in this century, in our country, we are still ignorant of the origins and development of the humble architecture of our primitive villages. Let us not ignore what Protagoras said "Man is the measure of all things". Through this study into tribal architecture, we can discover the basic roots of the development of community architecture and proceed with an enlarged vocabulary and clearer ideas which will help in planning and building of our own urban communities.

1.2. DEFINITION OF TRIBES AND TERMINOLOGY

At the beginning of the 15th century, when the great age of discovery began, the whole of the western hemisphere and the vast area of the Pacific Ocean, and the continent of Africa were unknown. Within three hundred years, however, the world as it is now known was largely discovered.

These expeditions and explorations led the Darwin-inspired evolutionists of the late 19th century to designate the inhabitants of these unexplored lands as primitive, since it was considered that their life patterns represented an earlier cultural phase through which the great civilizations of the world had progressed.

Claude Lēvi - Strauss (Structural Anthropology :102) wrote " a primitive people is not a backward or retarded people; indeed it may possess, in one realm or another, a genius for invention or action that leaves the achievements of civilised peoples far behind".

Piddington (1956) says that "a tribe is a group of people speaking a common dialect, inhabiting a common territory and displaying a certain homogeneity in their culture".

D. N. Majumdar (1961) says that a tribe is collection or group of families. He further says that a tribe is ordinarily an endogamous unit, the members of which confine their marriage within the tribes.

The definition of 'Tribe' as it has emerged from attempts of scholars or tribal life is a social group usually within a definite area having a common dialect with cultural homogeneity, and unifying social organization. The term 'Tribe' is also not defined in the constitution in the section concerning scheduled tribes (See Art. 366 (25) of the constitution) and in fact there is no satisfactory definition anywhere. To the ordinary man the word suggests simple folk living in hills and forests; to an administrator it means a group of citizens who are the special responsibility of the President of India. The constitution has simply stated under Art. 342; "The President may with respect to any state or union territory, and where it is a state, after consultation with the Governor thereof, by public notification, specify the tribes or tribal communities, or parts of or groups within tribes, or tribal communities which shall for the purposes of this constitution be deemed to be scheduled tribes in relation to the state or union territory as the case may be.... "

A tribe is a social group of people who have the following qualities :

(1) a definite territory or who claim to occupy a common territory

(2) a common name

(3) a common dialect

(4) a common culture

(5) behaviour of an endogamous group

(6) common taboos

(7) existence of distinctive social and political systems.

(8) Full faith in their leaders,

(9) Self-sufficiency in their distinct economy

1.3 TRIBAL ARCHITECTURE IN GENERAL :

Even before men and beasts walked on the earth, there existed some kind of architecture, coarsely modeled by the primeval forces of creation and occasionally polished by wind and rain into elegant structure. In the beginning once Man the Nomad and Hunter began to overcome the problems entailed in his daily search for food, he sought shelter under nature's own protection, that is, in natural caves, may turn out to be man's last ones. And when his life

became more sedentary and his main concern became that of creating a roof to shelter his indispensable living space. This was the rudimentary dwelling that was to become the most elemental expression of architecture.

There are many factors that relate these primitive architecture conceptually to each other, centuries of trade and conquest have diffused ideas and forms. However, the great common bond has been the honest, intelligent, and natural way these primitive man solved their problem of shelter.

Tribals vernacular of different regions are made up of a wide distinct architectural types which have gradually evolved over the years from the appropriate continuation of local traditions and a sensitivity towards local conditions.

The tribes built with local materials on selective protective sites or burrowed within the earth itself. A constant and organic development of primitive architecture has occurred in all parts of the world. Although, it is possible to isolate certain characteristics in relation to such natural conditions as climatic changes, earth composition, and water resources, artificial political or racial boundaries have never distinguished the architectural character. It is entirely logical that Men, although

isolated from each other by bodies of water or mountain ranges, would arrive at similar solutions to identical problems in many regions of the earth.

In a more specialized sense, the tribal, regional, or even village styles, have certain basic components which consistently recur in representations of a particular type of design.

1.4 TRIBAL INDIA :

Tribal India is found in forests and in naturally isolated regions. Some areas like the plains of the Ganga and the eastern coastal plain stretching from Bengal to Cape Camorin in the south are densely populated, while the hills and jungles of Madhya Pradesh, Orissa, Bihar or Assam, Arunachal Pradesh, Manipur, Nagaland and Tripura in the North-east and Himachal Pradesh in the west do not carry the same burden of population on every square mile of land.

In these hilly and forested regions, live some distinctive tribes. Those who are 'backward' in their economy, which means that they can support fewer people per square mile of land by means of their indigenous productive system, and often at a comparatively lower

standard of living than the neighbouring communities who depend on specialized arts and crafts. Under the economic pressure of the latter, the tribal communities have often been forced into some kind of interdependance with their neighbours, where they have not actually been reduced to some form of subservience.

The Indian tribes are also known as : Vanyajati (caste of forest), Vanvasi (inhabitants of forest), Pahari (hill dwellers), Adamjati (original communities), Adivasi (first settlers), Janjati (Folk people), Anusuchit Janjati (Scheduled Tribe) and Girijan (Hill dwellers known in Andhra Pradesh). Among all these terms Adivasi is known most extensively, and Anusuchit Janjati (Scheduled tribes) is the constitutional name covering all of them.

Till today tribals have retained their customs and regulations; nearly all marry within their restricted local groups, and are sometimes guided by their own elders, or political chiefs in their internal and external affairs. It is these communities which have been designated as tribes and listed in a schedule for special treatment.

1.4.1 HISTORY :

It is believed that the tribes were the earliest

among the present inhabitants of the country. They can be classified into :-

(i) The Austro - Asiatics in their primitive form are represented by the kols or the Mundas; the Khasis and Nicobarese;

(ii) The Mongoloid people speaking dialects of the Sino-Tibetan family who are found largely among the sub-Himalayan regions and who are represented by the Nagas, the Bodos, the Kukichins etc.

(iii) The Dravidians - the Malers, the Oraons, the Gonds and the Khonds, who speak tongues of the Dravidian family, are scattered through the central Vindhya region and have covered the land of Deccan.

(iv) The Aryans - are supposed to be the last to come to India. Thus, we see that the first three racial and cultural elements made a great contribution to the formation of the Indian people.

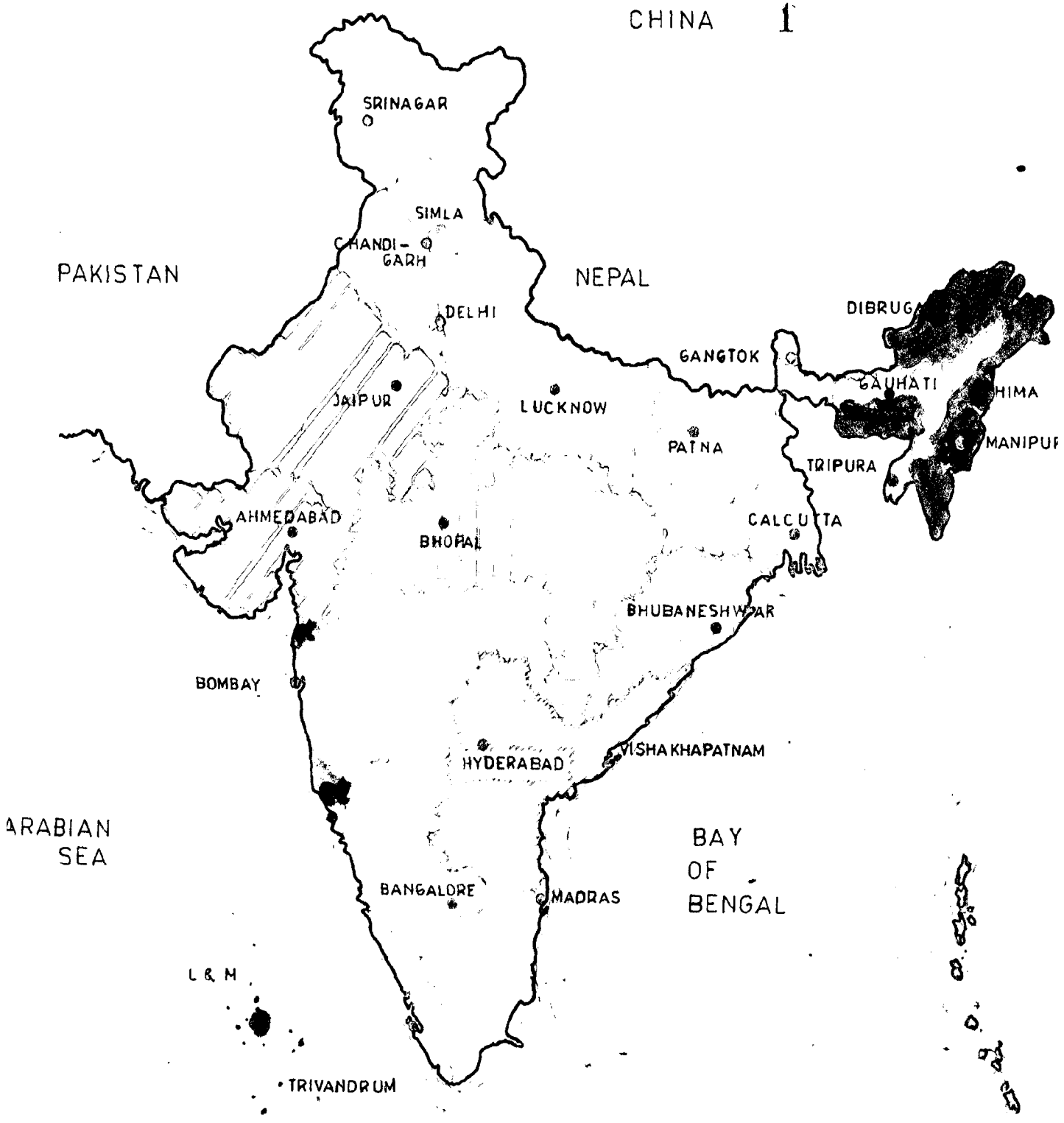
1.4.2 DEMOGRAPHIC ASPECT OF THE TRIBALS

There are altogether 427 tribal communities (Roy Burman, B. K. 1971; A preliminary appraisal of the Scheduled Tribes of India, New Delhi, office of the Registrar - General India) all over India, The Anthropological Survey

(1967) has estimated the number at 314 considering a number of tribes to be the constituents of a group of tribes designated by a common name such as the Gonds, the Bhils etc.

According to the 1961 census they had a strength of 2,98,79,249 which was 6.87 per cent of the total population. In 1971 their strength rose to 3.8 crores (3,80,15,162 census 1971), i.e. 6.94 per cent of the total population. So in the post-independence period the number of the tribal people increased from 2.25 crores to 3.80 crores and their percentage with respect to general population rose from 6¼ per cent to nearly 7 percent. An idea of the tribal population growth in the post-independence period may be had from the Table No. 1

DISTRIBUTION OF TRIBAL POPULATION IN INDIA (STATE WI



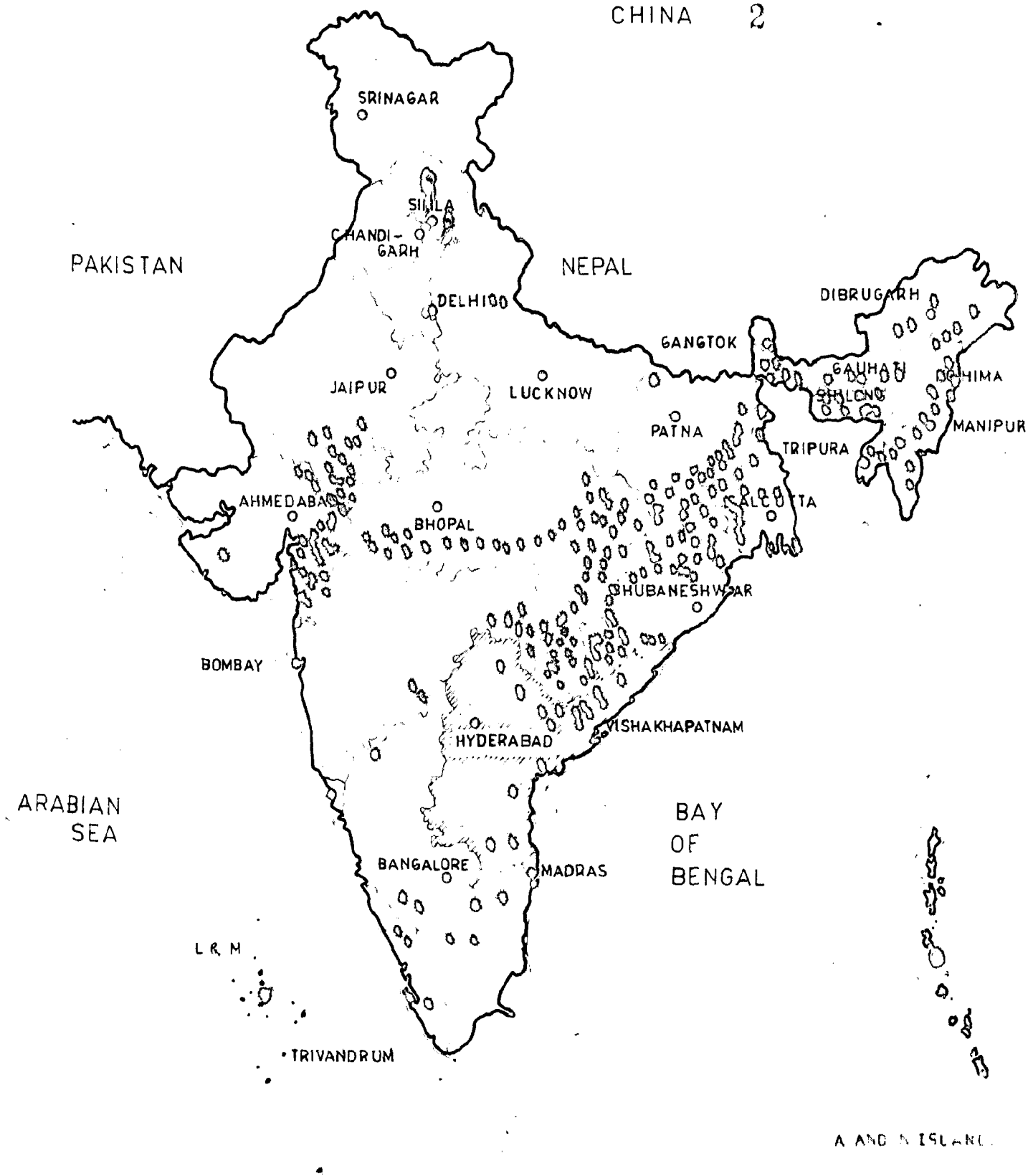
PERCENTAGE OF TRIBAL POPULATION.

- OVER 70
- 50 TO 69
- 30 TO 49
- 10 TO 29
- 1 TO 9
- UNDER 1
- NIL.

INDIA

SCALE : 1:17,500,000

CONCENTRATION OF SCHEDULED TRIBES IN INDIA



● ONE LAKE PERSONS.

INDIA

SCALE: 1:17,500,000

Table No. 1 : POPULATION GROWTH IN THE POST-INDEPENDENCE PERIOD

CATEGORY	1951	1961		1971	
	Considering the modified order (1956)	Population	Increase	Population	Increase
General	36, 11, 51, 669	43,90,72,582	21.58	54,79,47,829	24.66
Scheduled Tribe	2, 25, 11, 854	2,98,79,249	32.73	3,80,15,162	27.00

Table No. 2 : PERCENTAGES OF SCHEDULED TRIBES TO TOTAL POPULATION.

S. No.	Name of the State/ Union territories	Percentages of Scheduled tribe population to the total population	
		1961	1971 census
	INDIA	6.80	6.90
1.	Andhra Pradesh	3.68	3.80
2.	Assam (including population of NEFA)	19.35	12.80
3.	Bihar	9.05	8.80
4.	GUjarat	13.35	14.00
5.	Haryana	No Scheduled Tribes	
6.	Himachal Pradesh	8.01	4.10
7.	Jammu & Kashmir	No Scheduled Tribes	
8.	Kerala	1.26	1.30
9.	Madhya Pradesh	20.63	20.00
10.	Maharashtra	6.06	5.90
11.	Manipur	31.93	31.20
12.	Meghalaya	-	80.50
13.	Mysore	0.81	0.80
14.	Nagaland	93.09	88.60
15.	Orissa	24.07	23.10
16.	Punjab	0.07	-
17.	Rajasthan	11.67	12.10

18.	Tamil Nadu	0.75	0.80
19.	Tripura	31.53	29.00
20.	Uttar Pradesh	-	0.20
21.	West Bengal	5.88	5.70

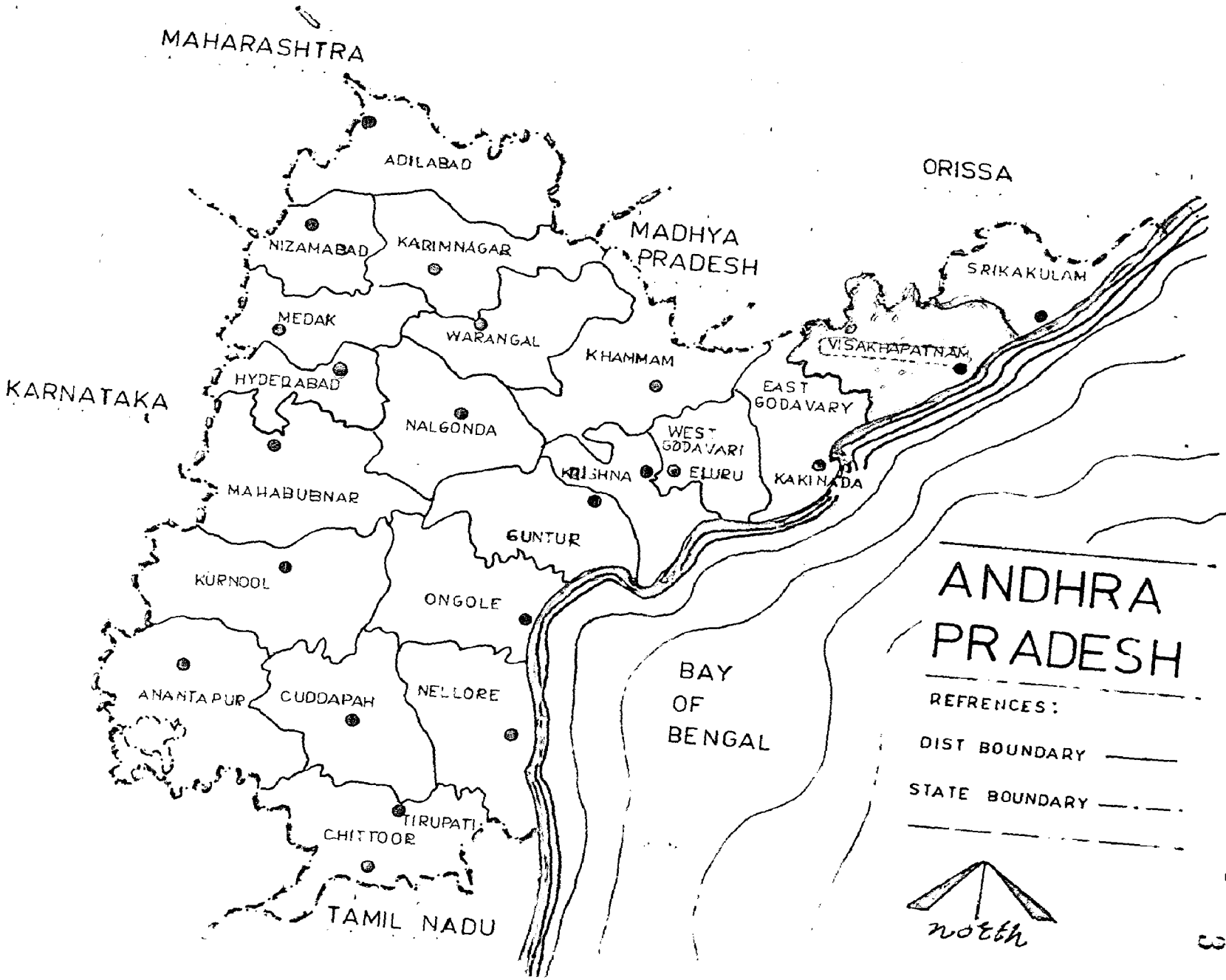
UNION TERRITORIES :

1.	Andaman & Nicobar Island	22.22	15.70
2.	Arunachal Pradesh	-	79.00
3.	Dadra and Nagar Haveli	88.43	86.90
4.	Delhi	NO SCHEDULED TRIBE	
5.	Goa, Daman & Diu	-	0.90
6.	L. M. & A Islands	99.03	92.90
7.	Pondicherry	NO SCHEDULED TRIBES	

Table No. 3 : STATEMENT SHOWING THE DISTRICT WISE SCHEDULED TRIBE POPULATION IN ANDHRA PRADESH*

S. No.	Name of the District	Previous S.T. population 1971 census	Revised S.T. population after inclusion of Yaradis & Sugalies of Telangana in S.T. list.
1.	East		
1.	Srikakulam	2,12,459	2,13,928
2.	Visakhapatnam	2,99,970	2,99,970
3.	East Godavari	1,19,027	1,19,027
4.	West Godavari	51,723	51,736
5.	Krishna	50,742	50,754
6.	Guntura	1,05,478	1,05,478
7.	Prakasam	55,111	55,111
8.	Nellore	1,30,277	1,30,277
19.	Chittoor	66,801	66,801
10.	Cuddapah	26,611	26.611
11.	Anantapur	64,878	64,878
12.	Kurnool	32,407	32,407
13.	Mahaboobnagar	5,600	85,602
14.	Hyderabad	9,667	59,769
15.	Medak	100	18,104
16.	Nizamabad	578	47,131
17.	Adilabad	1,69,299	2,36,321
18.	Karimnagar	16,433	41,180
19.	Warangal	43,287	69,907
20.	Khammam	2,01.670	3,25,702
21,	Nalgonda	519	1,22,352
	Total	16,57,657	22,26,086

*Source : Girijan Cooperative Corporation Ltd. Vizag


MAHARASHTRA
ADILABAD
NIZAMABAD
KARIMNAGAR
MADHYA PRADESH
ORISSA
SRIKAKULAM
MEDAK
WARANGAL
KHAMMAM
VISAKHAPATNAM
KARNATAKA
HYDERABAD
EAST GODAVARY
NALGONDA
WEST GODAVARI
KRISHNA
ELURU
KAKINADA
MAHABUBNAR
GUNTUR
KURNOOL
ONGOLE
BAY OF BENGAL
ANANTAPUR
CUDDAPAH
NELLORE
TIRUPATI
CHITTOOR
TAMIL NADU
ANDHRA PRADESH
REFRENCES:
DIST BOUNDARY
STATE BOUNDARY
north
PLATE NO. 3

1.5 GIRIJANS OF ANDHRA PRADESH :

Andhra Pradesh, the fifth largest state in India, extending over a total area of 2,76,754 sq.kms., with a population of 43.5 millions, lies in the eastern Peninsular India. Along the eastern sea-board lies a plain, made up partly of deltas formed by the numerous streams and rivers which flow from the inland hills and mountains either directly into the Bay of Bengal, or into such great rivers as the Godavari and the Mahanadi. These hill ranges, locally called Eastern Ghats run through the upper parts of the state almost from the sea coast in the North East in Srikakulam District to the North -west in Adilabad district. It is these forests and hilly tracts that are the traditional home of the scheduled tribes in the state. In all 33 such tribes residing in the state - out of a total of 427 tribes in the country, are pre-Dravidians in origin and to some extent share Negroid features. Ecologists assert that the early and middle Palaeolithic civilizations of Pre-historic times flourished in the district of Kurnool, Guntur and Nellore in Andhra Pradesh*.

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*Raghavaiah, V. - Andhra Rashtra Adimjati Sevak Sangh, Nellore (A.P.) 1971 : pp.27

The tribes of North India are vigilant, sturdy and assertive, those of the entire south India including the tribes of Andhra Pradesh, are lethargic, meek, unambitious and mostly emaciated, owing to age-long malnutrition, loss of land, loss of nerve and loss of identity.

The total tribal population of the state has gone upto 22.26 lakhs (Table No. 3) concentrated mostly in about eight districts along the North and North-eastern parts of the state. There are, however, some pockets of concentration of tribal people in the heart of the state, spreading across River Krishna, on the Amrabad Plateau in Mahaboobnagar district and the Nallamallai and Eriamllai hills of Kurnool and prakaam districts (Plate No. 3).

The entire tribal population presents a panorama of striking diversity, marked by varying racial characteristics, different cultural heritages, various linguistic and occupational traditions which lend lusture to the cultural mosaic of Andhra Pradesh. However, in all this diversity, there is a broad similarity which exists between these diverse tribal people. The similarities are in there traditional festivals, which date back to antiguity, belief in the common ancestory and worship of their ancestors. In some deep jangles, a couple

of temples are present in which there are beautiful images. The local tribes worship the deities by offering sacrifices to these images; The tribes of the mountain are thus not always as influenced by plainsmen as anthropologists have generally tended to believe.

The tribal people of the state have a very rich variety of languages and dialects. The Ghonds and Thotis of Adilabad speak Gondi, the Kolam speak mostly Kolami. The Banjaras or Sugalis speak a distinct dialect, the Savaras of Srikakulam district speak Savara. The Mundari group of Austro-Asiatic family is represented by the Gadaba language. The Khonds of Visakhapatnam district speak the Kui and the Kotiyai, Gondi and Bhagatos speak a dialect similar to Oriya language.

Among all the tribes the Gonds - also known as Koitur - deserve a special mention, because of their rich mythology and heritage. They wielded considerable political power in the past and ruled over a large region of the country, commonly known as Gondwana. Some Anthropologists believe that the 'khonds' of Visakhapatnam and the "Gonds" of Adilabad originally were only one tribe.

Agriculture is the main occupation of these tribes. As the rainfall in these parts of Andhra Pradesh is plentiful it has been possible for the tribes to survive

even if their standard of living has not been high. Forests and tribals are closely interdependent.

A.P. Tribal revolts erupted on four different occasions. First revolt was during 1802-03 and twice in 1879 and thrice in 1968, which continued upto 1970 and the last revolt took place under the leadership of the Naxalities. The main reasons were due to economic and political exploitation of tribes by non-tribal people The number of titarate tribals in A.P. is estimated as being 4.41 per cent.

Visakhapatnam district is spread over an area of 13,799 km. with a population of 28.05 lakhs covered by 25 panchayat samittis. Of this, the agency area is 6,167 sq.km. with a population of 3,30,152 spread over eight tribal Development Panchayat Sammittis.

Of the 2,99,970 scheduled tribe population in the district, 2,80,260 live with agency area and 142 villages having having 25% or more of scheduled tribe population, adjoining the Total Development Blocks*

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*Ref. : Report on the Development activities of Integrated Tribal Devp. Agency, Paderu.

1.6 GIRIJANS OF ARAKU VALLEY

The population in this valley are mostly Tribals. These tribals are slowly coming under urban influence and yet they retain their own indigenous ways of life. They live in scatered villages, which are located on the slopes of the hills or on elevated areas. The following are the hill tribes residing in the agency tracts of Araku valley:

(1) Bhagata
(2) Gadaba
(3) Kandakammara
(4) Kotia
(5) Kondadora
(6) Kondakapu
(7) Koya
(8) Kondu
(9) Mookadora
(10) Porja
(11) Mali
(12) Valmiki
(13) Samathulu or Kodulu
(14) Dombu
(15) Pydi
(16) Ghasi
(17) Goudud

The most prominent amongst them are Bhagatas, Kotias, Konda Doras, Valmikis and Kodulus available in the villages under case study.

1.6.2 SOCIAL HIERARCHY :

The Bhagatas said to be a soldier caste and

tribal dress

the tribal man usually wears a waist string and a small piece of cloth locally "gochi" as underwear. the ends are left loose and passed between the legs to cover the nakedness. they also wears a shirt, made of coarse cloth bought at weekly shandy. a few of these tribals also wear the headgear locally known as "burrachuttu" which does not convey any social significance. during winter season, everyone covers himself with "pachadam" (thick coarse cotton blanket). they usually prefer hand-woven and coarse cloth as it is not only cheap but also very durable. they purchase the clothes from the weekly shandy at araku on fridays and at sunkarametta on sunday.

considered to be of higher caste, at one time loyally. served the king of Golgonda. They have godd social position, they are devout Hindus. Some of them being Vaishnvities and others Saivites, and it is rather difficult to see why they are classified as a tribe. They look on themselves as the leaders of the communities in this area and the leading Muttadar (village Head) is normally a Bhagata.

The Konda Doras are also known as Konda Kapus and have been described as the 'agrestic slaves' of the Bhagatas. They claim to be Hindus but they have no objection to beef eating. They are not, however, regarded as untouchables.

The Bhagatas and the Kotiyas in Araku valley occupy a higher rank when compared with Khonda Dora. Pork is a taboo for the Kotiyas of this region whereas the Khonda Dora eat pork. But a Kotiya leader in a multi-tribal village does not allow Khonda Doras to rear pigs in his village though the latter has an inclination to do so. Thus sometimes the 'dominant tribe' in a village may not allow the rearing of certain animals which are taboo though the other tribes prefer to do it with the objective of supplementing their food resources and improving their economic lot.

tribal dress

tribal women's saree is tied round the waist in such a way that it covers completely the upper and lower portions of the body upto a little below the knees. making a convenient to work both in the farm and in the forest as she participates equally along with the man to earn the bread. they prefer low cost white sarees with coloured border. they do not wear choli. ornaments are made of brass and aluminium. besides they wear necklaces of multi-coloured glass beads. the hair style of the woman is known as 'mula'.

The Valmikis, most of whom are Hindus except for a few, converted christians, are regarded as untouchables. But however in their daily life in the village they have no restrictions in their interaction with other villagers. The Valmikis are not aborginal inhabitants in this area but have migrated from plains.

1.6.3 OCCUPATION :

The main occupation of these tribes is agriculture. They practice a primitive type of shifting cultivation which is locally known as 'PODU' cultivation. The tribal agriculturist clears a natural forest, sets fire to cut material, hoes the area with some primitive tools and broadcasts seeds of agricultural crops during rains. Due to high fertility status in the soil he harvests a fairly good crop in the first first year, but gradually the yield during the succeeding years falls down. The tribes then turn his eye towards a fresh area. PODU cultivation has become a habit, and a part of the tribals life. The tribals consider PODU as their birthright. Since generations, PODU is being practised in these hills, and their values and moral standards are determined by 'Podu'* and the cultivation of maggo.

*D. R. Rao, D. V. Raghava, : Social Factors Affecting Agricultural Devp. in Tribal areas, paper discussed in a Seminar at JORHAT, INFEB. 1970.

Girijans get pulses and grain, grown by them and minor forest produce like tamarind, "adda" leaves to Araku shandy on Friday. The transactions are based on barter as well on cash payment system. in turn they purchase salt, tobacco, cloth, dried fish, kerosene, jaggery and country liquor etc., which are the main requirements of these tribes.

They travel on foot and carry their luggage on shoulders or head.

according to them, who ever grows it, is a good man and a moral man.

A tribal looks at his economic activity as a way of worshipping Gods and a way of life rather than a way of purely earning a living. The tribal believes that only those crops traditionally cultivated by them are fit for offering to the Dieties. As such tribals prefer to grow only Traditional crops and hesitate to plant cash crops.

Additional occupations are rare. They cultivate either their own land work as labourers in others land. After the recent land distribution effort of the State Govt. by alloting excess land and unused land to the land-less, most of the house-holds now have some cultivable land of their own.

Service animals and cattle are commonly found within almost every other household, though the number varies widely depending on economic conditions.

1.6.4 ECONOMIC BACKGROUND :

It is not possible to assess the income of these people, due to the uncertain nature of income, ignorance, and reluctance of the people to disclose their actual income. The cereal produced from cultivation is in almost

tribal shandy at araku

the main centres of attractions for Girijans are the weekly 'shandies' at araku on Fridays and at sunkarametta on sundays. these tribals' market attract large tribal gatherings particularly during the summer seasons, as many of these tribal sell their minor forest produce, pulses, and grains etc., which are the main requirments of the tribals. these shandies are the live centers for acculturation in this area, as the tribals come into contact with different types of people in these market centres. thus the younger generation is slowly adopting the modern way of life.

all cases insufficient, sometime even for domestic consumption and so is not sold in the market.

But, the majority of the tribal population depend upon the collection and sale of minor forest produce to the Girijan Cooperative Corporation Ltd. (helps tribes by providing, providing more settled type of cultivation and wage based employment throughout the year), besides agriculture which is mostly dependent on rains.

The people do not seem to produce very much in the way of arts and crafts. They make mats from reeds and umbrellas or plates with 'adda' leaves. There is a certain amount of oil pressing at individual level for domestic use.

Most of the tribals have a habit of maintaining a small kitchen garden to meet their daily needs. The professional men like drumes, liquor collectors and village priests etc., have the advantage of some additional earning from their trade. There is practically no fixed and reliable source of earning for most of these tribes, excepting a few, who are well off.

1.6.5 FAMILY COMPOSITION :

The family composition and the system of marriage

of this society a is typically similar to remarrying monogamy. The eldest son normally b looks after his parents. Wife is often taken as a helping hand in cultivation, since cultivation in hilly terrain needs more labours as compared to that in the plains.

Due to the typical marriage system in the society, split in the family is accepted norms, immediately after the marriage the groom is supposed to establish his own seperate family (primary family) . Normally they prefer to construct their shelter near to their father's.

1.6.6 LITERACY :

The number of literate tribals in A.P. is estimated as only 4.41 per cent. There has been practically no formal education in the past, in these areas, only in recent times facilities of primary schools are available in a few of villages. Almost our hundred per cent of the female population, and ninety five per cent of the male population were found to be illiterate, rest of the population are from school going children, who are trained primary schools.

Every tribe has its own form of education. These tribes have its own language which was only a spoken

language until they began to study and write it both in Roman and Telugu script. There is a great amount of folklore, some of it is already recorded and studied by researchers.

The language (Lingua Franca) spoken in these area is Adiwasi Oriya, which is the Tribal counterpart of State Oriya. Adiwasi Oriya is an Indo Aryan language. Other languages spoken here are Kanda Dora, Kupia, Khond and Telugu, Khonds speak 'Kui'. Telugu has come in as an outside influence.

Basically the tribes of the villages under study do not have any script of their language, whereas other tribes in this valley have been writing a form of Oriya script for a long time on palm leaves which are formed into a book by the State Govt. Only some people were taught that kind of script for religious texts. The teaching and practicing was done on fine earth taken from termite hills and spread on a slap of wood. The script was then inscribed with a pointed stick.

1.6.7 RELIGION :

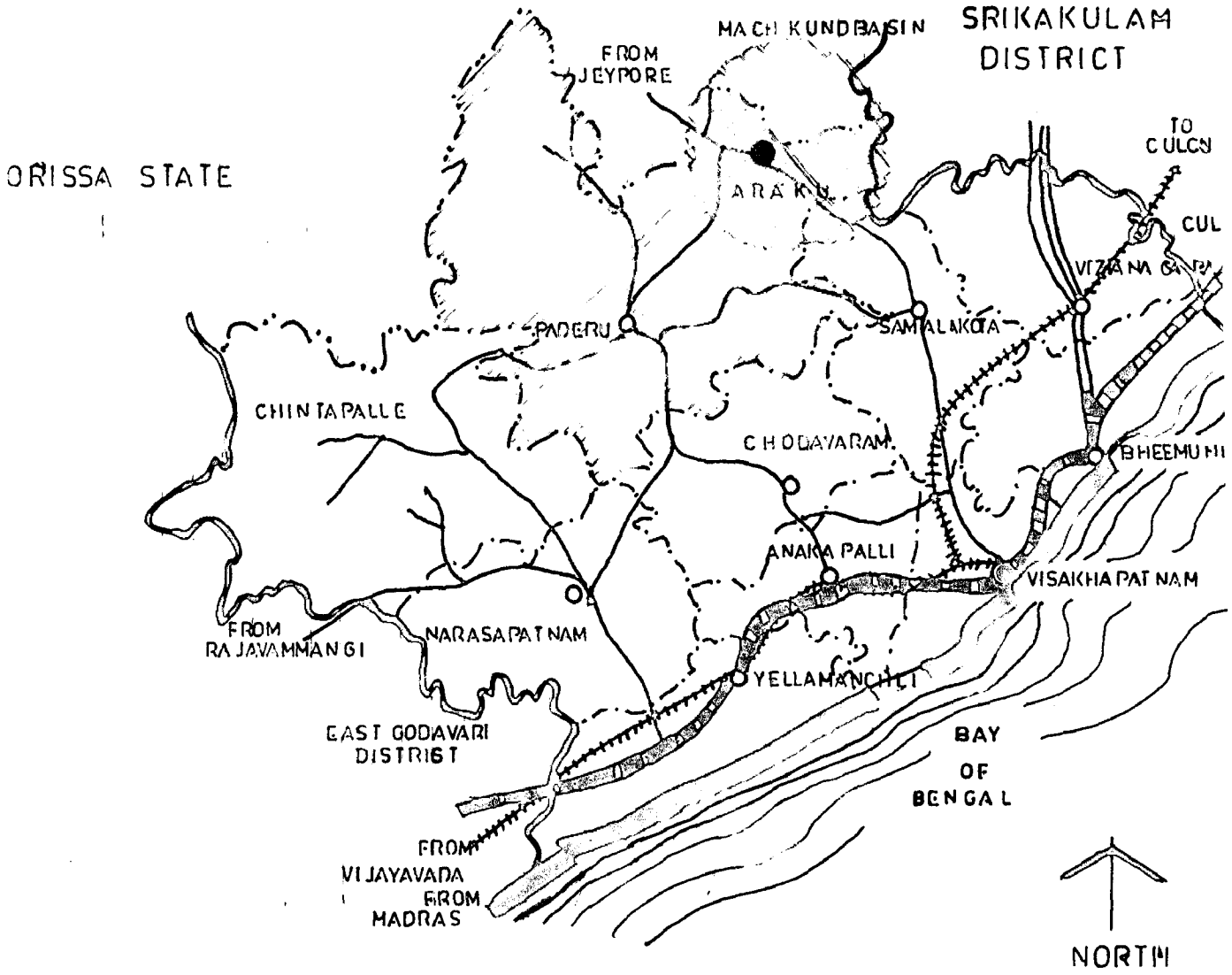
Tribal religion consists of three elements, the worship of Gods and spirits, the death rituals, and the

totemic ceremonies. The tribals have a great belief in spirits, they believe that the spirits of the dead constantly watch with interest and concern the doings of the living, tender tender them advice and sometimes even revisit them. Every village has got its own 'Demudu' (God). They perform the festival of their God in 'Vyśakha' month i.e., in May.

Rituals are performed mainly to avoid sickness and death. It is the central dynamo of life and the link which binds him to the secrets of nature. In other words, myths allows him to come to terms with nature's varied and bewildering phenomena. The tribal never tried to either dominate or outwit natural forces, but they learnt to live with many of their harsh forms.

Myths is an experience which establishes man's kinship with everthing around him. It reinforces his faith in himself explaining simply the rationale behind whys and wherefores by clearing the doubts and question marks posed before him.

There is religious toleration among the tribals. Some of them have been converted into christianity by the propaganda of Missionaries.



: ARAKU VALLEY IS 115 KM FROM VISAKHAPATNAM

0 16 32 48 KILOMET

MILES 0 16 32

LOCATION

MAP OF ARAKU VALLEY
PADERU TALUK (OLD)
VISAKHAPATNAM (DIST)

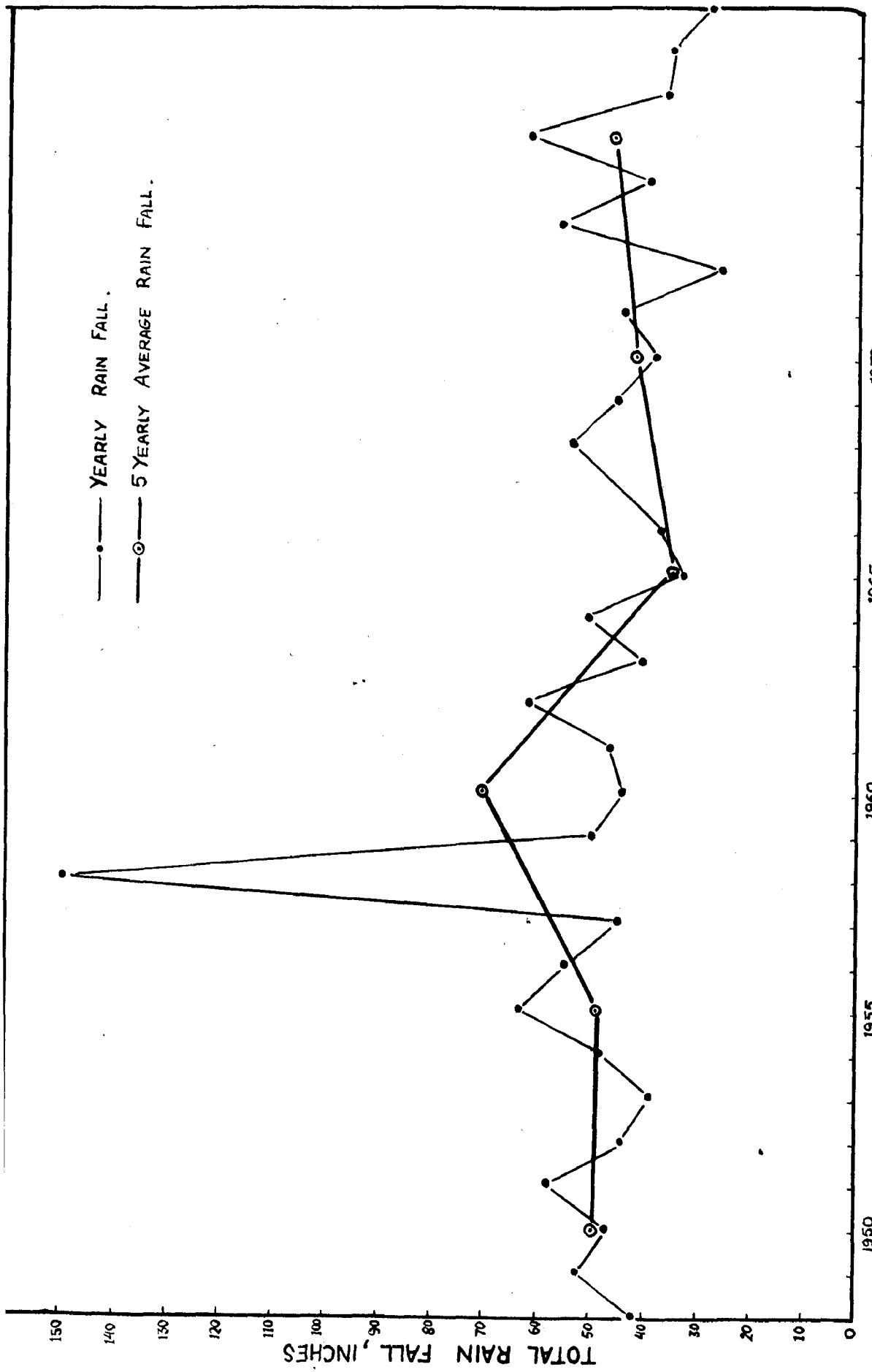
1.7 MOSAIC OF ARAKU VALLEY :

Originally Araku Valley was part of Panchipenta Estate which covered a large tract of land in Visakhapatnam and Srikakulam Districts of Andhra Pradesh. This estate suffered dismemberment in the 19th century. The Raja of Jaipur purchased a part of it in 1903. Under the Estate Abolition Act, the estate was taken over by the Indian Government on 20th June '55. Araku Valley came to lime light when it was originally planned to grow exotic vegetables to meet the demands of the military during World War II.

Araku is a broad picturesque and rich valley situated at an altitude of 3084 ft. from mean sea level. The valley mostly consists of grass land and cultivated fields and a number of perennial hill streams which run through it, locally known as Geddas. The forest in the area is of a semi-deciduous type.

Araku is the head quarters of the taluk by the same name Araku lies to the NORTH of Visakhapatnam Dist., separating it from Orissa State lying between lattitude 18° -23' N and longitude 82° - 52' E. Araku taluk is newly formed by being carved out of Paderu taluk on the 1st of June 1979. The distinctive feature of this taluk

PLATE NO: 9



RAINFALL DATA OF ARAKU VALLEY

SOURCE: DIRECTOR OF AGRICULTURE (J.C.) ARAKU VALLEY.

is that it is mostly covered with thick forest hills of the Eastern Ghats of Machkund Basin, so named because it is said to have been ruled by the rules of Mathsya Desa or the chiefs of Mathsya dynasty.

Araku valley is 160 KM from Visakhapatnam. The Machkund Hydro-Electric project is 84 KM. away from the valley towards Orissa State. The nearest railway station at present is Araku in the South Eastern Railway zone.

Araku valley (colony) is the key centre for developmental activities undertaken by the State Government in this hilly region. A Govt. Hospital, a veternary Hospital, A post office, Bank and various other Govt. offices are located here. A Govt. Basic Training and High School with a hostel for tribal children is also located at Araku valley.

1.7.2 GEOLOGICAL FORMATION :

The valley having residual nature of soil as they are formed in-situ from the underlaying rocks. Under a warm humid climate the parent rocks have weathered brown to reddish, sandy to loamy type of soils with frequent laterite capping. The clay and humus content is less. The soils are medium to fine grained and essentially non-clayey and

essentially non-clayey and hence susceptible to erosion, particularly because of the undulating nature of the ground.

The soils are deficient in lime, nitrogen and phosphoric acid and tend to be acidic. The soils in the road valley are deep and the fertility status is moderately good when compared to the soils on the hill slopes. The lateritic soils though poor in fertility status, respond readily to manuring and good cultivation.

1.7.3 CLIMATIC CONDITIONS :

The climate in the valley is mild and salubrious as a result of the altitude. Three seasons are distinguished as:

1. Summer : March to June
2. Rainy season: July to October
3. Winter : November to February

1.7.3.1 Temperature :

Ranges from 3° C to 30° C temp. fall to the minimum in January and rises to the maximum in May.

1.7.3.2 Rainfall

The region receives total annual rainfall of 1200 m.m. (see Appendices).

1.7.3.3 Humidity

The mean annual percentage of humidity is 70%

1.7.3.4 Wind

High wind pressure are experienced during October and November as a result of depressions that occur in the Bay of Bengal.

1.7.4 FLORA & FAUNA

1.7.4.1 Flora

The flora of this area provides a rich variety. The large sized trees commonly found in this forest area are mango, jack, silver oak. The interesting species available in this valley are :

	Name of Species	Botanical Name
1.	Sidha	Laogrstromia Perioiflora
2.	Ason	Terminalia Tomontosa
3.	Paharia Sisoo	Dalbergia Latifolia
4.	Pia-Sal	Petrocarpas Marusapuim
5.	Chakunda	Cassia Seimca
6.	Sonali	Cassia fistula
7.	Champa	Michalia Champaca
8.	Bahara	Terminalia Balerica
9.	Harda	Terminalia Chebula

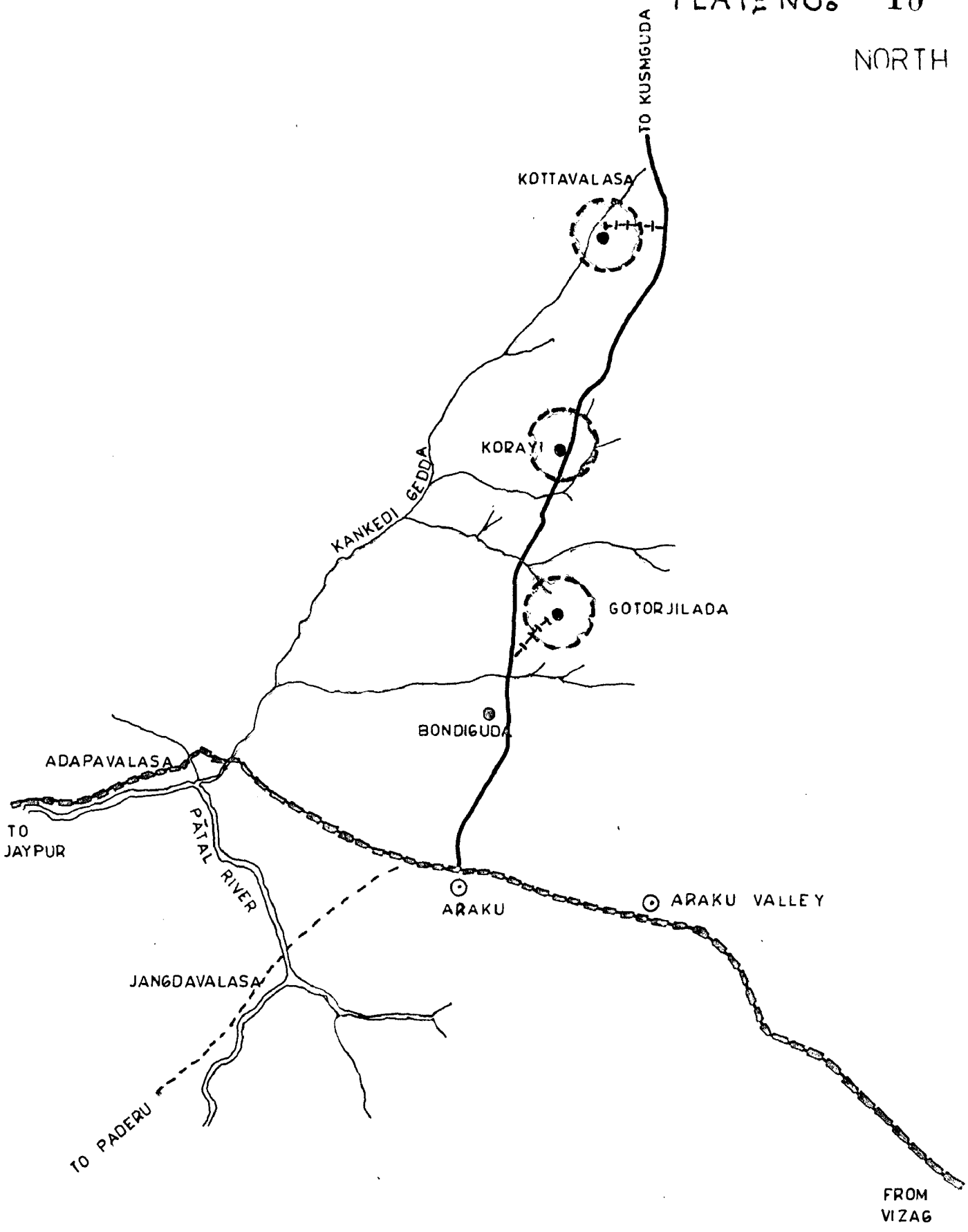
10.	Amla	Emflica offciralis
11.	Jamun	Syzygium Cemini
12.	Mango	Mangifera
13.	Panas	Artocarpus Integrifolia
14.	Ba	Ficus Fengalensis
15.	Aswastea	Ficus Religiosa

Source : Office of the Director of Agr. (Sc.) Araku

1.7.4.2 Fauna

The forest, surrounding these villages, is the abode of several varieties of wild animals such as Sambars, wild bears, leopards, wolves, panthers and bears. Varieties of colourful birds like parrot, sparron, wild crow are also found in the forest. Wood fowl and rabbits are abundant and move about freely in the hills. Buffaloes, cows, pigs, sheeps and goats from the domesticated live stock, but they do not belong to any well known species and their is no proper care taken by the tribes to improve their breed.

PLATE NO: 10



MAIN ROAD

UNMETALLED

CART TRACK

PATH

LOCATION MAP SHOWING VILLAGES FOR CASE STUDY

SCALE: 1 INCH TO A MILE

SOUTH

1.7.5 SETTLEMENT PATTERN

The villages are located on the slopes of the hills or on the elevated grounds, preferably under the shade-giving baniyan and tamarind trees. These villages are based on leaner pattern and unplanned.

1.8 VILLAGES IN FOCUS

Three villages have been selected for study :

(A) GATTORJILEDA

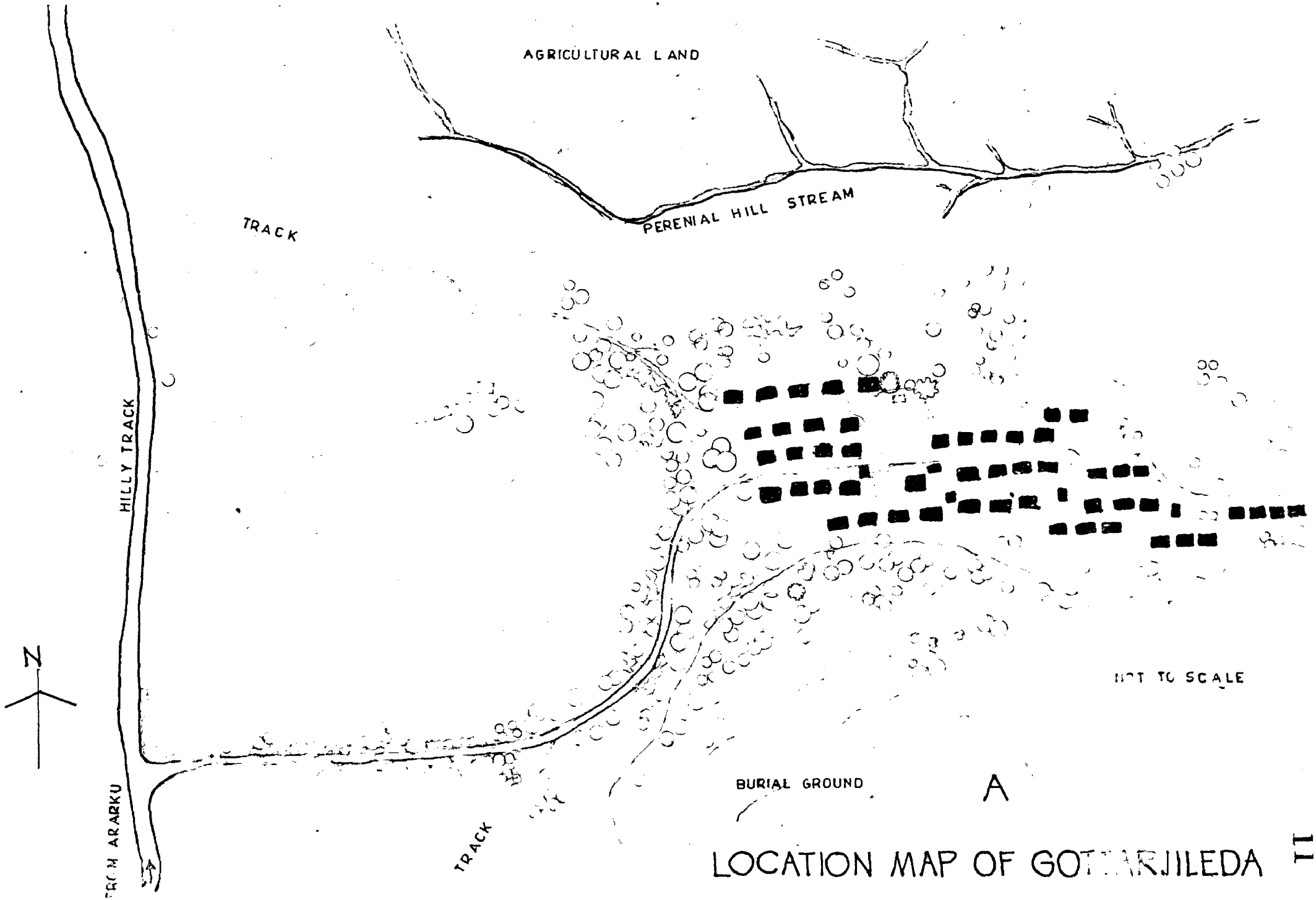
Location :

Longitude ... 82° 51' 30"

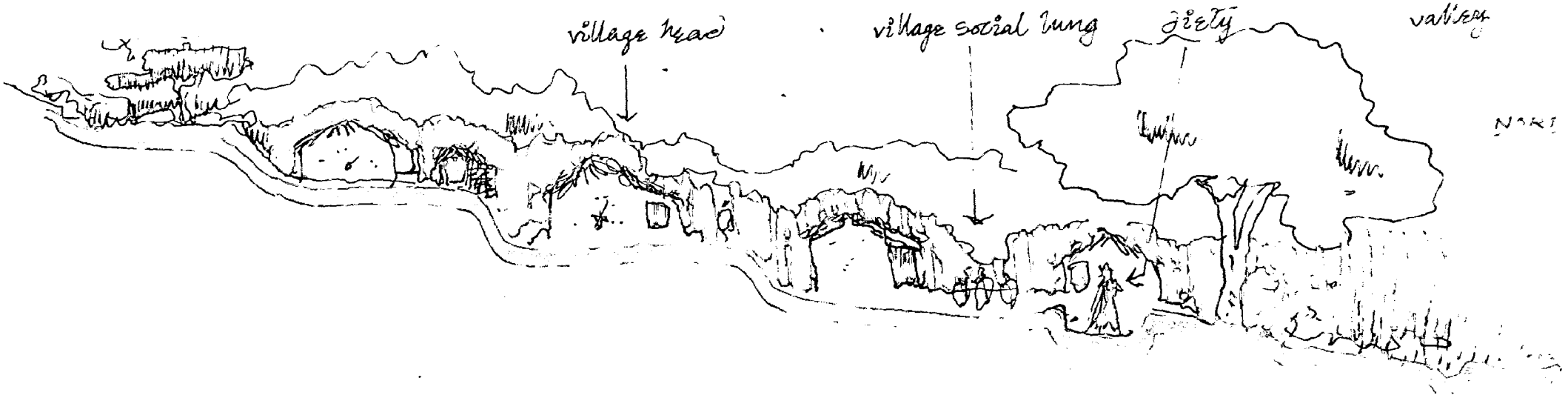
Latitude ... 18° 21' 58"

(Refer S.I.Toposheet No. 65 J/5)

This village is about 9 kms from Araku village and Linked with a Samiti Kuccha road which passes through western side of the village. This village is slightly off the main route, and situated on a hill slope, facing the Northern side of the valley. The village shelters are constructed on terraces, and camouflaged with thick vegetation.



LOCATION MAP OF GOTTARJILEDA



section across open space

longitudinal cross section

PLATE NO. 12

• HYPOTHETICAL SECTIONS OF GATTORJILEDA (A)

• NOT TO SCALE

The village Gattorjileda is a multi-tribal village. The tribes in the village have a hierarchy among themselves, according to their ranks, Kotia, Khorda Dora and Valmiki. Valmikis are considered as untouchables and the higher class avoid them from entering into their shelters. But however, in their daily life of the village does not have any restriction on their interaction. They are located on the rear side of the village leaving a distance in between the two classes.

These villagers are agriculturists, and cultivate wet, dry podu lands. They grow crops such as paddy, maize, Korralu, Samai, Chodi, Oodalu, Millet and Adusula. This village has a perennial hill stream across the valley towards Northern side, which they use for drinking as well as for cultivation purposes.

The cremation ground is situated on the southwest of hill slope. This village restricts its growth (Ref. Plate No.)

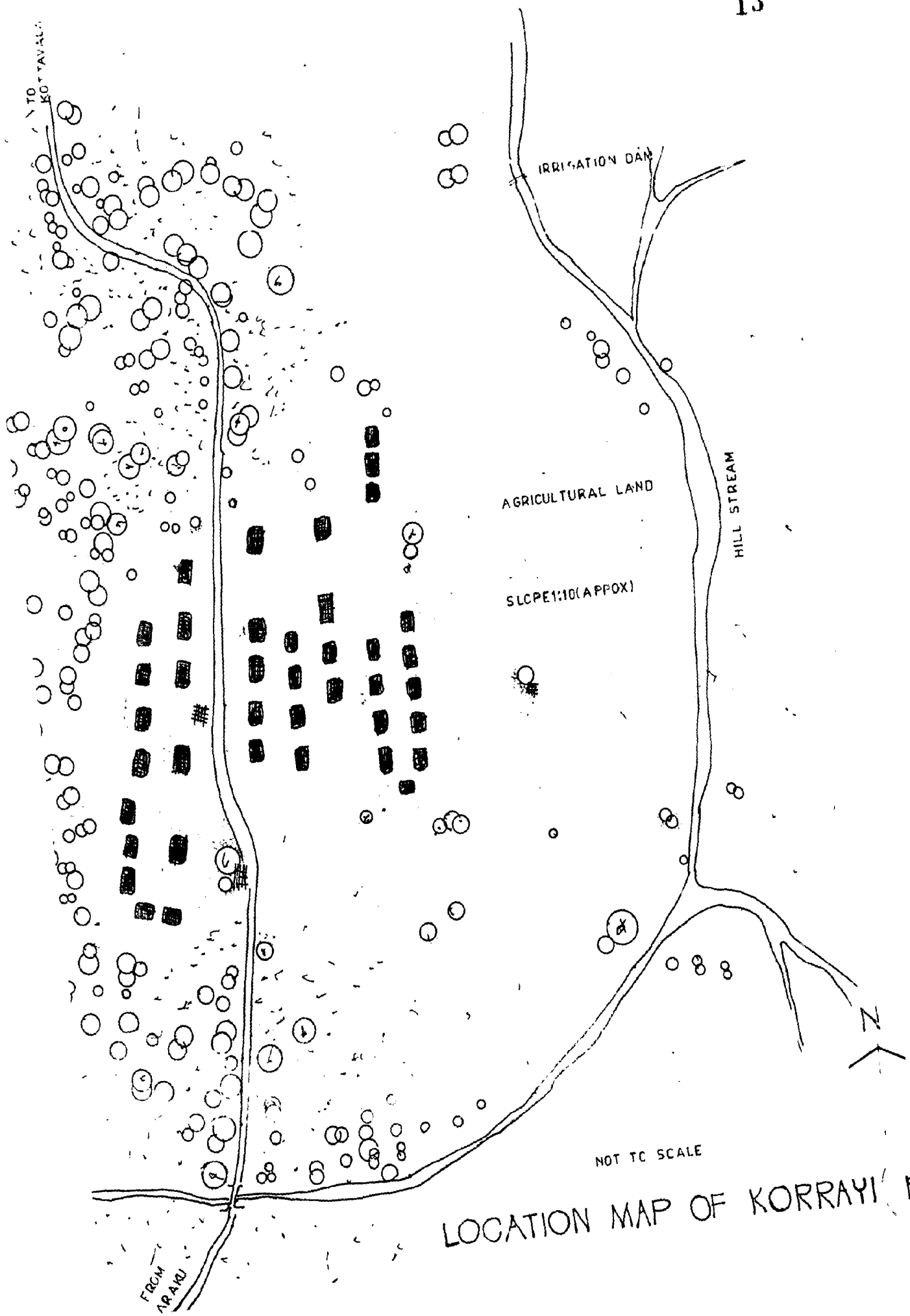
B. KORRAYI

Location : Longitude 82° - 51' - 30"
Latitude 18° - 22' - 56"
(Refer Toposheet No. 65 J/15)

Area : 2.36 sq. miles

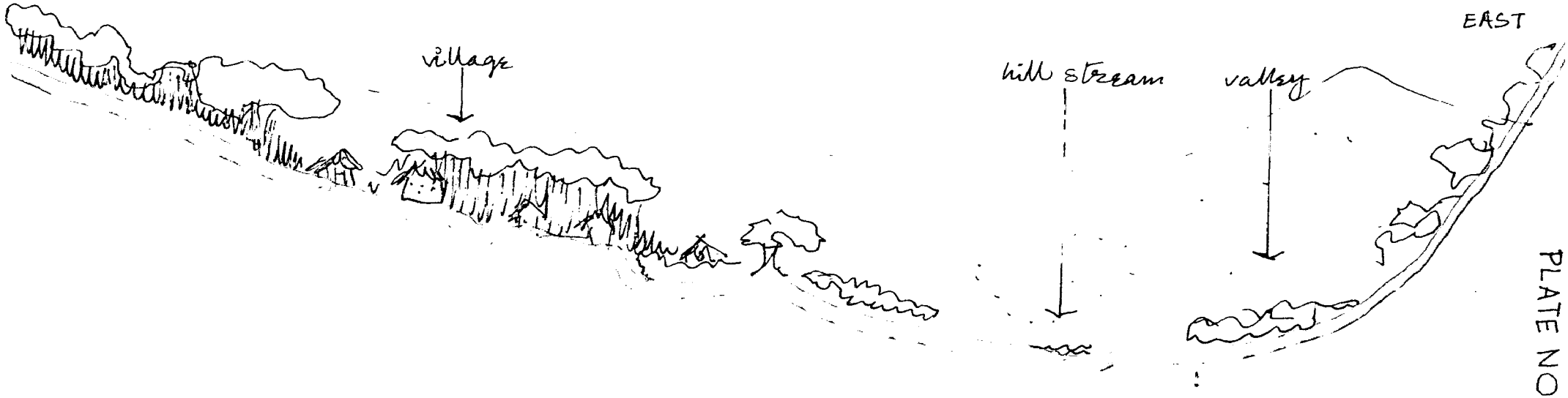
Altitude : varies from 3250 ft. to 3050 ft.

PLATE NO
13



LOCATION MAP OF KORRAYI E

section at village open space



longitudinal section

PLATE NO. 14

• HYPOTHETICAL SECTIONS OF KORRAYI (B)

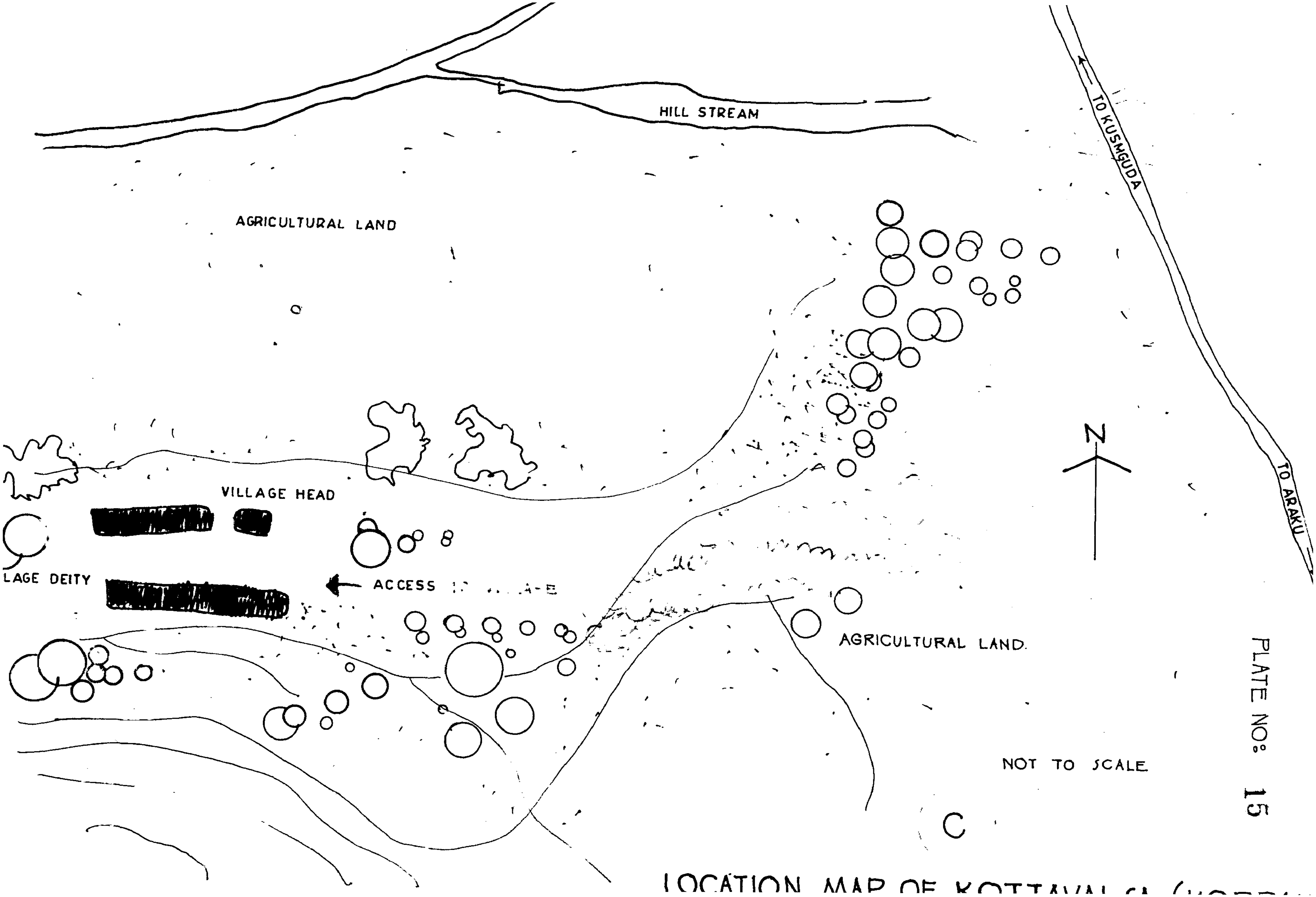
This village is situated on a hill slope, and about 12 kms away from Araku village. The Samiti road crossing this village is in very bad shape, due to the irrigation work taken up by the I.T.D.A. There is a perennial hill stream just before the entrance to the village on the southern side, which is used for their cultivation, as well as for drinking water purposes on the eastern side of the valley.

This village is surrounded by many hillocks. This is an old settlement, could be about 50 years old (according to the village 'Karnam') but definite information is not available. Based on linear pattern, is a multi-tribal village. The tribes in the village have hierarchy of caste among themselves, are Bagatas, Khonda Doras and Valmikis. Valmikis, even though considered as untouchables are economically well off as compared to other higher caste.

These villagers are agriculturists. They have a habit of raising kitchen gardens. This village has a one-teacher primary school and a base camp for a medical officer. Therefore this village is directly under influence of plain people.

This village has a scope of growth as it does not restrict emigration, and due to this no other satellite

PLATE NO: 15



LOCATION MAP OF KOTTAVAL

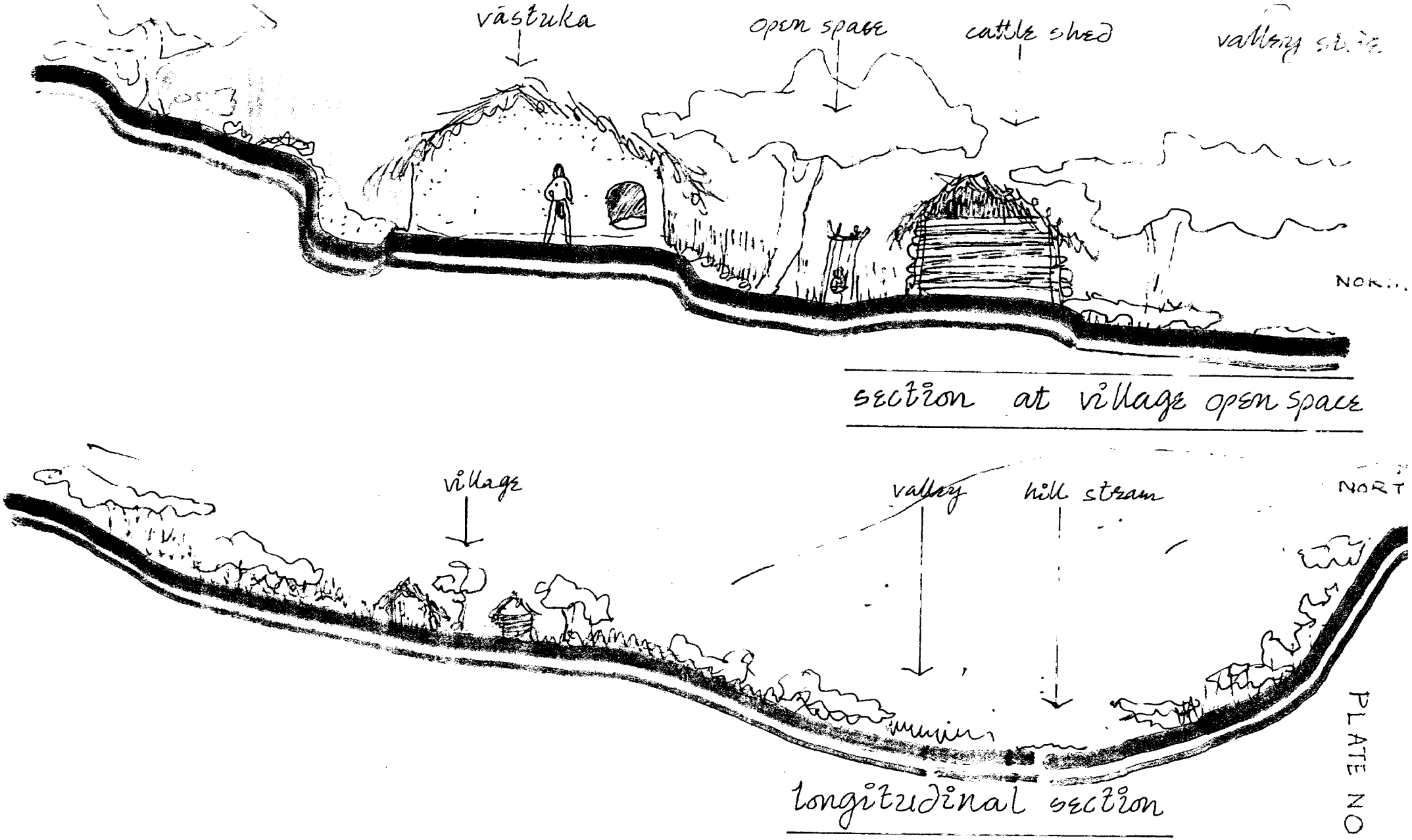


PLATE NO. 16

• HYPOTHETICAL SECTIONS OF KOTTAVALSA (KORRAYI) ©

• NOT TO SCALE

Table 4 : STATEMENT SHOWING AREA AND TRIBAL, NON-TRIBAL AND TOTAL POPULATION IN MULTIPURPOSE BLOCK : ARAKU

Block	Area (in Sq. miles)	Tribal popula-tion.	Non-tribal population	Total popula-tion.
Araku	240	34,569	1,200	35,769

Table : 5 STATEMENT SHOWING DEMOGRAPHIC STRUCTURE OF THE VILLAGES UNDER STUDY, AS PER BLOCK SURVEY REPORT ARAKU PANCHAYAT SAMITI - 1978-79

Village	Popula tion	Male	%	Fem-ale	%	House-hold
(A) Gattorjileda	212	102	48.11	109	51.89	52
(B) Korrayi	142	69	98.59	73	51.41	38
(C) KOttavalasa	29	12	41.38	17	58.62	7
Total	383	183		199		97

0.11% of the total population of the Araku Multipurpose Block.

1.9.1 AIM

A total community isolated from urban influence and living styles of architecture offers a worthy example for an academic study. Mans endeavour to protect himself from environmental conditions and attach himself to the traditions evolved by his forefathers gives an ideal opportunity to make an investigation into the beginning of shelter for a man. The man's desire to express his artistic expression into a visual form, renders the created shelter form as a spontaneous expression of Man's efforts to build and to create architecture. It is, therefore, the aim of this thesis to explore the nature of the rudimentry man within the rudimentary shelter and ultimately into a community environment.

1.9.2 OBJECTIVES

1. to analyse the existing physical shapes of the villages, dwellings, materials, traditions, faiths and accepted norms, living habits and work habits of the people. The interaction of people and physical environment.

2. to analyse the various forces (Social, Economic, Cultural, Political, technical, religious) and factors (living pattern, resources, knowledge) in the form of constraints and limitations and how they have moulded their architecture.

3. to study their emerging pattern of "Basic design process".

1.9.3 SCOPE

The tribal people in India have been the object of occasional research and study for many decades - both before and after the advent of freedom.

A few have romanticised them by painting an idyllic picture of primitive and naive simplicity, a life of dance and song, of ritual and colour. Some others have looked upon them as a curious anthropological phenomena.

There are two interesting schools of thought regarding tribal culture. The advocates of the first school of thought are, more numerous and vociferous in their argument that the human race always has been, and still is, steadily advancing in civilization and hence it is imperative that the tribals should become civilized, enjoy progress and improvement, and become part of the changing world.

The second school of tribal thought, though smaller than the former, has a sounder core. It maintains that the old ways of the tribals should be preserved before they die or, as is more likely wiped out. They further maintain that the modern world can learn something from the so called

primitive culture of the tribals. In support, they point out that there are very few physically repressed or unhap; unhappy men and women amongst the tribals.

There are several socio-economic studies on Indian tribes but the tribal architecture has not received attention.

This would be most useful not only for planners and architects but also to all those interested in history or engaged in academic pursuits of rudimentary and anonymous forms. The output of this study could be : preserving the tribal architecture or Girijan Vastukala (Vanishing) and also their social and cultural values.

Preservation of such community may lay a variety of interesting hytreginity in the social groups and also their architecture.

1.10 APPROACH TO STUDY

Lewis Mumford points out that the physical artifacts - the art objects - give the maximum of meaning with the minimum of concrete material.

This study which is an analysis of the anotomy of Girijan Vāstu Vidya, tries to comprehend the form of settlements and dwelling in the light of different factors such as location, climate, resources, construction techniques etc., keeping in mind the socio-cultural background of the Girijans.

This topic is not concerned with unique cases or with the multiplicity of examples; a few tribes of eastern Andhra Pradesh which have been selected for the study are typical in nature. The study restrict itself by not becoming involved in unnecessary details while analysing the anatomy of Girijan Vāstu Vidya and trying to understand the forms of dwellings, settlements in the light of location, social aspects, climate, materials, construction techniques, and other variables.

The data collected by surveys has been analysed and studied and an anatomy of the tribal architecture has been formed, drawn from the summary finding and inferences as pertinent to dissertation.

CHAPTER - II

TRIBAL ARCHITECTURE : FIELD STUDY AND ANALYSIS

2.1 VILLAGE FORM - STUDY AND ANALYSIS

2.1.1 Relationship in the setting

These villages are situated very near to the old village of Araku in Araku valley. The maximum distance of village (C) is between 15 - 16 kms from Araku village. These villages are located in a very close proximity to various perennial hill streams having agricultural land alround to their settlements.

These villages are connected with an unmetalled 'Kucha' road. But approach road to village (A) and (C) is through their fields. They are so located that it is not directly exposed to the road. The villagers normally travel on foot,, but for long distances they take road transport.

Village (A) and (C) does not have any urban influence, as compared to village (B). The only social intercourse they have between the villages is in the weekly shandy, at Araku village.

Most of these villagers are settled cultivators having 4 - 5 hectares of land. Sometime they do labour work for others on a daily cash payment basis.

2.1.2 Socio-Cultural

These tribes feel that if their settlements are too close to one another that may create a problem of quarelling between the communities. Whereas they desire to be near to their fields. In case of any quarrel among the villagers or when their views differ from others they are asked to leave the village. This is predominant in village (A) and (C) where some satelite villages have come out. But whereas in village (B) where they do not have any strong belief, are not p affected.

These villages believe in burrying their deads, and their ceremonial grounds are kept away form their villages.

2.1.3 Socio-Economical

Most of these villagers are agriculturists and depend on the agriculture produce. So prefer to remain nearer to his fields. Most of these fields fall on the valley side, and the outward view from the village gives a clear picture of their field. The economically weaker section like Valmiki's in village (A) does some kind of labour work, either in the neighbouring villages or prefer to labour for govt. organisations.

2.1.4 Socio-spatial

The uniqueness of the village plan (Ref. Village Plan (A), (B) and (C) lies in the major focus provided by the large negative central space, which acts like a social lung of these villages, with the dwellings themselves forming the perimeter ring. But some how this space is not crowded on all sides by their shelters, they also try to maintain their scale in and around this open space. This accentuates the special nature of the Araku green, which also becomes the ground courtyard of these community. These spatial form may be compared to a large public park or green in a metropolitine city, the contrast is here more intense and psychological impact more satisfying, since it supplies not only an area for recreation but also for the serious meetings.

2.1.5 Play of externalities

They are very much afraid of burglars and not from the wild animals. This reflects specially on village (C) where, even the approach track is difficult to locate for an outsider, as it is very well camoflaged behind the hills and thickly vegitate.

An urban influence is slowly creeping in among the younger generation, while they have started using modern clothings and aluminium utencils etc.

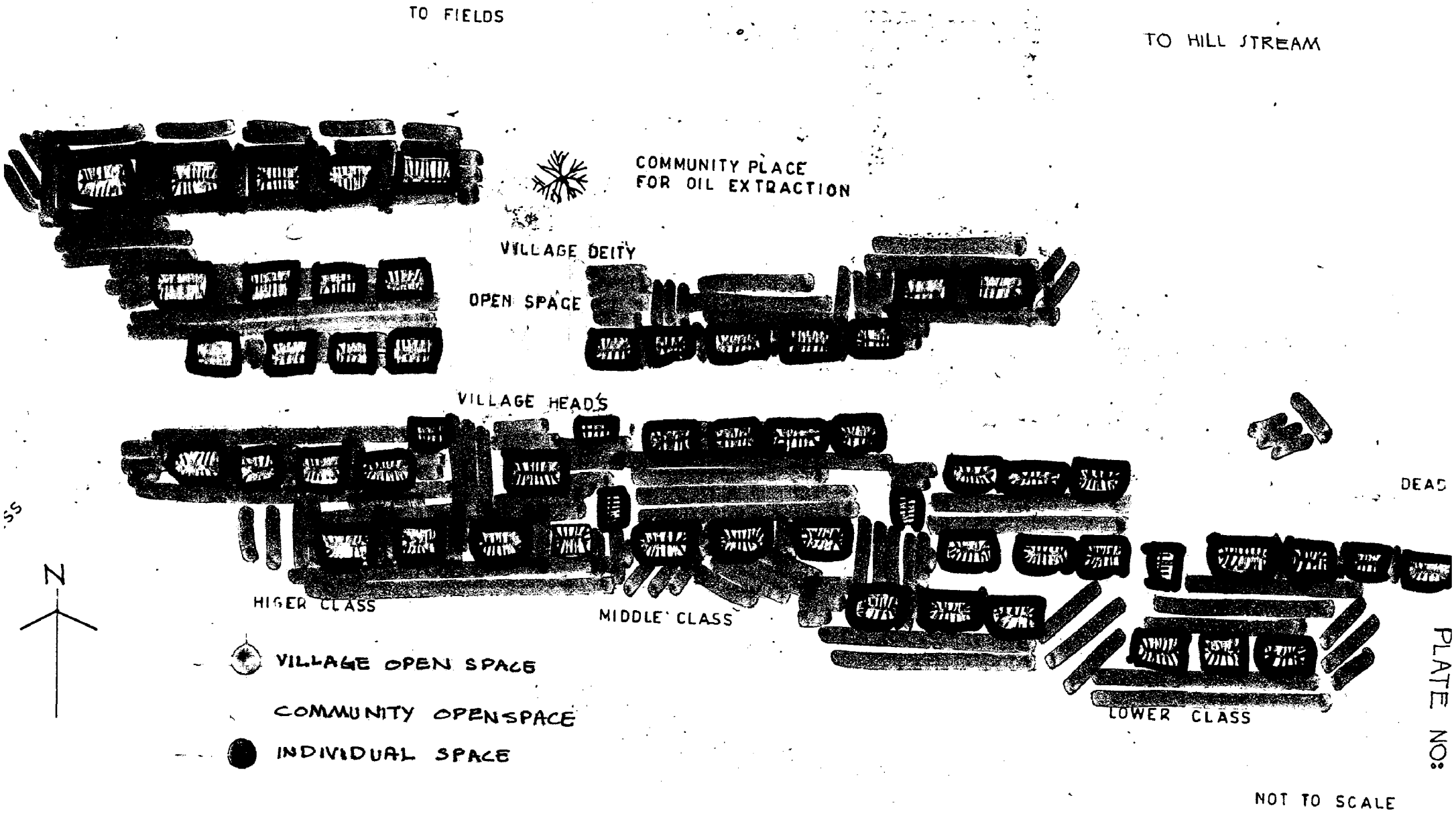
As village (A) and (B) are looked after by some outside agencies in some way or other, specially it could be noticed with the converted christians, those who have already started showing some mark difference in their behaviour compared to other groups.

2.1.6 Findings and Infrences

These arganic villages relate most closely to their natural environment, builtof local materials left in their natural state also relate closely to their hilly surroundings. Actually accentuate the configuration of the terrain and thereby reinforces the natural form.

The choice of village setting used to solely depends upon the natural resources available like cultivable land, water sources, natural local building materials etc., of late however, certain external organisations which provide some added amenities have had an impact on the village setting and form. In other words, these external agencies have curb the shifting settlements. In this aspect climatic and defensive factors play a minor role.

The form of these villages reveal a sophisticated network of communication and resultant sequence of spatial

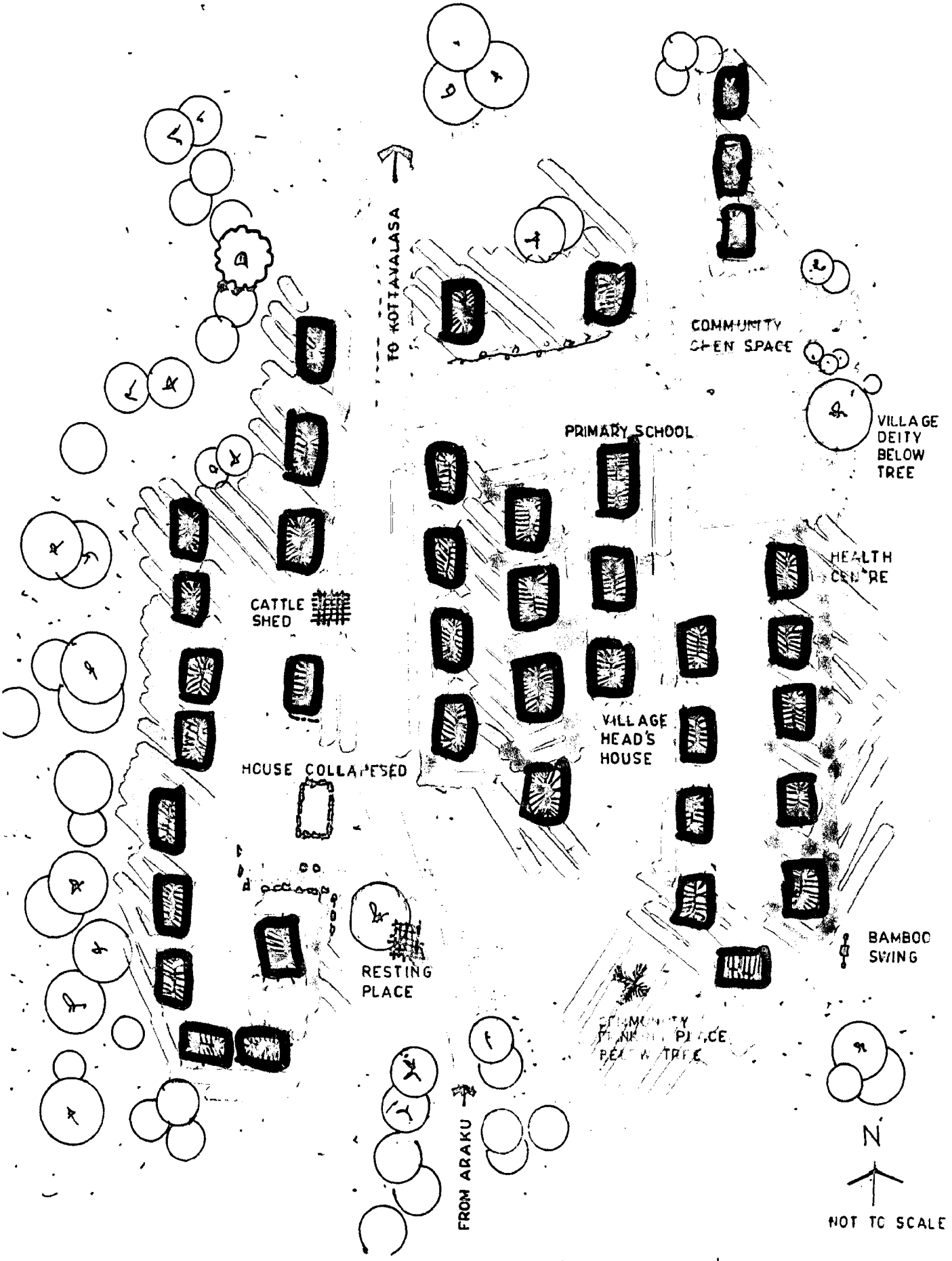


NOT TO SCALE

PLATE NO: 17

LAYOUT PLAN OF GOTTARAJILEDA (A)

PLATE NO: 18

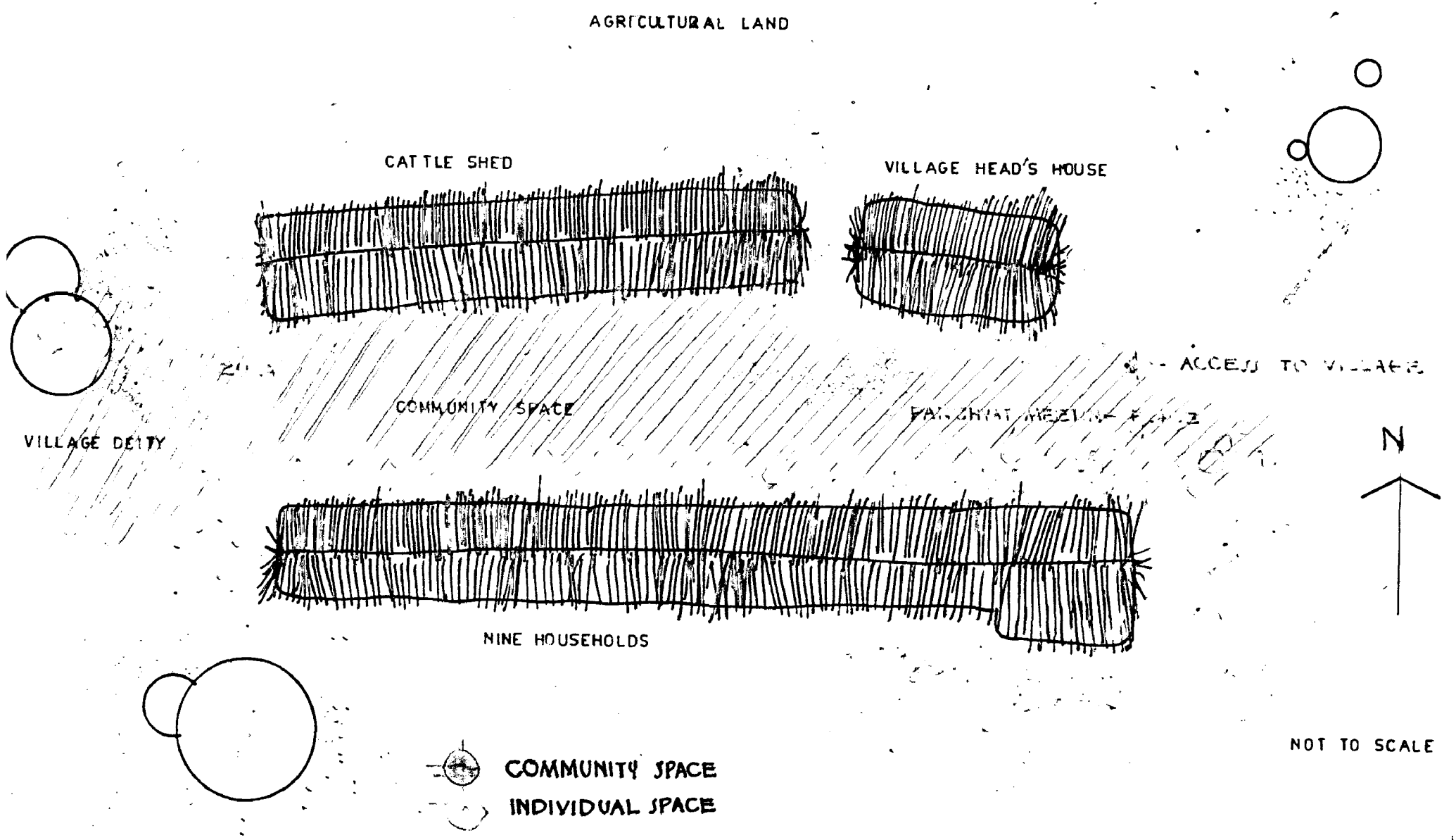


LAYOUT PLAN OF KORRAYI B

VILLAGE OPEN SPACE

COMMUNITY OPEN SPACE

INDIVIDUAL SPACE



LAYOUT PLAN OF KOTTAVALSA (KORRAYI)

C

PLATE NO: 19

experience. In the daily ritual of the inhabitants, there is a constantly changing experience from light to dark, from intimate to expansive. Therefore, within the limits of these Girijans, there is a basic order of design and a sophisticated variety of experience.

2.2 CLUSTER AND GROUPING - STUDY AND ANALYSIS

2.2.1 Type (Physical)

Villages are of a linear pattern, village (C) consisting row houses, belongs to a patriarchal family,. According to "Mānushyālaya - Chandrika, Ch. 3, Sloka 19", such a village is exclusively inhabited by a single patriarch with his family and retinue.

Mostly house groupings are made according to their social hierarchy of caste system, specially in village (A) and (B). Wherein a all four scheduled tribes are residing. The lower caste is pushed at the rear side of the village (S), while higher class live at the entrance of the village. Village (B) and (C) have been planned according to hierarchic order of caste system in the direction of San's movement. The village chief's house is so precisely in the spot of rising Sun that one can tell from its location. Specially in village (C) it has been

separated from other row houses just for this reason making it a dominating feature. In other villages they have tried to emphasise the village chief's house either by locating it in village open space or by raising it so that the roof of this house is visible from all directions.

Normally a group of the same caste construct their houses in one place, either facing each other leaving an open space in between or cluster at a place in such a way that a definite segregation is marked by a road in between.

Basically the necleus shelter and cattle sheds are owned individually in villages (A) and (B). Therefore, it has been located either at the side of the shelter or the fron front in the open courtyard of the shelter, so that it is convenient for them to protect and maintain their livestock. In the case of village (C) as it belongs to a patiarchal family and the cattle shed is shared by them all, it is located just in front of the necleus shelter. Even in this village one of the brothers has an independent cattle shed, thereby showing that the position of this ancillary unit is totally governed by social factors.

House construction is a dynamic process within the same cost, as they go for an independent dwelling immediately after the marriage, and a son build his shelter

either attached or just by the side of his father's. Naturally, it closely resemble the former one, for the sees no need to improve upon it, rather it does not occur to him.

2.2.2 Relationship in the Setting (Physical)

In these villages, houses are, obviously, more uniform in style and fit in with the neighbouring houses, following a more open and communicative pattern.

There is no harsh difference between any of the caste, except some physiographic barriers. Villages (A) and (C) restrict its growth as it does not encourage imigration while in village (B) the setting is left open, though it could only develop on the northern side of the village.

Mostly the open spaces act as an element which segregate shelter groupings in village (A) and (B) where they need to distinguish the social class system otherwise like in (C) they group around the open courtyard, but even a slight interference with the tribal customs they are asked to quit the village and go to a satellite settlements near to the same village, even in village (A) such cases are observed. Such cases do not occur in village (B) as they are more extrovert in nature.

Shelters face towards the valley in all the villages, but they have also grouped their shelters facing each others' houses when they want to have a feeling of belongingness, among the same family relations. Other than this the orientation of their shelter cluster are made in such a way that all short walls face the sun's direction in village (A) and (C), while in village (B) the natural hill terracing creates a shadow on the longer side of wall even though it faces the west, therefore it is in perfect harmony with the nature and surroundings

Most of these villages structures developed around a single negative space it may be a worship place or an exceptional village heads shelter like in village (C) and (A). In village (C) the focus is towards the village diety whereas in village (A) it is towards the village open space.

2.2.3 Socio-cultural

These tribals strictly observe the caste distinction. In village (A) and (B) it clearly reflects from their house groupings, the lower caste are situated at the tail and of the village (A) even by leaving an open space in between the two, But village (B) segregates them from higher class only by a village road, but it is not so

distinct as they are economically better off than the Bhagatas and Konda Doras (higher castes).

Sometimes relations of the same family group their shelter at one place, A son builds his shelter after seperating from his father just near the former's house, as it is a custom among these tribes. These groupings do not stop other villagers cr other castes to use their spaces. But in village (C) this factor does not play any role at all. The main reason for this could be that of belonging-ness which gives a feeling of security.

In all the cases it is found that the village head's shelter has been emphasised either by locating it right in the centre of the village, with an open space in front or by separating it from the rest. Sometime it is also located, along the Sun's direction.

For the Girijans most of the living takes place outside which has a far reaching implication on house form. The village open space acts like a lung for the whole village. With all shelters grouped around it

2.2.4 Socio-economical

Probably cluster and groupings are directly affected by the economic status of the tribe, as it tries to dominate accordingly in village (A), where Kotia and Kondadoras

are economically well off they try to remain right at the entrance to the village, while in village (B) one can first see the Valmiki shelters, which is on the western side of the village, even though the higher caste are residing lower down in the village, it does not affect them directly.

In village (A) and (C), where they do not encourage immigration any more, the growth of settlement is more or less static in nature, when compared to village (B), as they think that the overcrowding of village may bring poverty to their village.

The most economical way of housing has been achieved by the Koduly in their village (C), where they all share the same envelope of shelter, both Vāstuka and ancillary units.

2.2.5 External Forces

The higher caste in village (B), who are economically weaker have selected a place which is away from the village road, thereby giving them complete privacy in their daily life, Whereas the Valmikis prefer to be nearer to the road side, where they are more exposed to the outside world.

These linear pattern of the settlements give them a seduded inward view of the village, even when they are working in the fields. Most of the village paths are so well defined that it automatically takes you the place of village importance. All their paths are hewn with some kind of small open spaces which acts like a punctuation to the total landscape of the village.

2.2.6 Findings and inferences

These settlements reveal what buildings do, and how successfully they have functioned. Tribalistic character is achieved by the close association of shelter forms, which is economically conceived within the limitations of the site. Although the village has taken a linear f form on the terrace slope of a hill defined by cultivated land and hill streams, its individual components link up to form a tight, unified plan.

House groupings are decided by the social hierarchy of their caste system or unwritten laws which limit behaviour pattern, in the different domains.

These clusters prove that Man's relationship with his environment is a two-way traffic. Abuse begets degenerations. Harmony fosters peace, clusters are formed without hampring the natural site conditions in all the cases.

PLATE NO: 20

The unique, universal and infinite space of geometry acts like a tribal social lung, indispensable for the integration of his social, political and spiritual life. The length and width of these spaces depend on circulation needs as well as on natural terrain limitations. Thus, the size of the viaduct depends on the job it does.

The combination of front individual court yards and village open spaces relieves the rythem of the unit form and creates diversion alcoves along the village corridors, giving order direction and all the important sense of place.

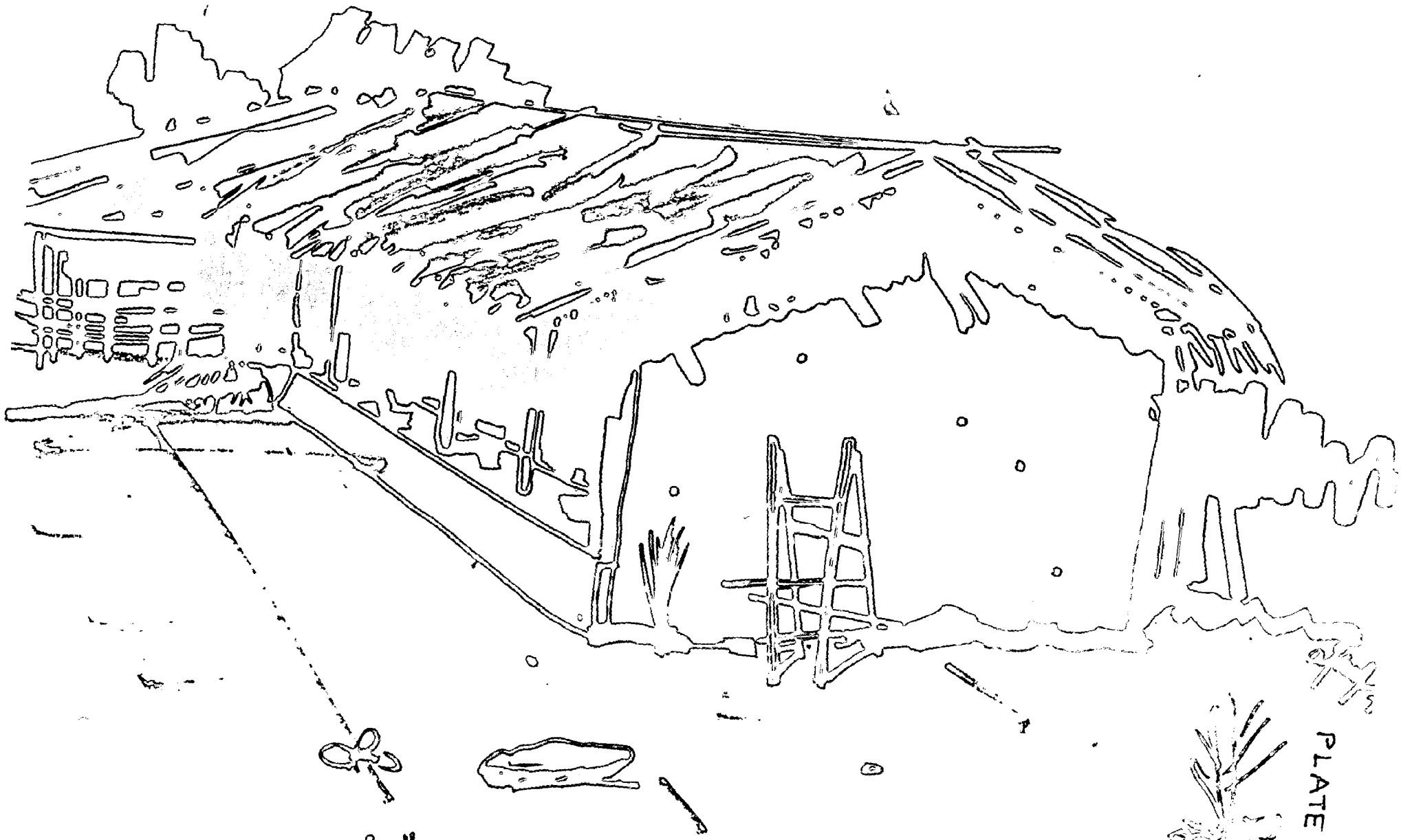
Each order of open space serves a different need; the narrow paths offer protection from strong winds and harsh sun and provide psychologically soothing intimacy. The village open space is where the action is, and it serves as a combination of festive place, village meetings, visual focus and link with outside world.

2.3 SHELTER DESIGN - STUDY AND ANALYSIS

2.3.1 Nucleus plan (Vāstuka)

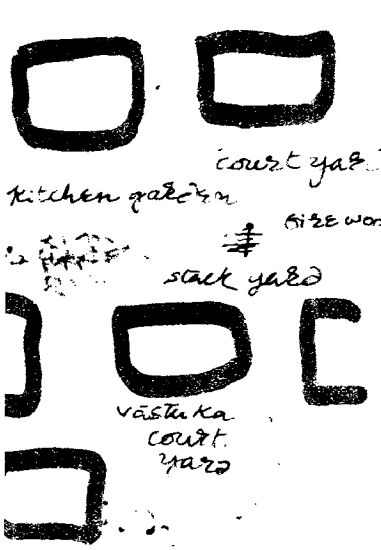
It has two elements within the envelope. These are the room and the verandah. The room, is the personal or family sanctury where a man and a woman generate a human being which is a commitment to its sharing to the available space. The verandah is the transition to outside, the roof keeps the rain out and helps in making an enclosure.

Basically there are two types of shelters available in this region - (1) "Middilu", where the house has a double roof, the 'inner-roof" being plastered with mud, (2) the other one is of 'purillu', having only one roof. These forms are governed by the economic status of a man. It is clearly reflected in village (A), where the lower and economically weaker class i.e. Valmiki, has purillu' type house which is comparatively smaller in size, in a perishable condition, they even fail to repair their shelter, Whereas the same caste living in village (B) has 'middilu' type house, whose economic conditions are more sound when compared to the higher class i.e. Konda Doras.

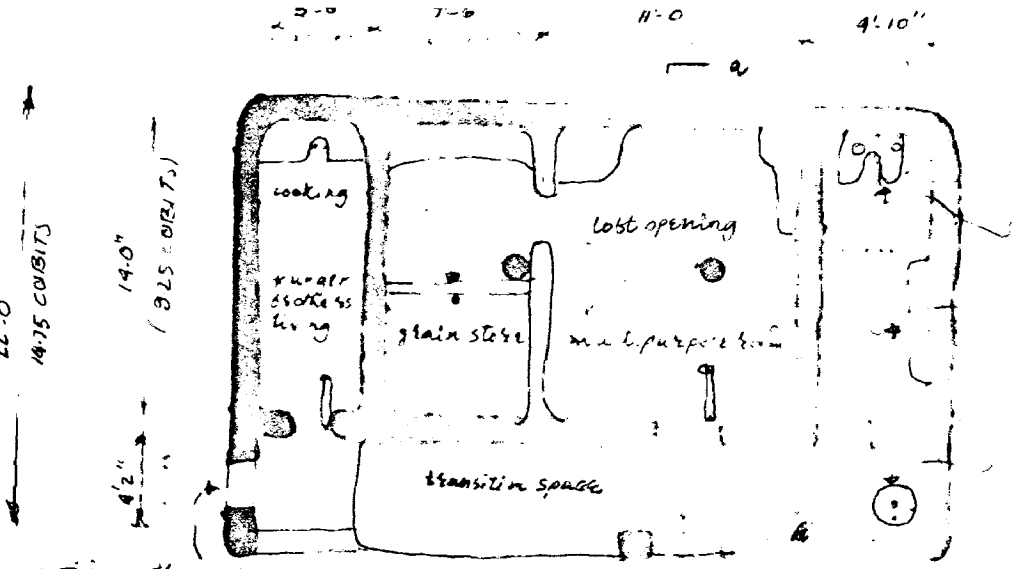


A "MIDILLU" VĀSTUKA

PLATE NO.: 21



village open space
typical cluster layout



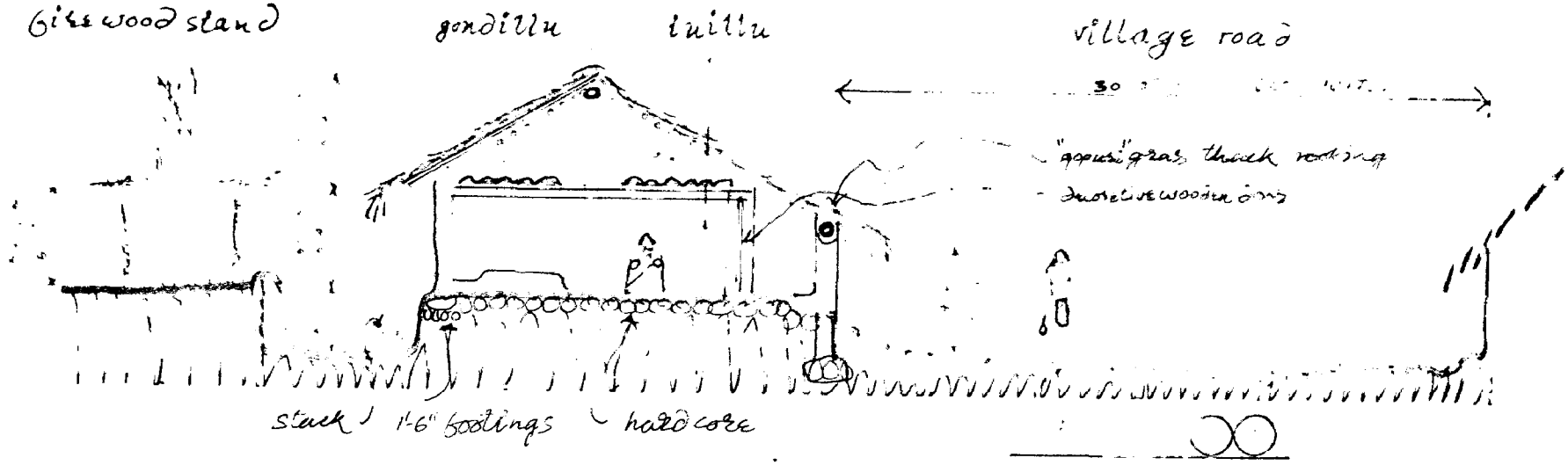


PLATE NO. 22

• SHELTER DESIGN - "MODDULU" (KONDADORA) : GATTORTILEDA

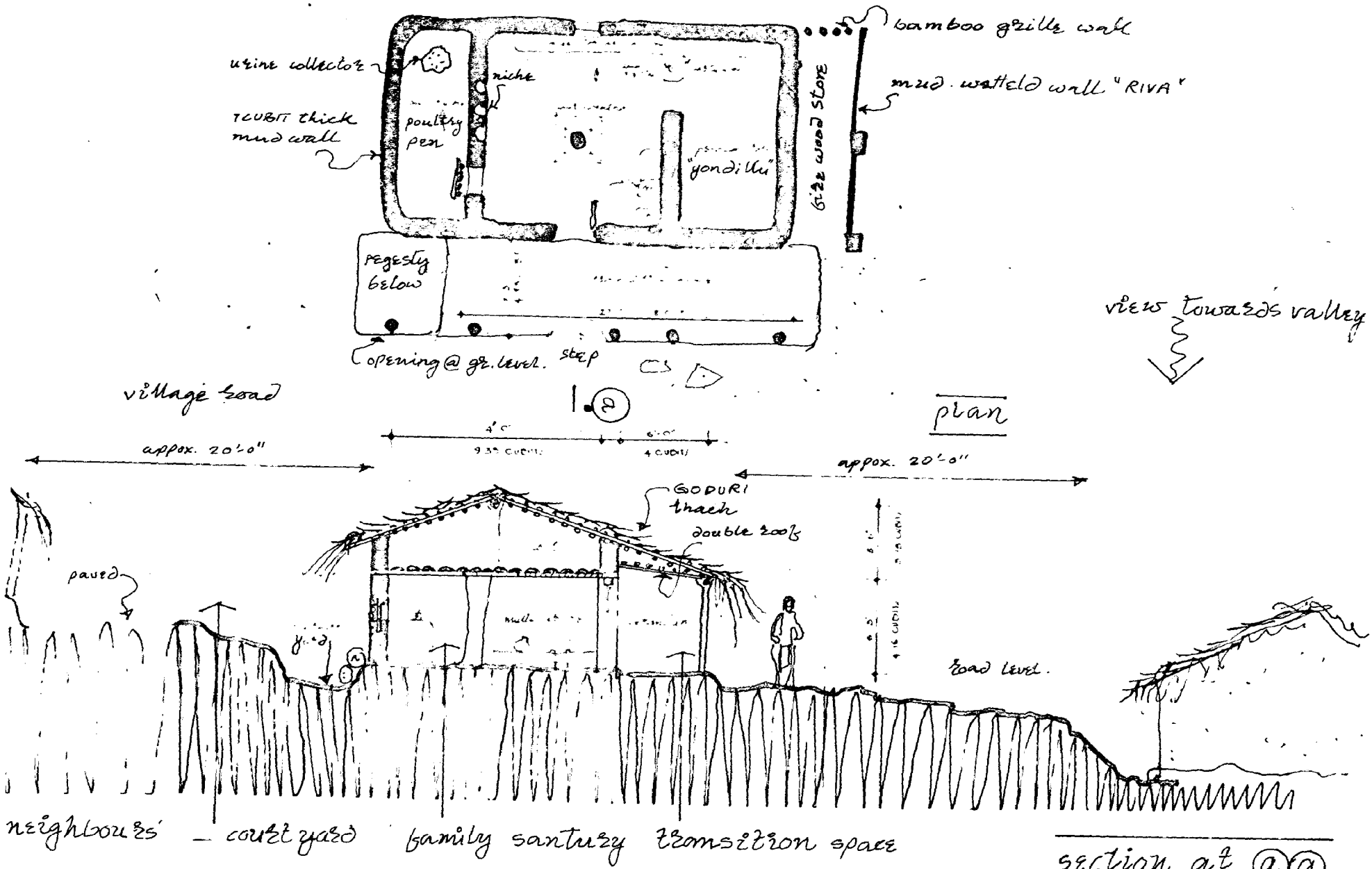


PLATE NO: 23

• SHELTER DESIGN - "MODDILU" (VALMIKI) : KORRAYI (B)

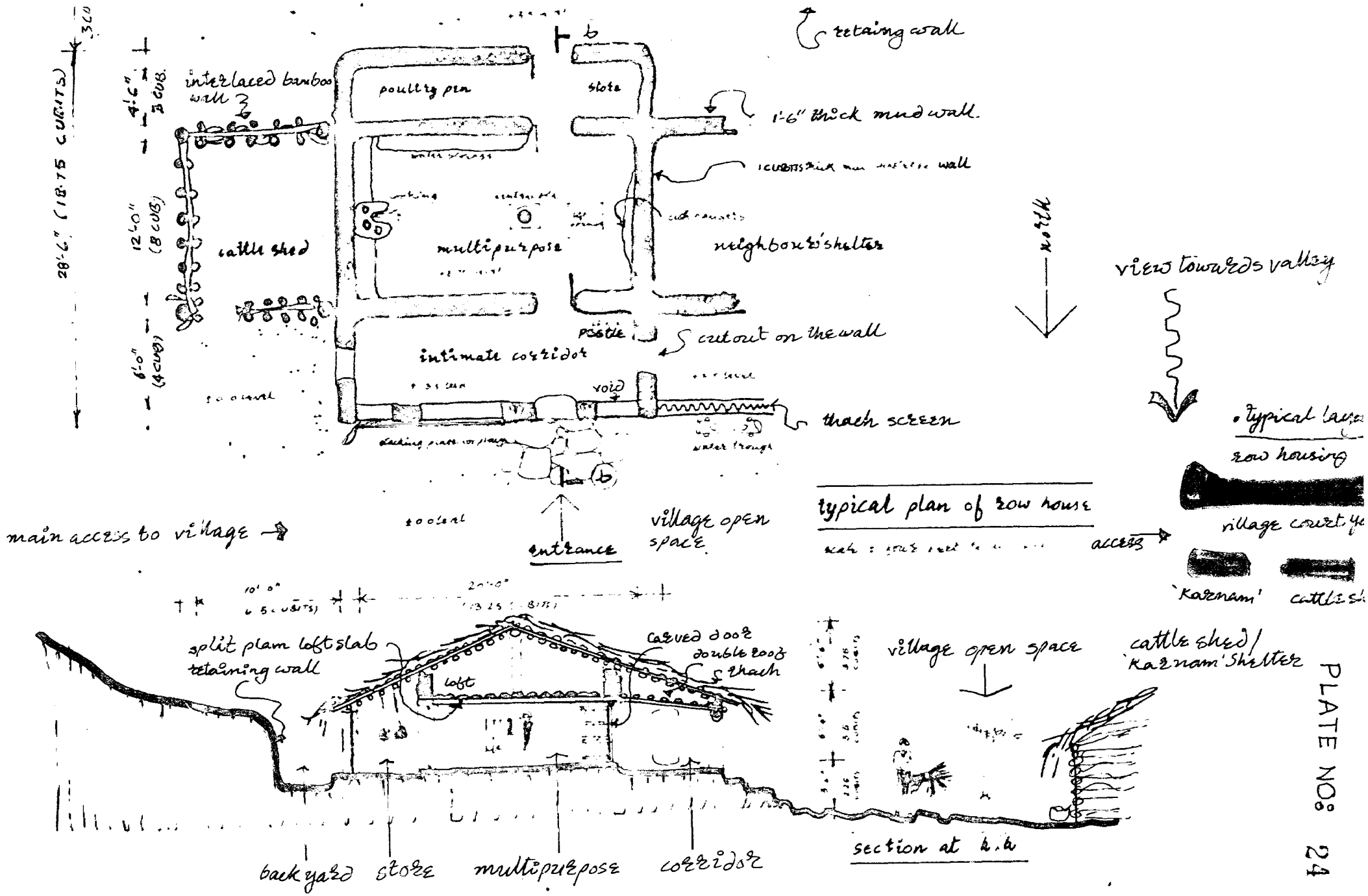
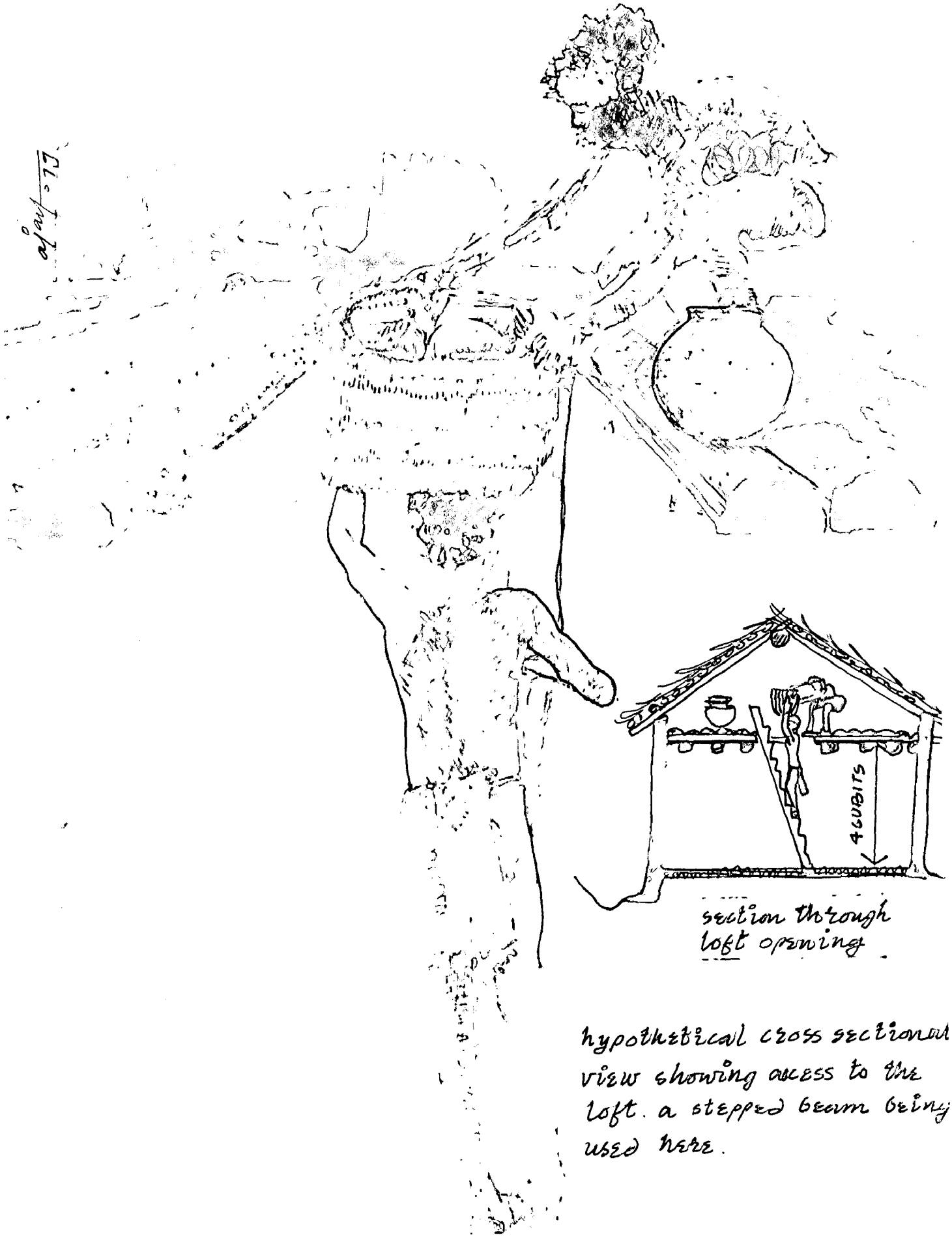


PLATE NO. 24

a. typical row housing : SHELTER DESIGN (KODULU)



section through loft opening

hypothetical cross sectional view showing access to the loft. a stepped beam being used here.

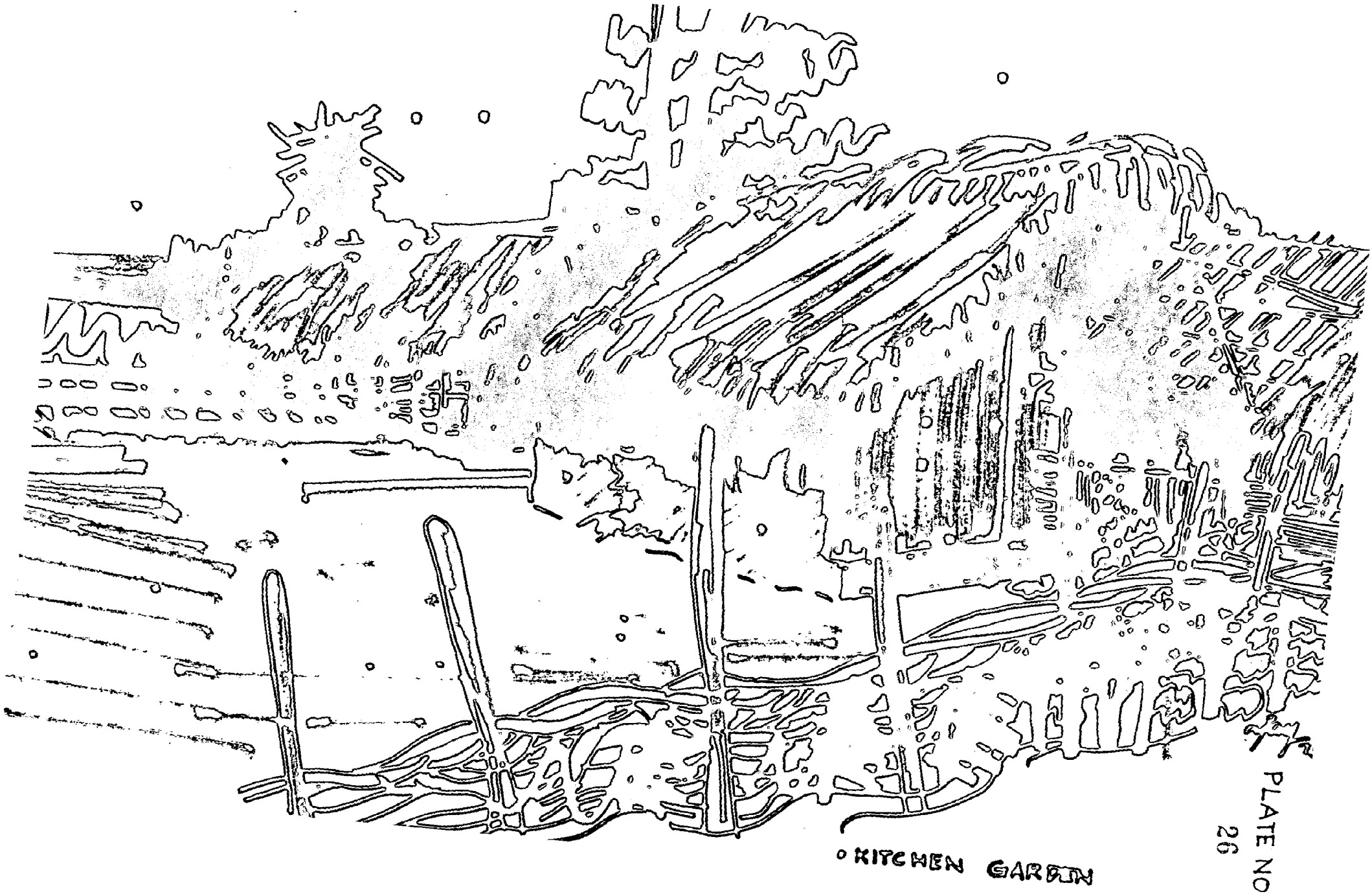
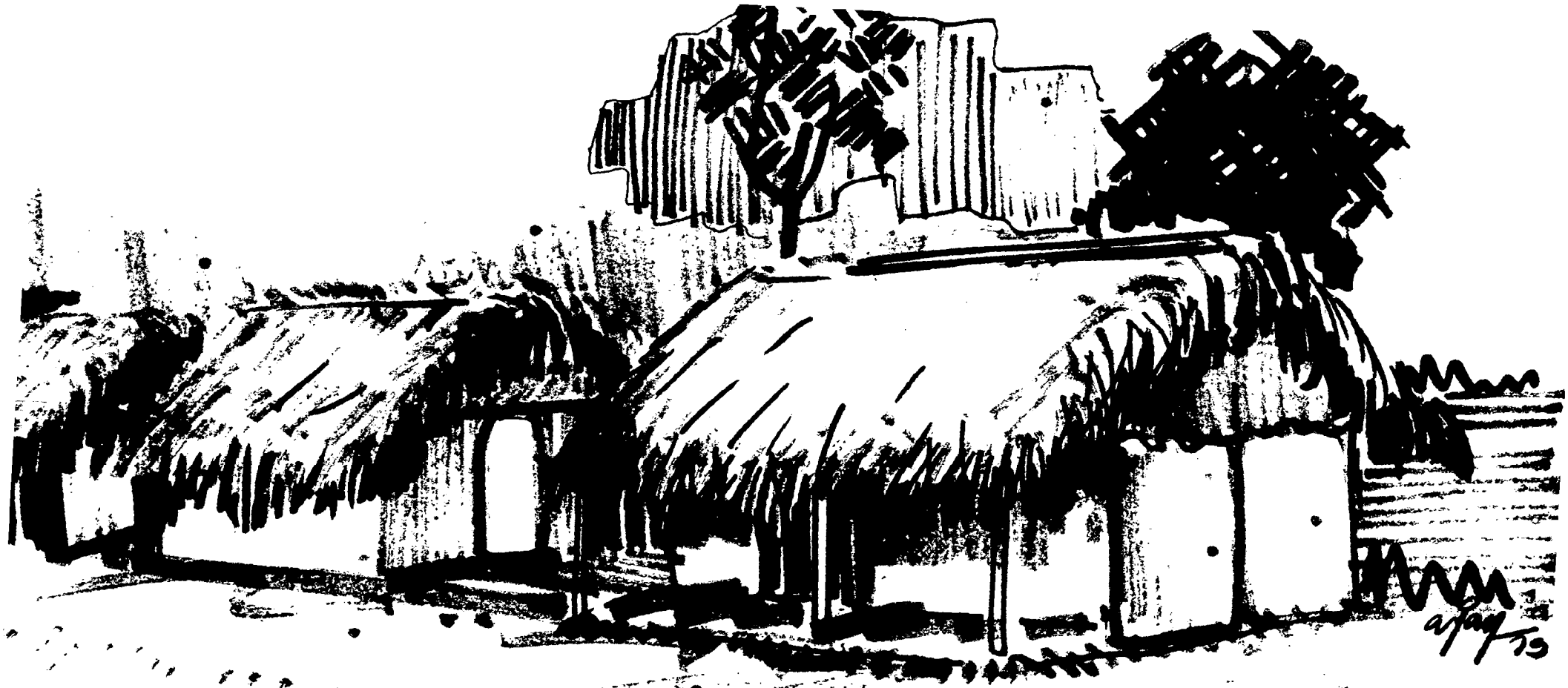


PLATE NO: 26

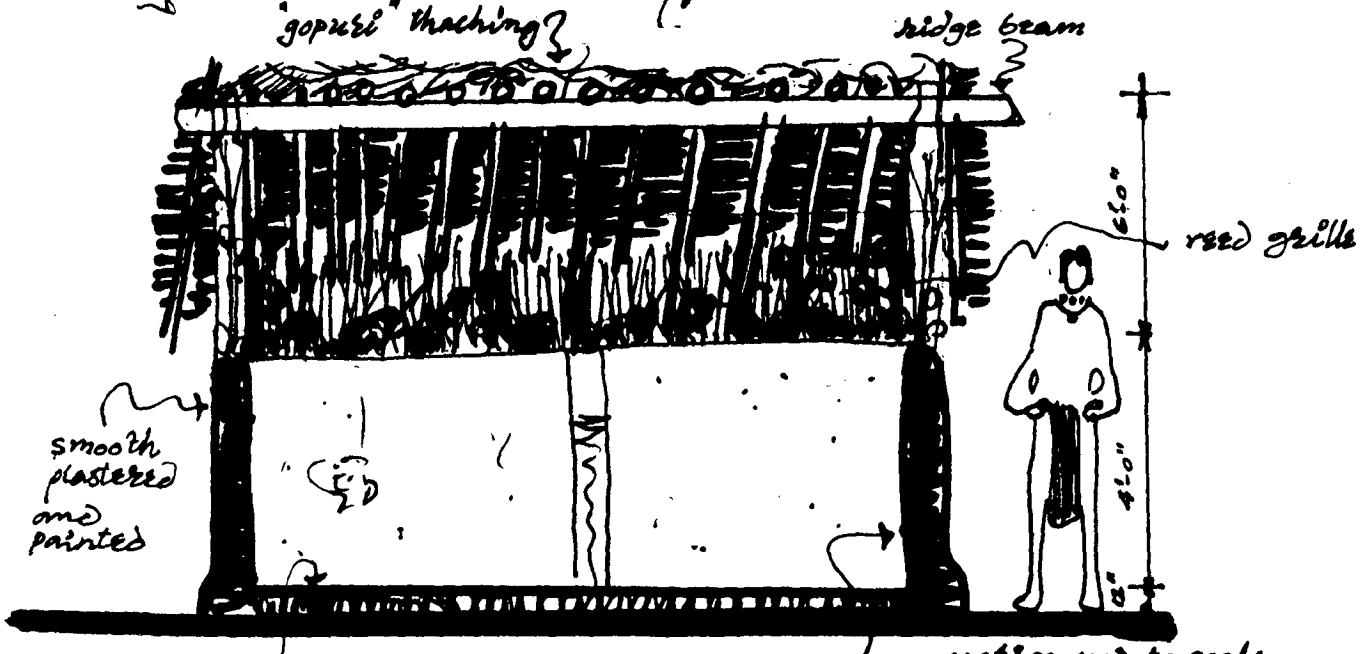


'PURILLU' VÄSTÜKA

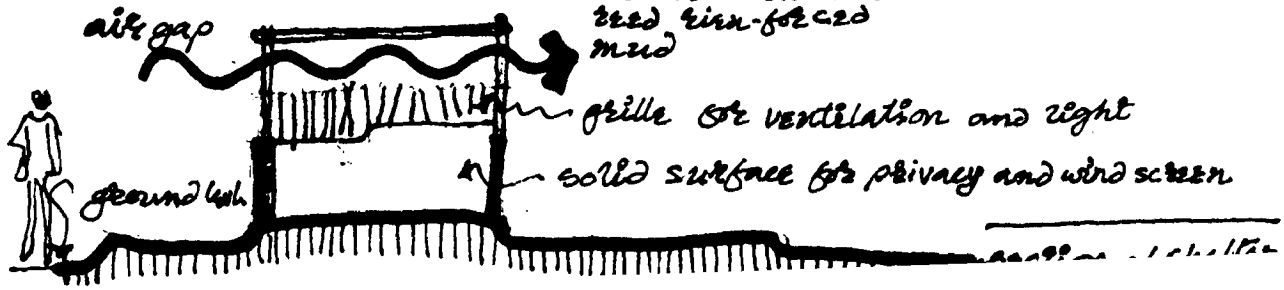
PLATE NO. 27

• detail of "puzhilu" shelter

(vāstuka)



• section not to scale



Village (C) where they have row housing shared by individual member of the same family, with one independent house belonging to the village head. In the other two villages, the shelters are owned by single house hold member.

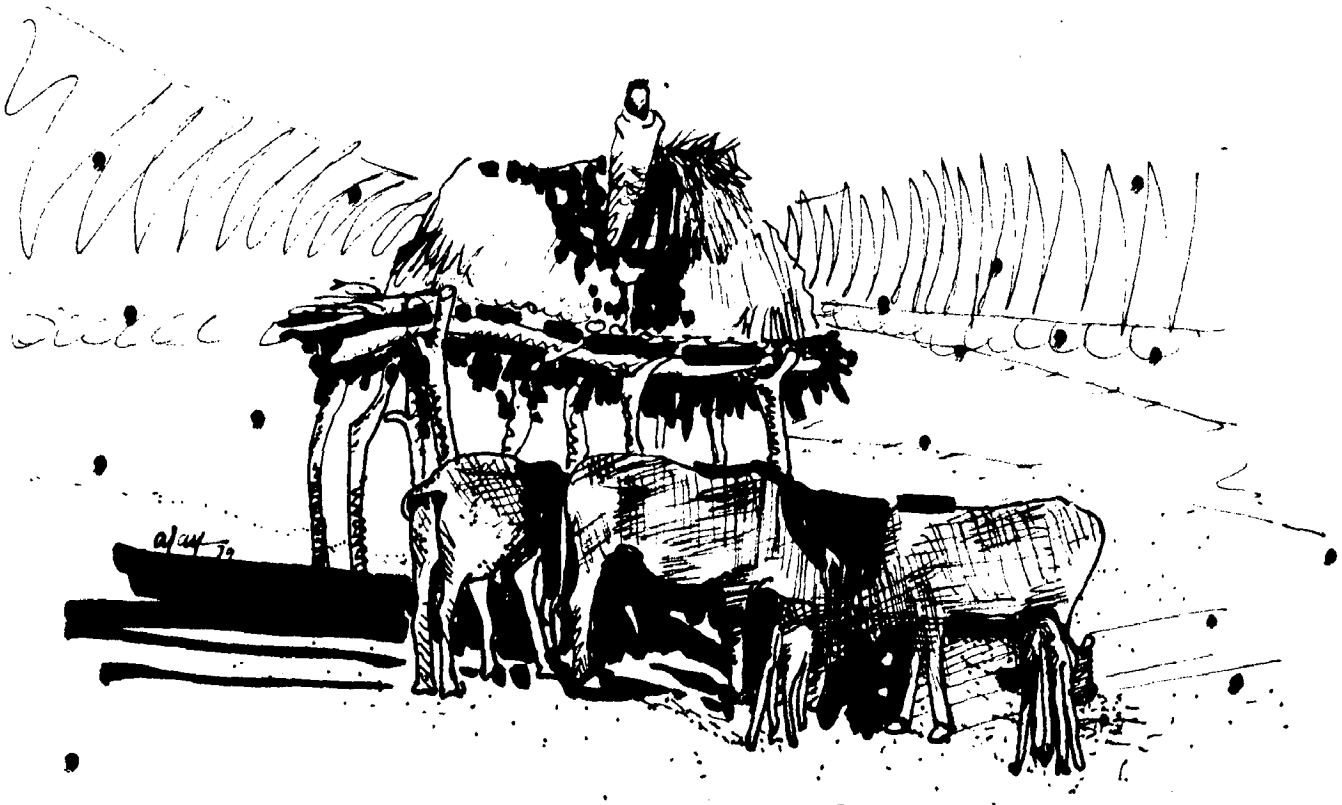
Basically the plan form is dependent upon the financial capacity of the individual. This aspect is revealed in many ways, a person having a sound financial standing in the community goes in for a more elaborate construction, having larger and more number of habitable spaces, usually incorporating a loft. These constructions usually have a higher plinth 2'-0" to 3'-0".

A person of a lower economic standing goes in for a smaller construction i.e 'Purillu' Vāstuka, in this case the loft is usually left out and the plinth is also much lower upto 9" - 15" size high.

In either case the basic plan form remains the same. A multipurpose room where cooking, eating and sleeping takes place is supported by a provision store on one side and a poultry on the other side, having an entry from the verandah. Every house has a verandah which acts like a transition space between the outside and inside. The cooking space is always located near the main

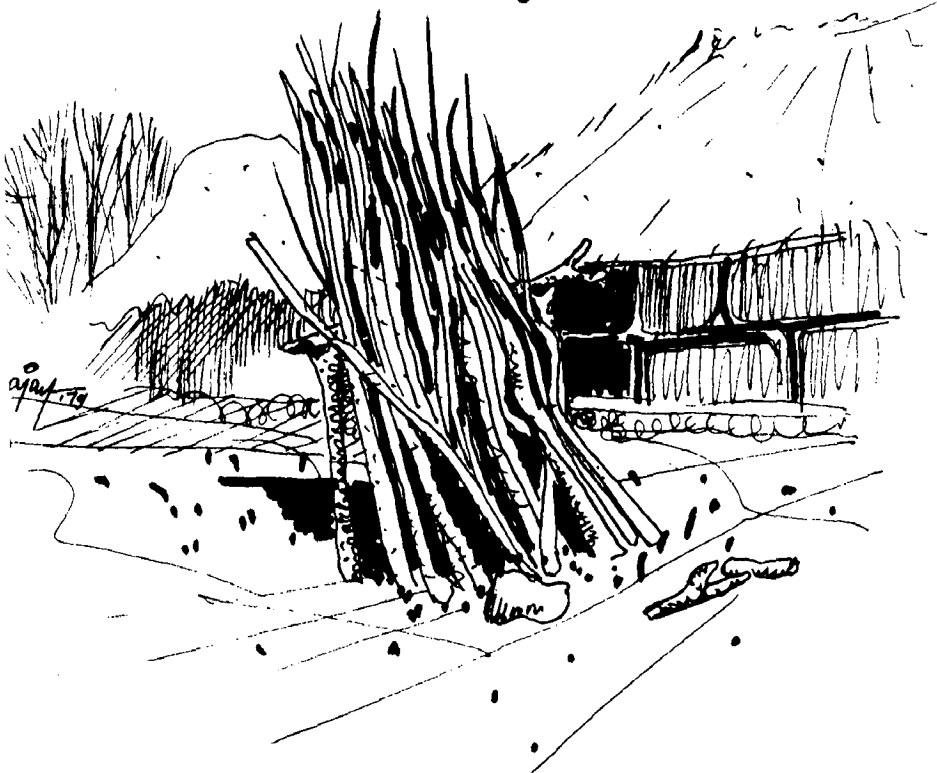
PLATE NO: 29

o Shelter design: a cattle shed and a vastuka with an open court yard in front



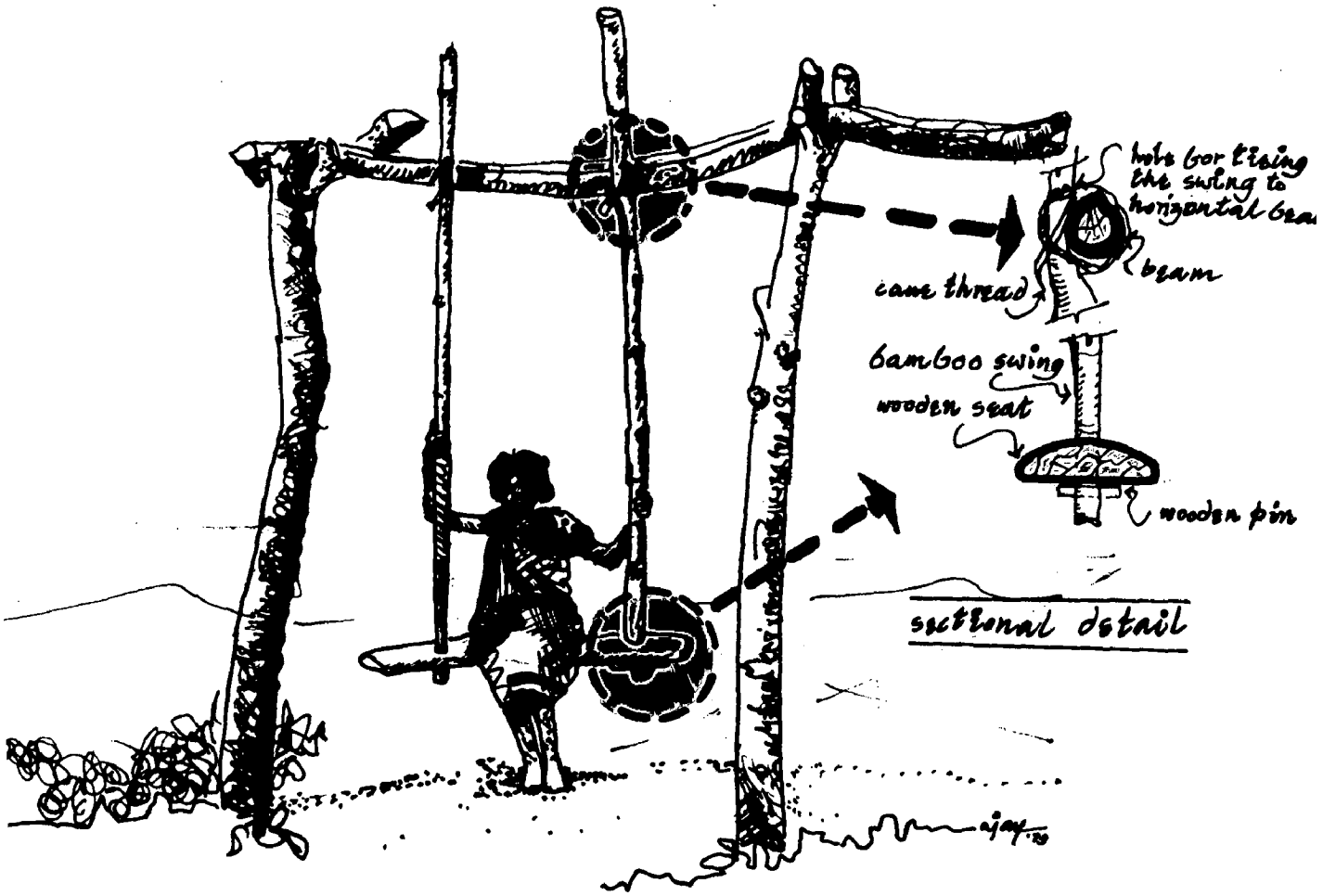
ancillary structure : (2) , field shelter

for tethered cattle and fodder storage. normally of 4x6 cubits and about 4 cubit high so as to avoid cattles to reach that height. the structure usually supported by 6-9 forked wooden uprights with spread reeds. platform. man has to use a ladder to climb up.



fire wood stand, placed by the side of a shelter. two wooden forked supporters with a horizontal bar, normally 2 cubits high.

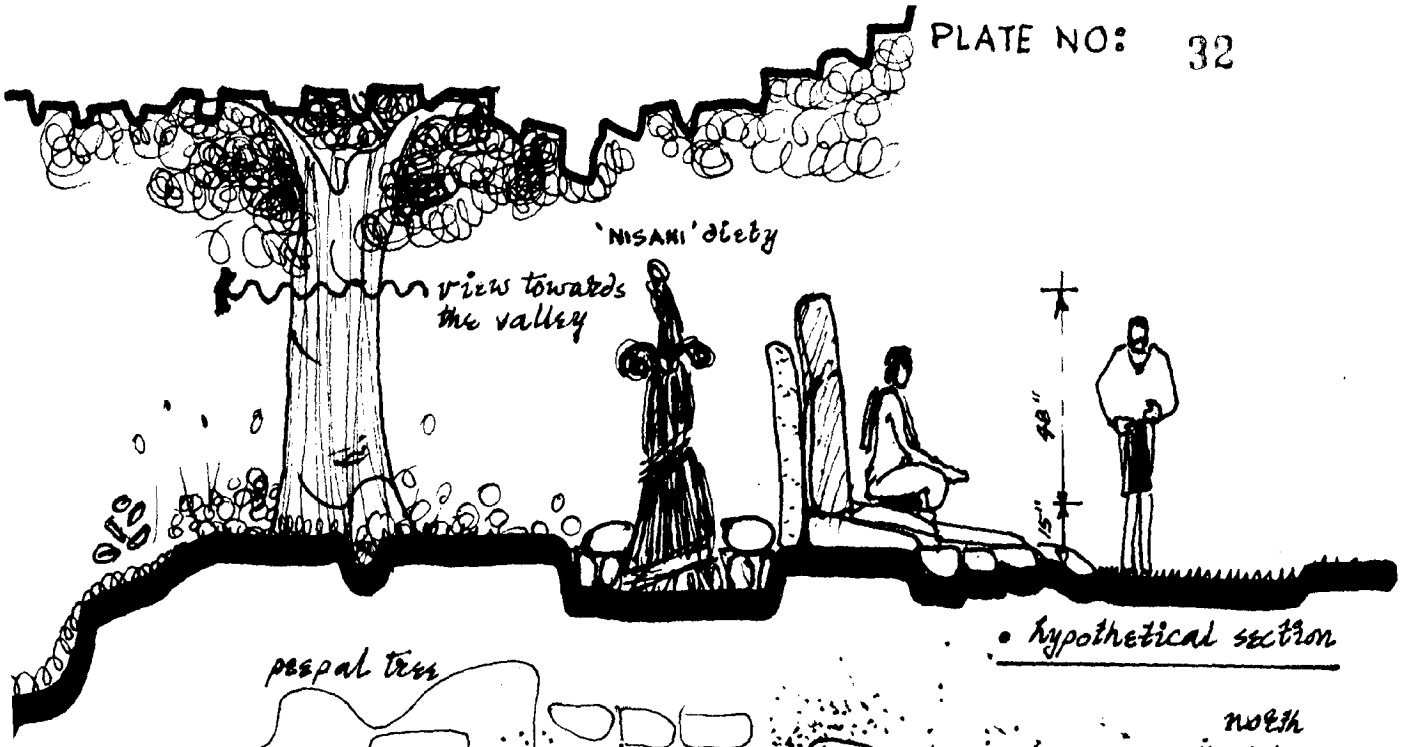
ancillary structure : (3)



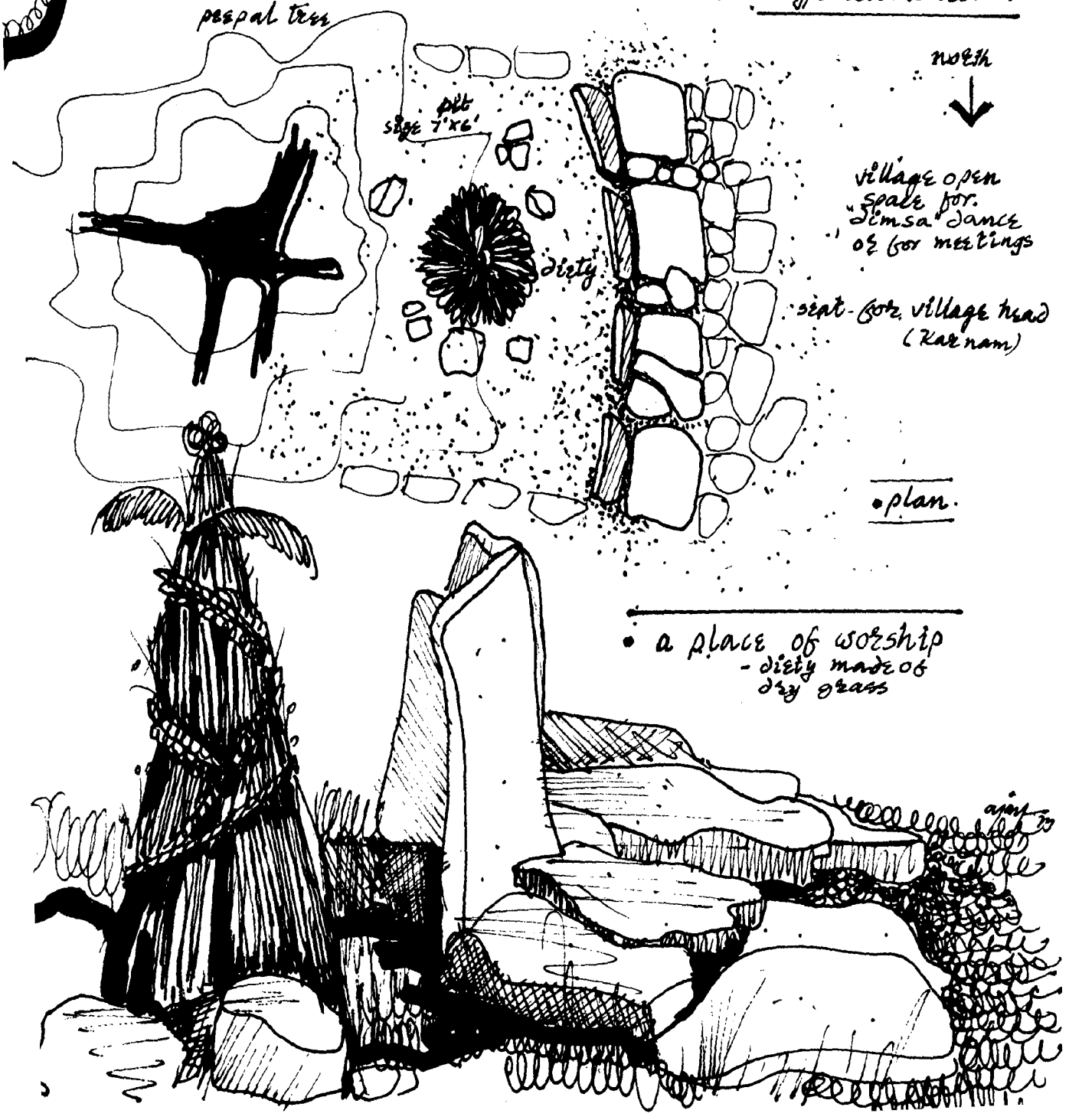
ancillary structure : (4)

jula (swing) for children, located either in the village open space or in the front court yard of a shelter.
swing made of bamboo with a 2 cubits wide wooden seat, supported by two forked upright members.
the max. swing is 2 cubits on either side of the beam. appox. height of the jula is 4 cubits.

PLATE NO: 32

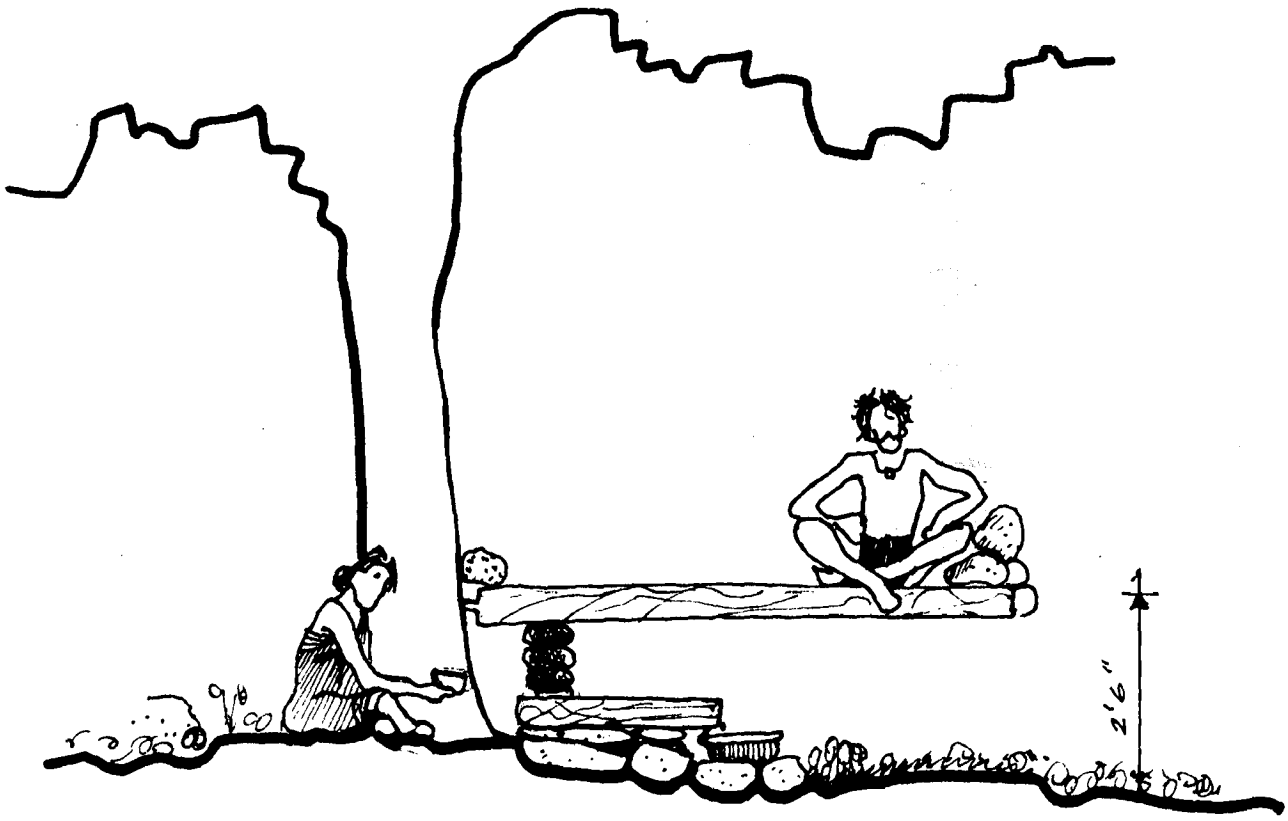


• hypothetical section



• plan.

• a place of worship
- diety made of dry grass

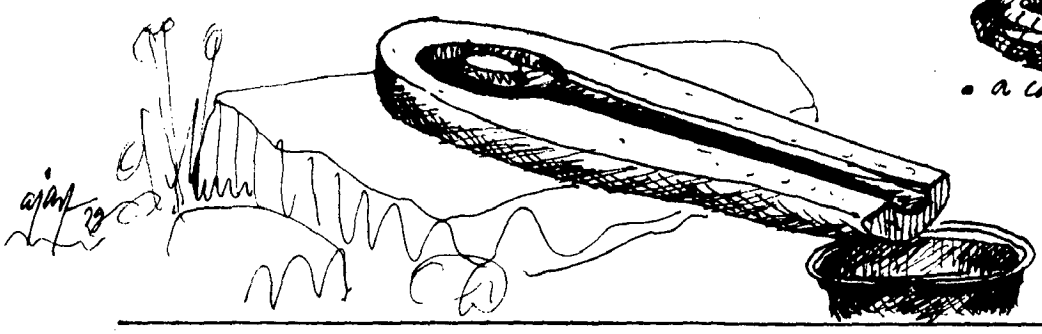


• foreshorten section

a community oil extracting unit under a tree

usually whole family is involved in this process.
every household uses his own implements, like three "nune buttis" (small cane basket) filled with cooked niger stuff are kept one above another on a wooden basin which drains out the oil into a container, when pressed from top, with the help of an wooden indigenous lucrum to extract niger oil.
seeds are fried and pounded before hand.
the "pongamia glabra" seeds by men and women to anoint the head and body. this oil protects the body against the blisters caused due to severe winter and also softens the skin.

• wooden basin



• a cane basket

storage of fodder. This has only one small entrance which is closed with some kind of rudimentry wooden grille door (Refer Plate No.).

(b) Field Shelter - This is a temporary structure which is constructed in the fields. It acts as shelter and tethering place for their cattle as well as a fodder storage platform. This is erected on five forked vèrticals, of 5' high at four corners, on a square piece of land, and all these poles are horizontally connected with purlins, on which they lay a platform made out of bamboos. For climbing over to the platform a bamboo stem with lateral shoots is placed in an inclined manner which serves the purpose of steps (Ref. Plate No.).

(c) Firewood stand - These are erected in THE REAR AND OF THE Vāstuka with the direction of wind having two upright supports with a horizontal beam to support the fire wood kept in a vertical manner. The height of this structure varies from 5 - 6 ft. Surrounding land is always paved with rough stones. (Ref. Plate No.).

(d) Place of worship - This is always located under an old Neem tree with an open space infront. Their form of diety is in stone or in hay, for which they made a small pit of 6' - 7' with a stone bund alround.

In village (B) the village meeting place is just located in front of their diety (REF. Plate No.), providing some stone seating arrangements for village 'Karnam' facing towards the village. This gives a sculptural look.

(e) Oil extracting unit - This is a community working space located under a tree in some corner of the village, where every one is allowed to use the tree, but the basic implements for the process are generally owned by each individual. In this process the whole family takes part to extract oil from seeds. (Ref- Plate No.).

2.3.7 Findings and Inferences :

From these villages, it could be said that they have a wide variety of architecture, which has gradually evolved over the years to meet certain conditions of the climate and daily life. Fundamentally their Vāstukas are built to shelter their family and to house his belongings.

All forms of their shelter, interiors as well as exteriors, are simply and economically conceived, none is wasted or misused.

CHAPTER - III

PHYSICAL PERFORMANCE OF MATERIAL AND STRUCTURE - STUDY AND ANALYSIS

3.1.1 Material

(a) Inherent characteristics and properties - Mud is the basic raw material for all types of construction, it is used from starting till the end. The argillaceous clay which is mixed with straw and cowdung, yields to its pressure as willingly in building as it does in potting.

Thatch, apparently the most common roofing material locally known as 'Gopuri Grass', is meant for warm and temperate climates. It presents the advantage of being readily available in the form of fronds or fibrous stalks, of resisting the penetration of moisture when properly sloped and lapped, out of permitting the passage of air which cools and ventilates the enclosure or the Vāstuka.

The mud plaster, earth collected from the nearby white ant hill are mixed with cow dung gives a beautiful smooth wall surface. Sometime it is also painted with earthen colours mixed with waste oil, to give shining surface on the walls.

Timber collected from nearby jungles, solves their problems of complex building construction, as it is

easy to assemble, by having loose joints and keeping the natural slope of the material. It also helps them to maintain and replace, whenever required.

(b) Purpose - Weather and physical environment determine the materials available to a tribal builder. He chooses to work in wood, as the columnar shape of a tree might have inspired him to organise his design accordingly for example, all forked upright members of the structure has same supporting details even if the column does not have the material fork shaped support, when it is cut from a log. Basically, it is the builders' mental conception, not the material he uses, that determines the character of his product.

Thee use of thatch leads to a certain consistency of covering structure among these tribals shelters, since the attachment of bundles of material demands the use of a purlin spanning major ribs and rafters and the spacing of purlins are determined by the convenient length to which a specific type of thatch is cut and attached.

The use of mud plaster on to the walls not only create an aesthetic appeal, but also make the shelter hygenic to live. Other organic material like applying a paste of turmeric paste to the walls or door frames helps to keep away all insects.

Sun is used to cure the mud structure, the absorption and evaporation of moisture by thatch helps to avoid condensation problem.

(c) Methods of Use - Mud is the basic raw material for all types of construction. The argillaceous clay is heavily diluted with water in pits very near to the construction site, and then kneaded under foot. A mixture of grainy, greasy clay and sandy laterite soil is prefered for this purpose. Apparently, an admixture of chopped straw, hay, or cowdung serves not only as a binding medium, but the microorganisms contained in them also affect the release of certain chemical and biological processes that promote hardening.

Walls are constructed by superimposed layer of mud building by means of overlapping. The argillaceous clay diluted with water and mixed with cowdung once applied by hand on the rough surface of the wall, give an interesting texture.

The log, which is generally collected from the nearby jungle in advance are well seasoned by leaving them exposed to the atmosphere. The 'forked' shape of the log maintained as it is and used as a upright supporting member for the ridge beam or the left slab. These logs are rough

hewn with an axe and adze. Once erected they are then finished by applying colourful earthen colours on them or left as it is so that it can 'breathe'.

Stone which is normally used for pavements and construction of retaining walls, are placed loose on the surface.

(d) Durability - The mud wall which they construct, require a constant maintenance from time to time, like in village (A), where Valmikis are not able to maintain their shelter, due to poor economic status, their shelters are in a very bad conditions, and once not maintained properly, these structures are prone to affected by termite attack.

Age of timber members are increased by some kind of local indegenious techniques. In village (C) where the main supporting members are still kept in tact, which could be even fifty years old. The normal life of the roofing material is only three years and has to be replaced with new. one.

(e) Builders' Economy - In all villages there is a limit to the extent to which building forms are controlled by builders' economy. This limit is generally imposed by a builders' fina ncial capacity. It is so

3.1.2 STRUCTURE - Logistic form based on physical structural variables.

(a) Climatic factors - Resistance to lateral forces, such as wind or earthquake, generally requires either rividity or bracing. These structures having a very simple roof and supported by a central pole as well as peripheral columns. Since thesepoles are buried deep in the ground, the building acts as a rigid frame, although the flexibility of the members themselves assures some flexibility. Another way of resisting wind is flexibility which often depends on the use of tied joints, is the use of flat strips of bamboo for the tied joints. These grip thecylindrical upright much more securely than would round tiles and are self tightening.

The use of double roof of thatch and thick bamboo reinforced mud ceiling to protect mud construction from rain, as well as for climatic reasons.

(b) Safetty - The construction of the inner loft slab, which plays a role of sheild to inner living space. Mostly the surrounding areas of the shelter are cleared and proper pitching with stone has been done to avoid any kind of landslide. This also protect their plinth from damages during rains.

entrance door, hidden by the shutter opening, the cooking hearth of 15 inches high has an attached side platform where the cooked food is kept. Immediate storage for cooking items is in the form of a 'JOLI', suspended at the height of 2'-6" above the hearth, meant for storing spices and drying of meat. The store rooms are generally located on the side of the kitchen, and sometime used as puja room too. They do not use this space for sleeping purpose. The aceess to the loft is either from store or from the multipurpose room.

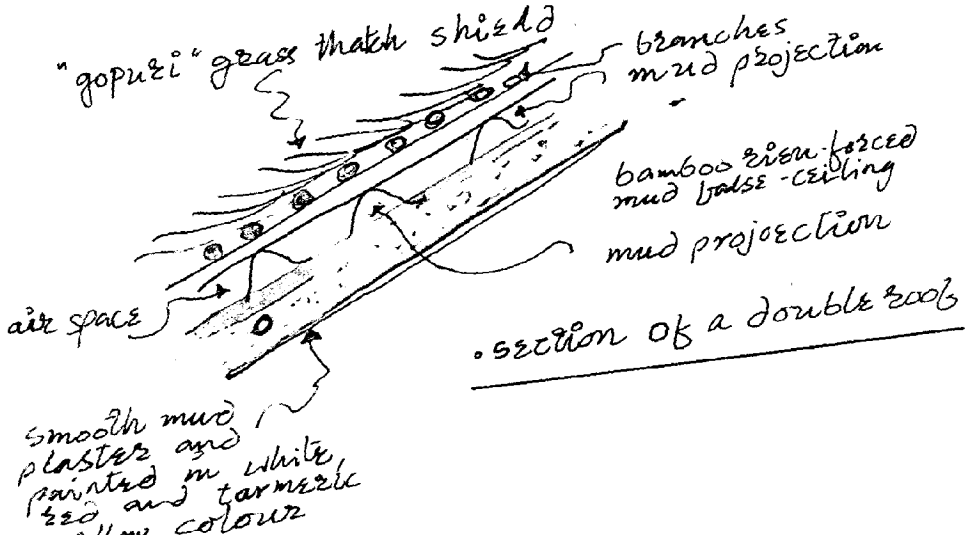
In village (B) where Valmikis have kept the entry to their poultry pen is through their main room, are badly maintained. As 'middliu ' type household has live stock, the owner builts a separate cattle shed just by the side or in the front courtyard of the house. These shelters has a paved and mud plastered court yards of 12' x 15'. They generally do not go for fencing. But only in case where kitchen garden are present, they erect an interlaced read fencing. They have other ancillary units like a firewood stand, which is always located on the rear side of a shelter, in the direction of a wind. Small paved platforms are generally made on the rear side for bathing.

In village (C) where the row housing has a similar 'middilu' type house layout, except for a long connecting corridor between the dwellings.

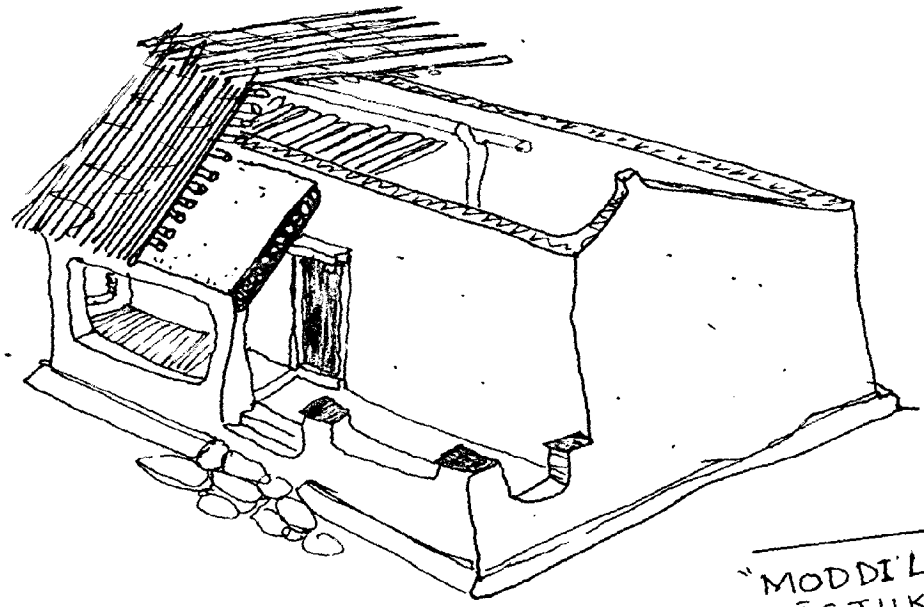
distinct that sometime even when the modern materials are available within their reach, they are not in a position to use them for their building construction. All their shelter forms are determined by this factor, where the social status of a man does not play a significant role. Like in village (B), where Valmiki tribes, who are considered as untouchables, has a bigger size and better 'Middilu' type of Vāstuka, compard to Konda Doras, same caste, those who are better off in village (A) has similar 'Middilu' type Vāstuka. But only difference which is noticeable in Valmiki shelters that they are not able to maintain their houses even when they have sound financial backing .

Builders' economy also decides about the size of Vāstuka and the locally available materials are to be used. In village (A) where Valmikis, the poorest lot, are forced to have only a very perishable type 'purillu'.

The cost of each Vāstuka ranges from Rs. 200/- to Rs. 500/-. The maintenance and repairs of their structures varies from Rs. 20/- to Rs. 40/-.



• section of a double roof



"MODDI'LLU" VĀSTUKA

CONSEQUENCES

1. thatch drains out water and protects the mud wall in the rainy season.
2. thatch shades the mud roof and the wood ceiling (loft) from direct sun, hence reducing heating up of the house
3. the airspace provides additional insulation during the hot days, while the heat capacity of the mud keeps down the day temperatures.
4. the mud conserves the heat for cold nights and the thatch helps to conserve that heat for reducing heat loss to the cold sky.

PLATE NO: 34

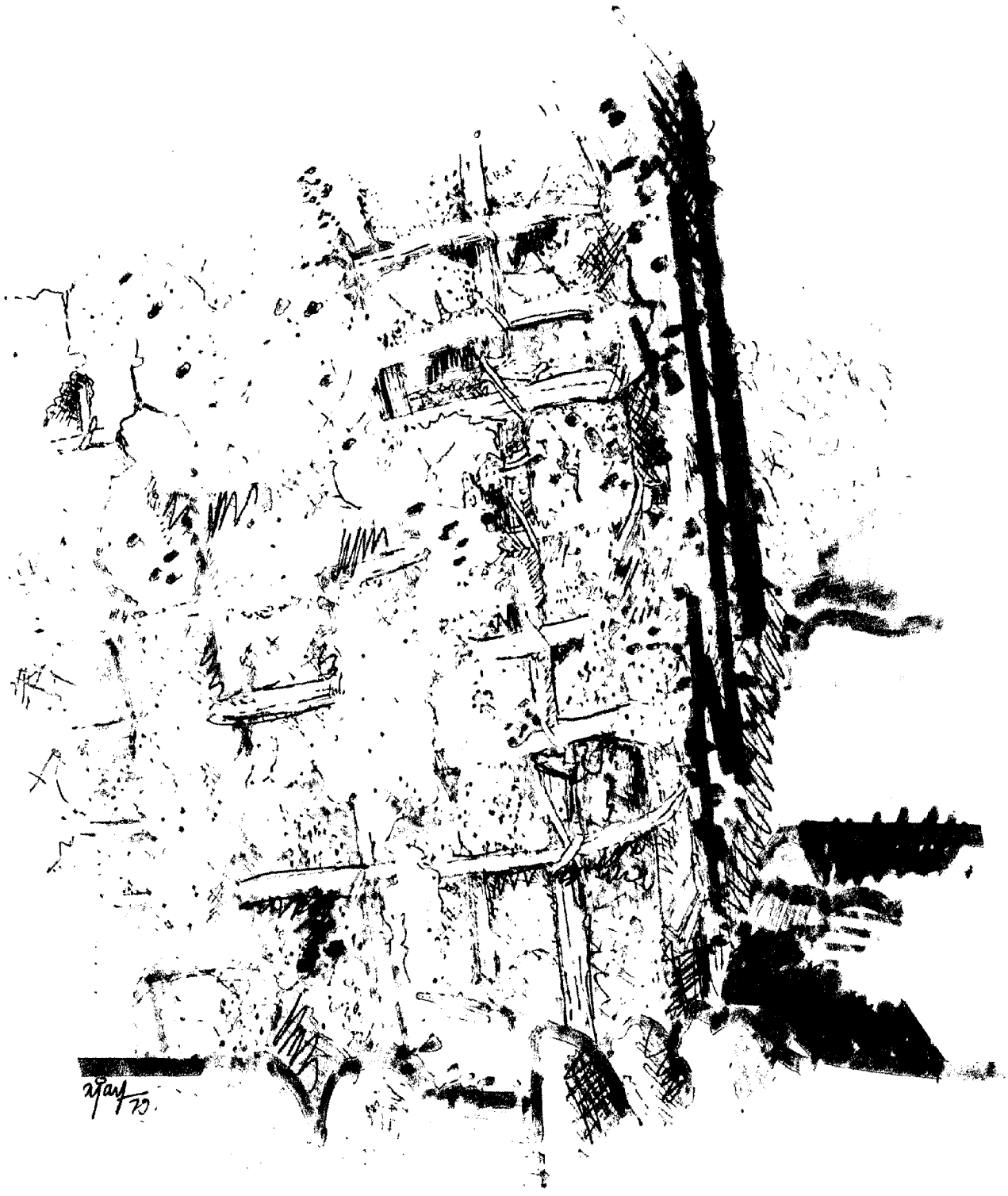
(d) Loads - Vertical load carrying elements, which collect the forces from the spanning members and transfer them to ground, present a distinction. Columns and bearing walls are relatively simple in concept, and their use is limited largely by their tendency to buckel, which restricts the height for a given thickness. In order to reduce the bulk of walls, they are reinforced with peirs, which adds to their three dimensional quality, could be found in 'purillu' type of house, where they have gone for wattled walls.

The horizontal loads are taken care by the 'one dimensional' 'A' timber frame, having the properties of tensile strength.

(e) The design requirements - The central post plays an important role in a shelter and therefore is a sacred to these tribes, as they feel that this bears the whole weight of their shelter. This is indeed true, for the massive outer walls are only a shell for protection against the cold and the interior is formed by a series of supporting beams.

3.1.3 Maintenance

Mud plastering has deteriorated, specially in low cost houses i.e. in village (A) and (B), and even



a neglected wattled mud wall detial
(a skeleton view from external side)

completely disappeared due to the lack of repairs. (Plate No.). Normally the mud walls are bedaubed with argillaceous clay mixed with cow dung, which fills all the hair cracks from time to time on the walls, and helps it to harden.

The Gopuri shoot-grass roof survive for three years, have to be beaten flat from time to time, which blends with entire roof giving an attractive texture. The other members of the roofs net work are replaced whenever the need arises. Maintenance of timber and other bamboo structural materials are done by applying fresh mud plaster mixed with ash or by putting kerosene oil on to them. The best maintained shelters could be seen in village (A) and (B).

3.1.4 Economy of Structure

Mud which is freely available from the construction site are extensively used. Other structural members like wood and bamboo are normally collected from the nearby forests or purchased from the market. Some time they also collect the roofing material from the forest.

Normally, they try to maintain their traditional technique, which has definite worked out economies for their environment.

3.1.5 Findings and infrences

Tribal shelters combine persistence of form with ephemerality os substance, construction and repair are almost a constant activity.

The availability and the choice of materials and construction techniques in a tribal architectural situation greatly influence and modify the form of their shelter. Materials do not determine form, inspite of their fundamental nature. They merely make possible forms which have been selected on other grounds, they make certain forms impossible, and in acting as a tool, they modify forms.

Tribal uses the local materials with an admirable skill. Their wall textures and colours relate directly to the local climatic condition. The thick mud walls are built to keep them cool and warm during summer and winter, plus stucco is applied as protection from moisture; and white wash is applied primarily for its heat-reflective qualities.

Because of its strength and durability masonary is chosen for foundation and supporting mud walls. A combination of wood and mud structure offer good, unobstructed interior space, strong and durable perimeter walls, and excellent insulation qualities.

The simplest pitched 'A' - frame roof, a type of structure common to all these villages, affords an economical attic storage space that further insulates the living quarters below. The wood-bamboo framed roof frame is reasonably light weight and easily assembled and covered with locally available dry jungle grass, is flexible enough could be replaced whenever the necessity arises.

3.2 CONSTRUCTION TECHNIQUES - STUDY AND ANALYSIS

3.2.1 The most interesting feature of the tribal architecture is the painstaking construction of each of its elements. There is no need of any drawing work, each individual knows his needs, construction works are taken up during the summer months of March - May, when they are relieved from the heavy agricultural work, and when their roofing material is ready and well dried. Construction techniques are almost similar except for a few differences according to their beliefs, it starts after consultation with the village priest or with the 'Karanam' (village head).

A cosmological force merely influence these village or shelter design. Only the village preist locates or decides the construction programme, generally beliefs and thoughts, differ from village to village.

Kneading of argillaceous clay with water in pit, for house construction, near to the house construction site.

superimposed layer of mud-building by means of overlapping.

no tool is more sensitive than the fingers, no implement better adapted than the human hand

the argillaceous clay yields to its pressure as willingly in building as it does in potting.

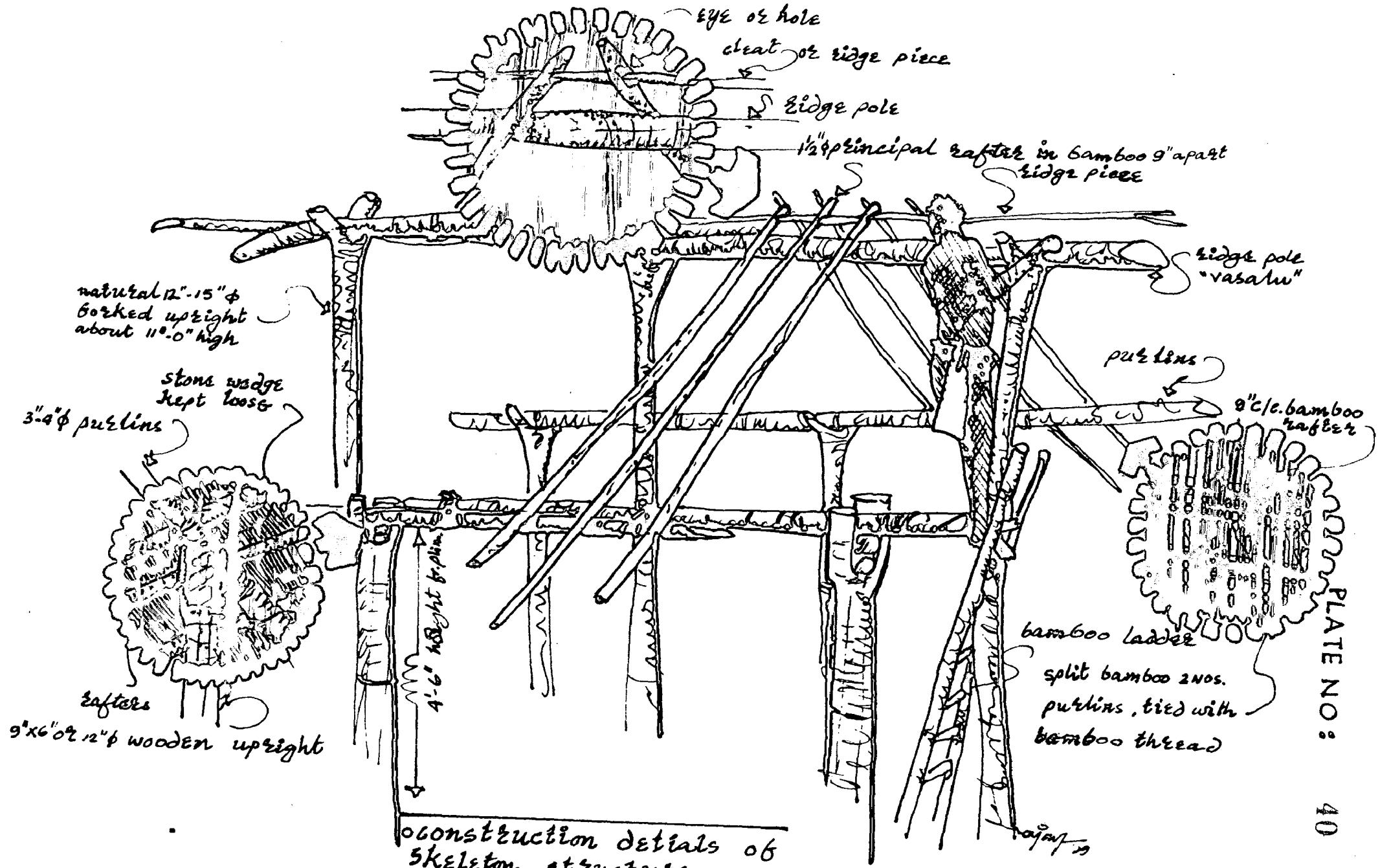
bedaubing of mud wall with diluted mud plaster, mixed with cow dung.

the clay mixed with chopped straws, hay, and cowdung serves not only as a binding material it also promote hardening

super structures are constructed with help of scaffolding

tribe wears a "GOCHI" at the time of construction

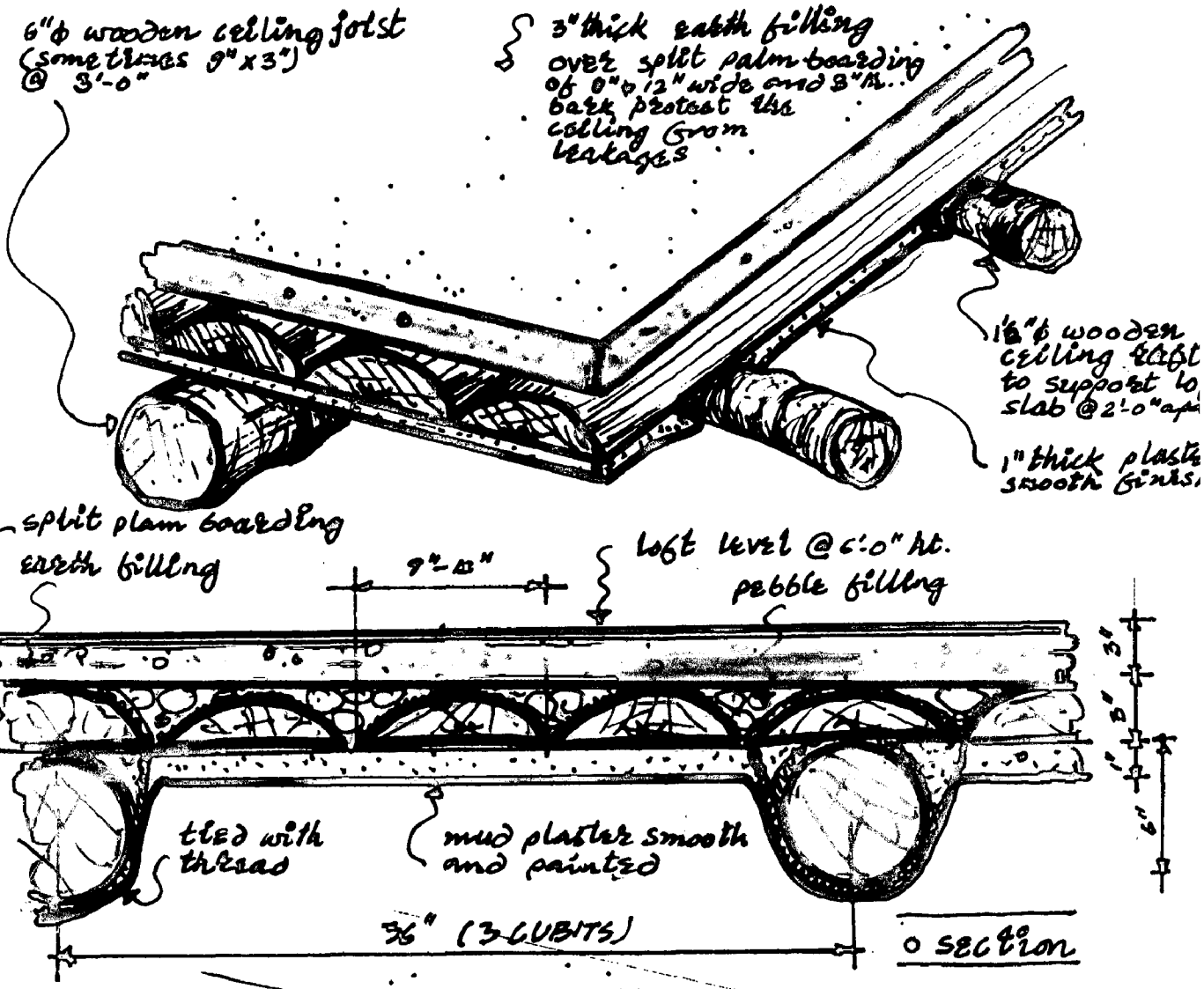
ridge beam being placed on a forked upright



Construction details of skeleton structure

PLATE NO: 40

•detail of loft slab



• details

• exterior

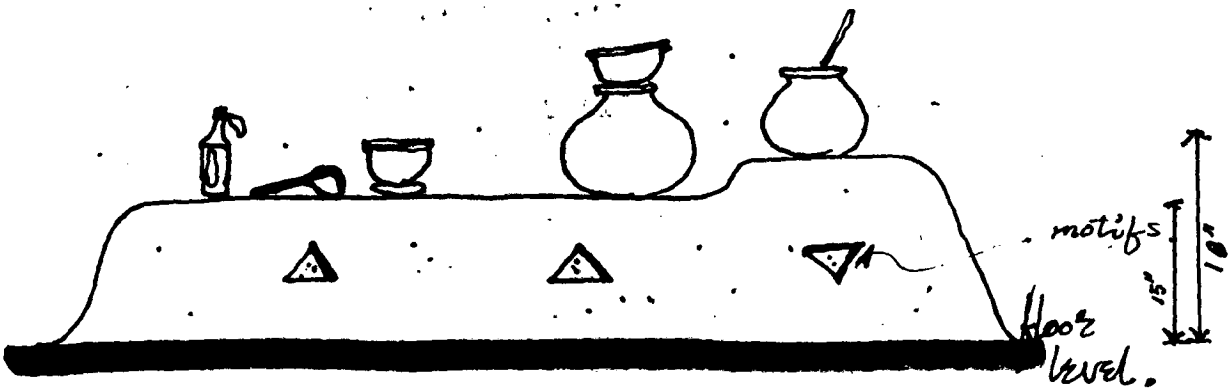
• interior

earthen pot embeded with a ledge, fixed @ 2'-9" ht. used as a storage space for small articles

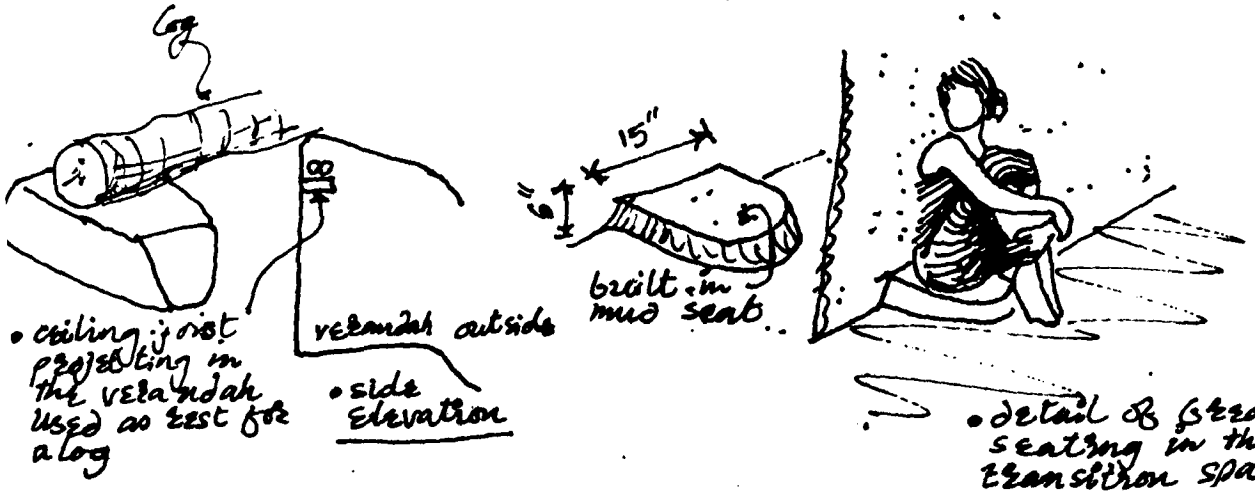
mud wall

floor level

ajay 79



• elevation of built in platform for storage of water pot

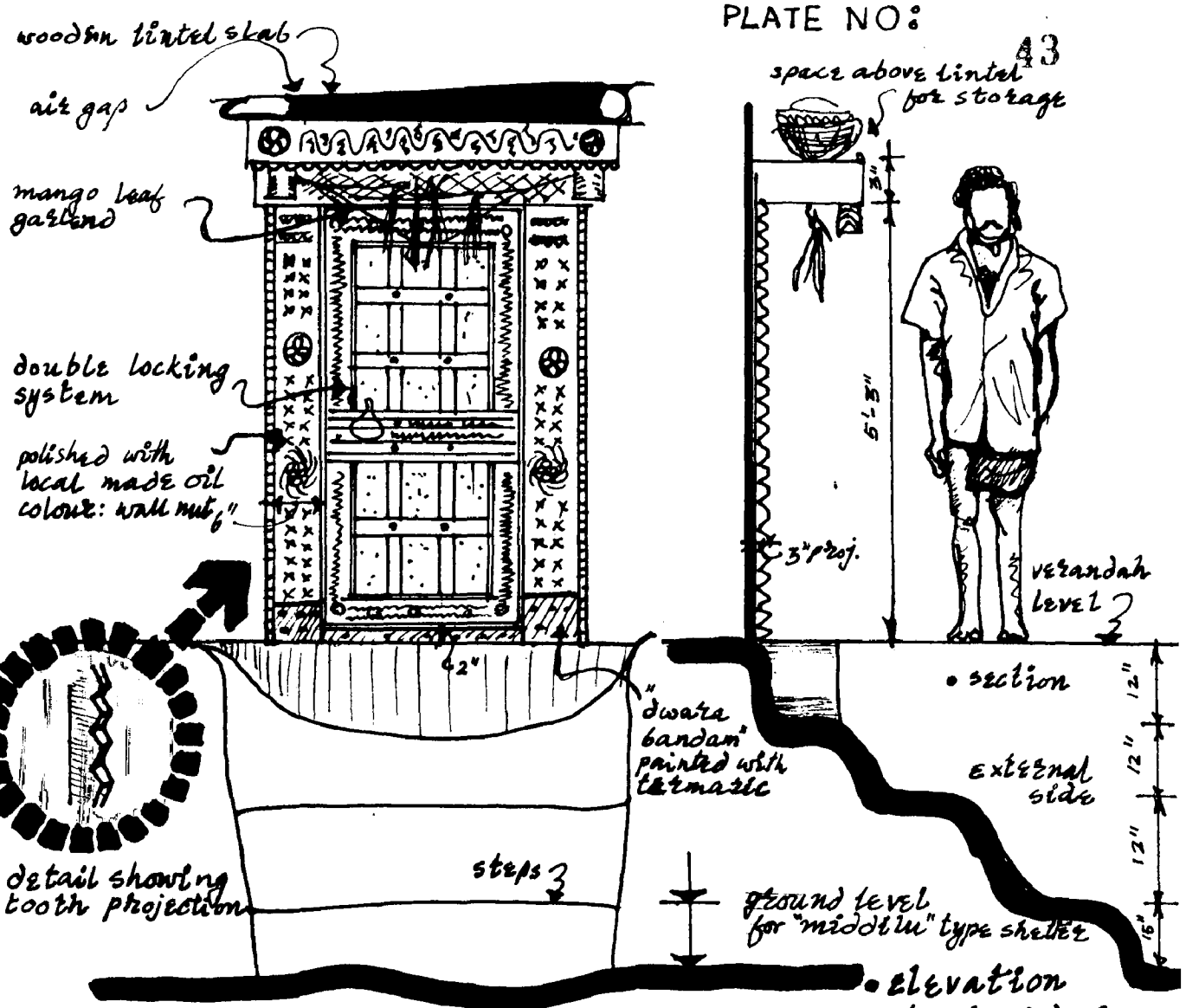


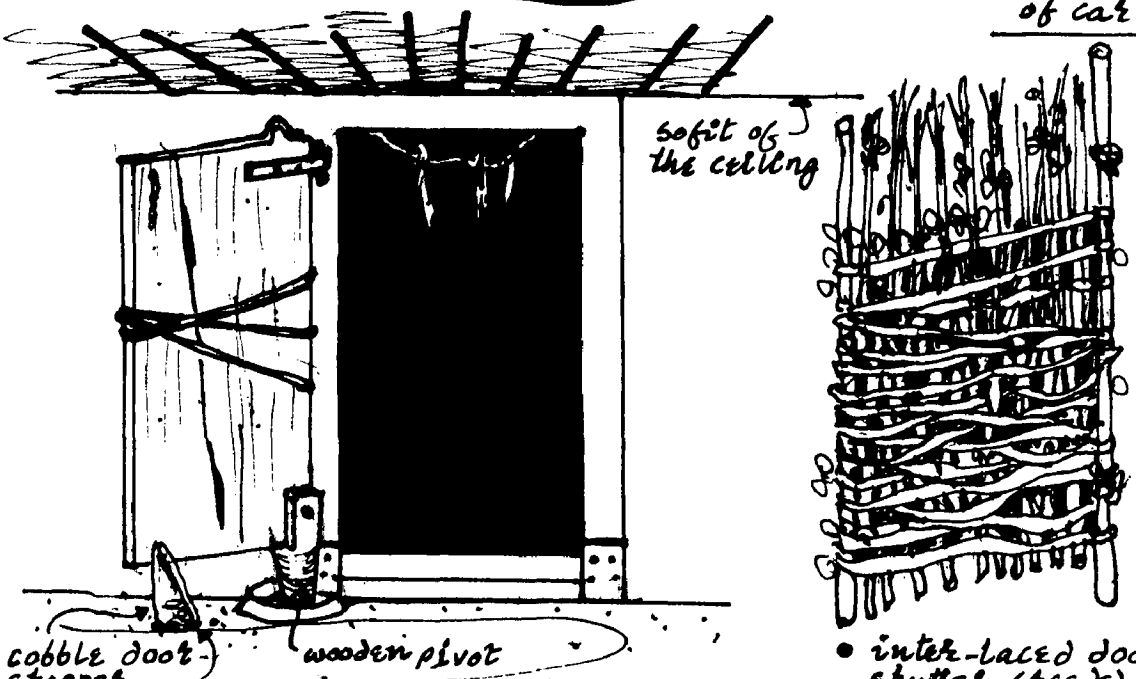
• ceiling joist projecting in the verandah used as rest for a log

verandah outside

• side Elevation

• detail of breast seating in the transition space



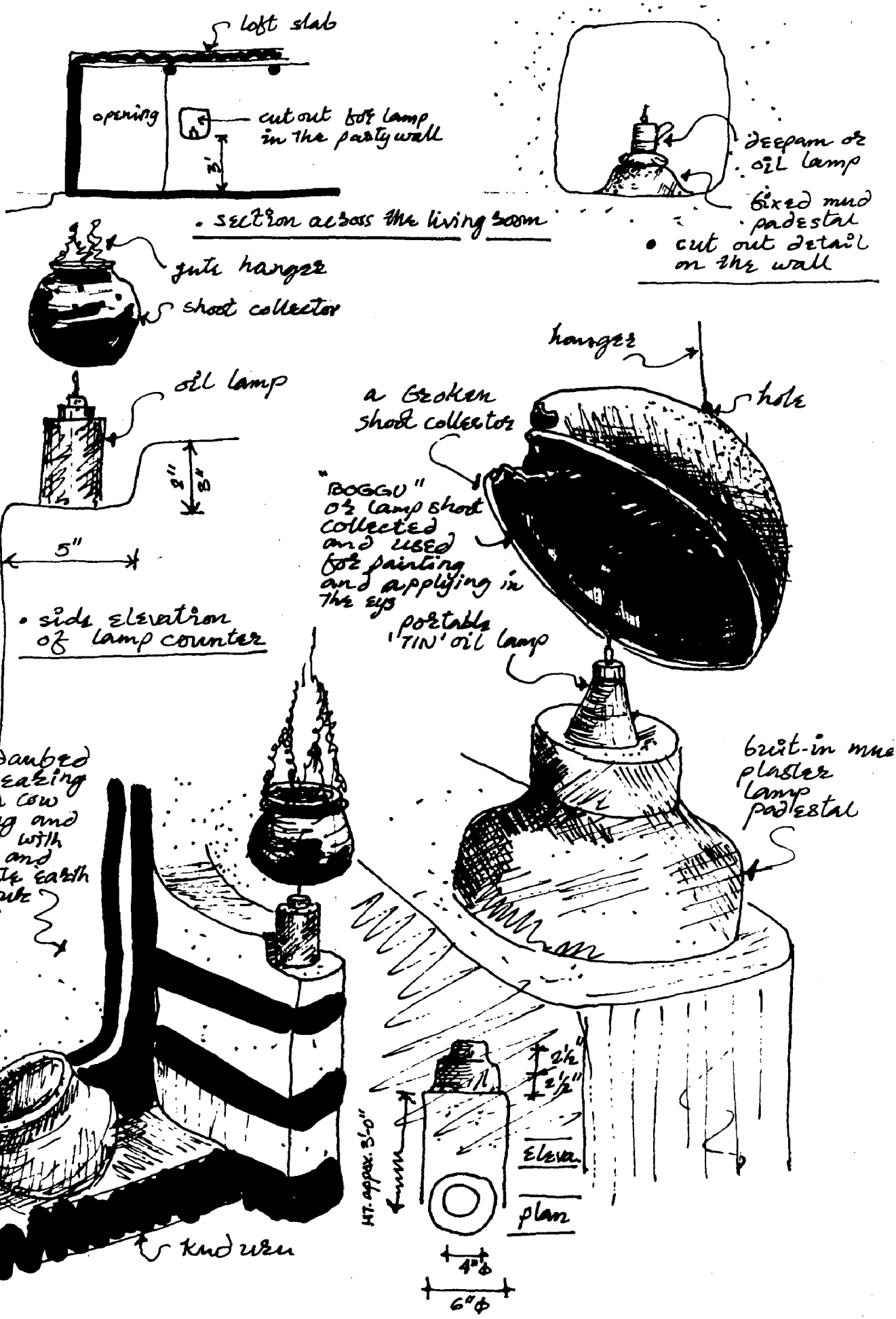


- wooden door shutter tied with leather thread to hold the crack.
- iron hinge
- door frams are selected according to individual's finacial capacity

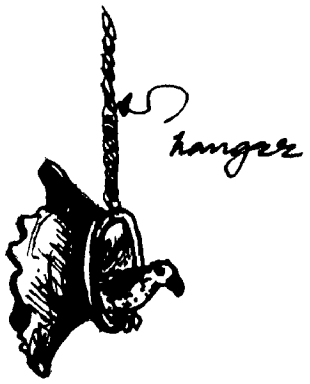
- wood used →
  - mangifera
  - buttea frondosa
  - tereminalia
  - Omelinea arborea
  - Eugenia jambolanum

- inter-laced door grille shutter (reeds)

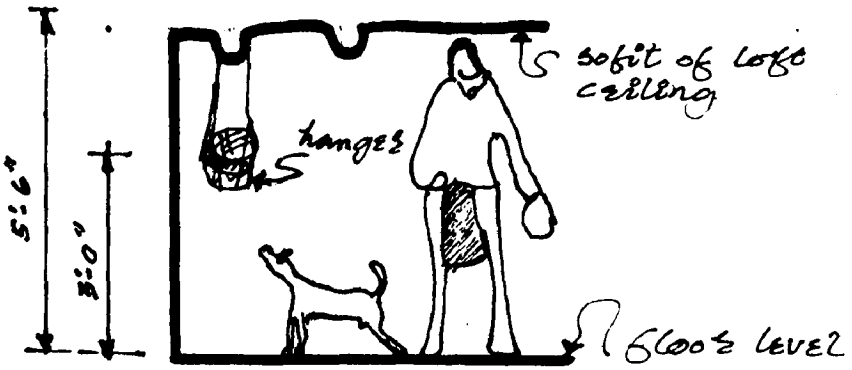
• alternative details of door



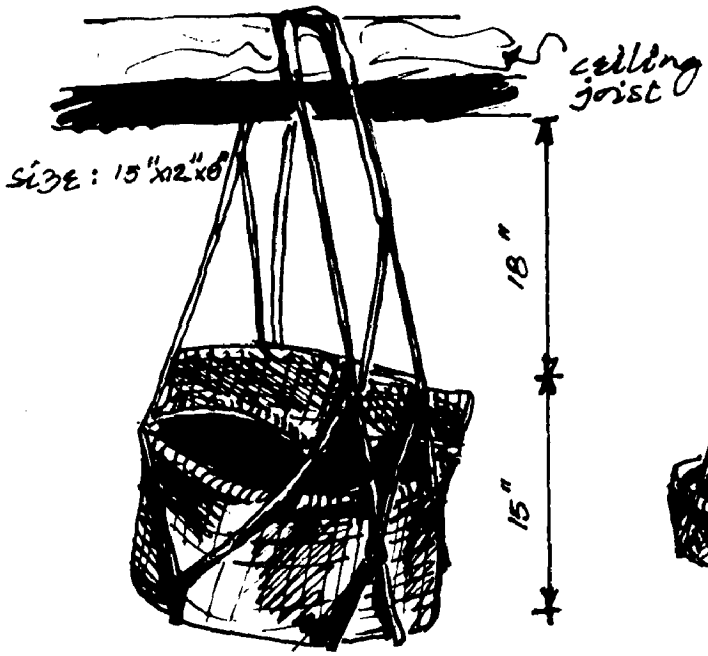
• the process of shoot collection



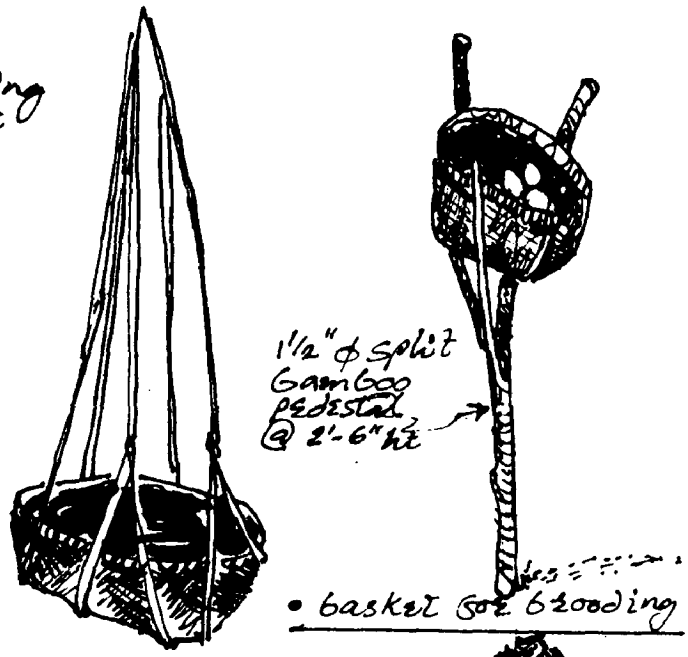
• Girls' swing made of broken earthen pot



• anthropometric study

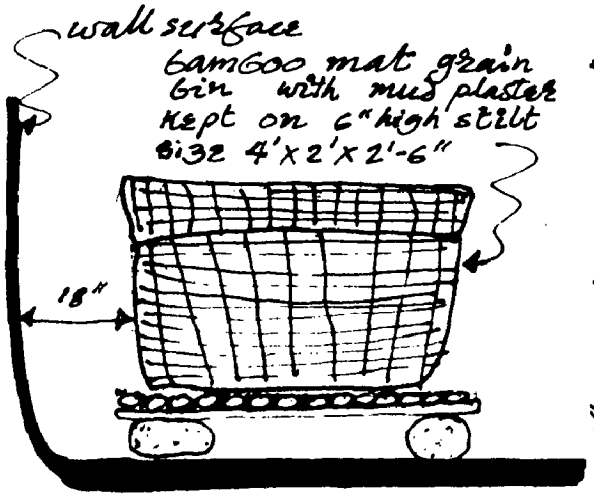


• hanger basket for storage

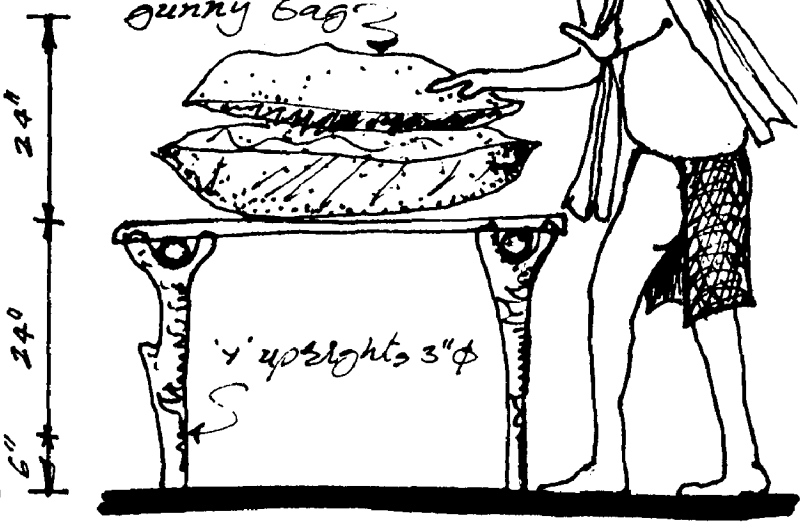


• basket for brooding

• alternative arrangement



• a grain storage bin (insects proof)



• grain storage platform

storage units in tribal interiors

The tribal hand is the basic tool used for shaping their architecture, it even reflects on their final products. Other tools which they use for the construction is a spade, crow bar, earthen pots for carrying water from hill stream etc. They also use grass thread for alignment purposes and wooden scafoldings of different heights.

The total process for Vāstuka construction takes place in two months. In the first month, they construct the super structure, and the next month is kept for the roof laying work. House building is a community enterprise for tribals. The house owner musters his relatives, villagers, and friends, and they all help. According to their financial capacity the owner slaughters a goat, and organises a community feast, once during the period of construction. Sometime a cash payment is also made to those who labour. Later, he reciprocates and in his turn helps to build another's house.

They need only six males and six to seven females helpers to complete a house construction. The main construction starts after consulting with the village 'Pujari', on an auspecious day. This occasion is known as 'Sankhusthapna Muhurtham'. After clearing and levelling the proposed site, they dig the foundation pits for footings of about

1 - 2 cubits, depending upon the site conditions. First they lay a 6" thick layer of compacted river sand on which they construct the footings with natural shaped stone in mud. For 'Purillu' type houses the depth of the foundation remains only at 9" - 15" height, as they can save on the labour charges. After constructing the high plinth upto 3 ft. height for 'Muddillu' house they take up the super structure mud walls of 1'6" thickness, which is made of argillaceous clay, collected from the nearby site. Tribes those who can not afford to build such walls, go for simple 6" thick 'Rivva' bamboo reinforced mud plastered wattled walls. Mostly the height of the walls remains upto the loft height, i.e. 5'-6". They leave this for drying purpose for about 15 days.

All extra fittings like niches, shelves, pegs, vent opening (not more than 3" dia.) are fixed at the time of erecting the super structures, then they place a rectangular "Vasalu" or the ridge beam on the side walls, which is again supported from the centre by a forked upright member of 12" - 15" diameter. The wood they use for constfuction purpose are : Eugenia Jambolanum, Mangifera Indica, Artocarpus Integrifolia, Buttea frondosa, Omelinea arborea and the like. They take one full month for constructing a super structure.

In the next month when the walls are already dry, they spread the roof frames made of bamboo. All the loose joints are tied with'adda nara' and these knots are known as'pendikattu.' Thatching is done with 'Gopuri' grass by a few experts of the village. During this process, mostly man do the heavy work as compared to the womam.

After finishing the external envelope, of the shelter, they put the door frame in position, which is normally manufactured by some outside carpenter or they purchase them from the shandy. The weaker section manages with a simple interlaced flexible beam door. (Plate NO.)

The next important aspect of the construction of a shelter is the decoration of the house, which is exclusively a woman's task. Most of them paint their Vāstuka, with the locally available earthen paints, after nicely bedaubing their walls and loft ceilings. They are very fond of using lamp soot black colour, this is usdd either for painting the dado of their cooking space or for borders along the soffit of the ceiling or skirting.

They construct all their ancillary units in a similar manner, constructed with loose joints and by using simple techniques. Most of their village paths and village and individual courtyards are very nicely paved with stones.

3.2.2 Findings and Infrences

Tribal hands are virtually the only building tool. These builders use their hands with admirable dexterity, and it can be said that one can have the right 'feel' only with the hands.

Use of proper locally available materials like thatch roof with a false bamboo-reinforced ceiling or log boarding loft ceiling for insulation purposes and use of other heat-resistant materials for walls. The narrow streets not only provide shade in the summer but act as ducts for the circulation of fresh air.

A serious weakness in these tribal shelters are the lack of windows and other such openings. They generally claim that this keeps the Vāstuka cool in summer and warm in winter; that it keeps out mosquitoes and other stinging insects; that it prevents evil spirits getting in; and lastly it prevents theft and menace from wild animal. Moreover, we should not think of a tribal shelter as if it is a kind of building where a great deal of light is required, as at present none of them can read or write, in fact they do not have any script of their language, this of course, ignoring the fact that the only one village out of three have education facilities. In fact, most of

their life is lived outdoor and the house is a place for cooking, sleeping and for meetings after dark.

Their construction methods are so simple, and where it is a communityaffair, almost everyone knows his job. This Girijan custom of co-operative building, not only helps to overcome the complex building task, but also has social implications. If social aspects lead to a community enterprise, certain complex or difficult techniques and forms become possible. Men, women, and children all help which express the family unity in economic and social terms.

3.3 Tribal Aesthetics - Study and Analysis

3.3.1 Heritage

There is no other kind of art found except for certain amount of wall paintings. These Girijans, however, are fond of dancing and are by temperament a gay and happy natured folk.

Most of the tribal women are fond of bedaubing their houses with colourful locally available earth, inspite of their caste and creed or the economic status of the household. Economics doss not play much role into it. Only in case of a widower or due to some physical inability of a tribe a house may have been neglected.

These tribes repeat again and again only that version of reality accepted in their community. Their symbols are not destroyed because they have weight of the past behind them.

3.3.2 Relationship to Structure :

The basic plan of a large, square central space which acts like a social lung with low pyramidal roof around it, creates a rich and complex multilevelled tribal architecture. Roof, which is one of the most important elements of the shelter, mostly dominate the village silhouette. The uniform earth and red earth colour and the repetition of cube give order and organisation and units the total village form. The structures primarily of mud with bamboo and mango wood forked supports in the interior because of the thick exterior walls and narrow openings, which offer good insulation, the interior spaces are dark, intimate, and mysterious. This quality of space affords a necessary psychological security for the inhabitants of a village set in this environment.

They normally worship the different parts of their structure, as they feel every thing about it is sacred. The pole, walls, doors and floors are nicely decorated and worshiped on every festival, by hanging mango leaves garland

(c) Volumes - The Vāstuka which is a perfect example of hard plastic form, looks sculptural in the surrounding, where as the punctures on the front wall gives a relief to the total form (Ref. Plate No).

The ancillary units can be categorised as skeletal forms, except the seating area of village head in the village (B), which again could be called as plastic form.

(d) Light Sources - All the private spaces are kept dark, preventing the Sun's direct radiation from getting into the house, even though they spend very little time in the house during day time. The main source of light into the house is through the main door, or sometime they also provide a circular 3" dia. vent hole, which again tilted downwards, so that the outside light does not hit the eyes. Even in the case of row housing, where they have even tried to protect the front verandah from direct glare, by using some sort of screen.

3.3.4 Organisation of formal presentation

(a) Ratio - The growth of the developmental activities are more on the horizontal planes rather than the vertical one, which are governed by the physical set up of the area and the functional uses of the spaces. This horizontal and vertical development (restricted) ratio

seem to be the same both at the village form and also at the shelter design levels.

(b) Proportion - In tribal villages proportion does not tend to create any problem as compared to cities. Since the heights of all the structures are controlled and the use of appropriate building materials and the size of doors and openings are disciplined by a sense of traditional uniformity of unity.

(c) Colour - These tribes seem to have very high sence of using appropriate colours in their shelters. Specially females those who have equal importance in the society, plays an important role to make a shelter lively. It has been observed that families without a female member in it looks deserted. Their wall surfaces have been treated skilfully with highly stylized, abstract motifs and painted by the house wives, but with rich intuition and awareness of general love for beauty.

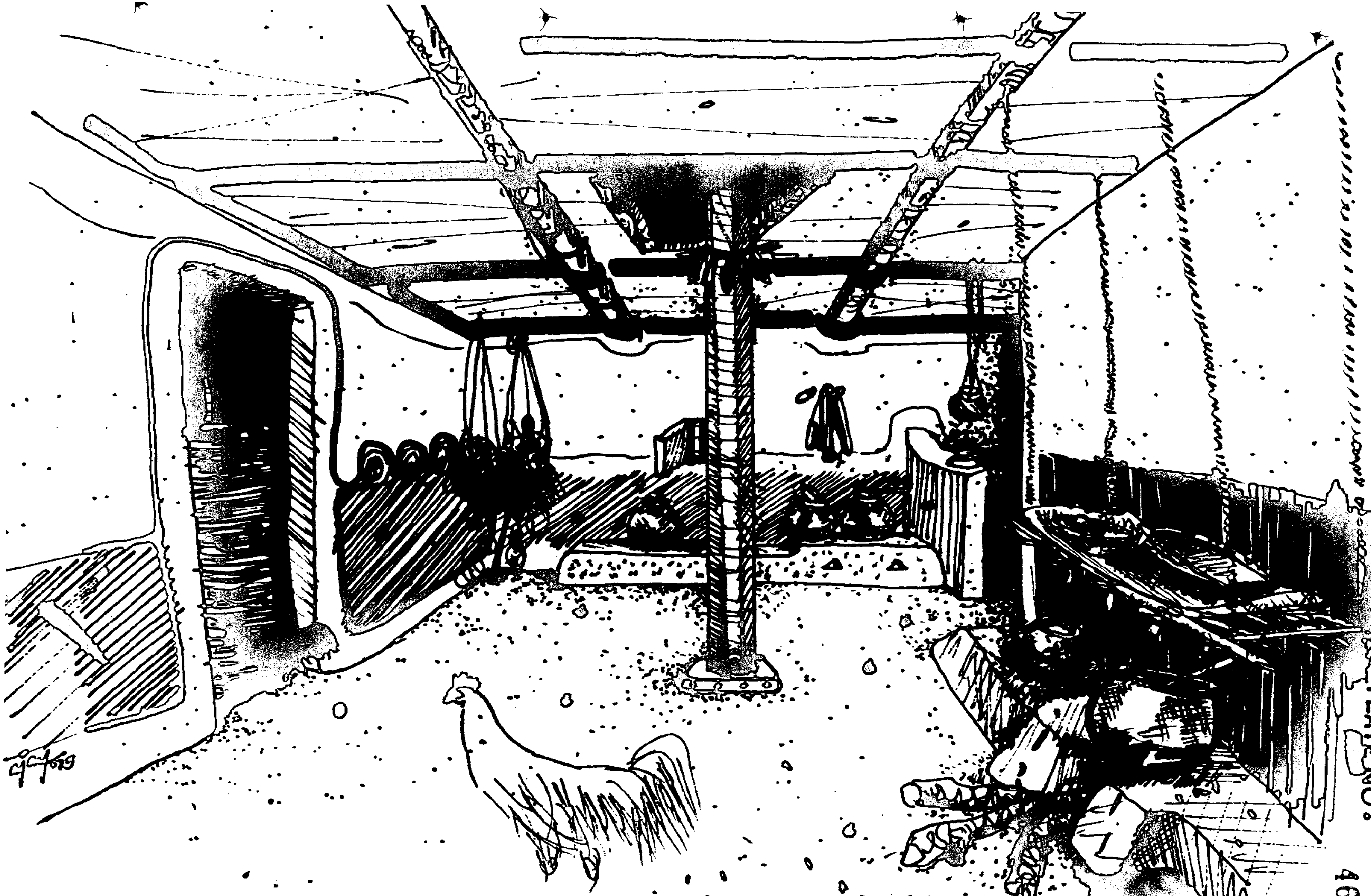
Basically colours are used for decoration purpose, by using locally available red earth, turmeric yellow earth, and calcium bought from the shandies, plus lamp soot black, on the mud walls from inside and outside. These colours do not play any scientific role apart from keeping the interior neat, while external whie colour tries to reflect the solar radiatioh.

(d) Scale - The scale is proportional to the limited architectures which are carried out in the village environment. The shelter act as a dormatory units with a low level cooking, which can be taken as a point in conformation of the roof height at a low level. One more fact adds to it is the general height of the p tribal in these villages. The open spaces between tribal clusters, generally used for religious and cultural celebrations (like Dhimsa - Dance), where in the number of people dancing to the area on which they are dancing is a sense of aesthetic proportion.

(e) Rythm - The combination of small and big open spaces along the village path creates a beautiful harmony along the horizontal space while the blending of the rough textured pyramidal roof surface with the stone paved courtyards adds, the same rythm into the total envelope of these villages and their surroundings.

(f) Harmony - Physical harmony is achieved through unity o f form and structure thereby giving the feeling of a dominating central influence in all these villages.

PLATE NO: 46



o an interior of valmiki tribe : korragi (B)

a valmiki verandah

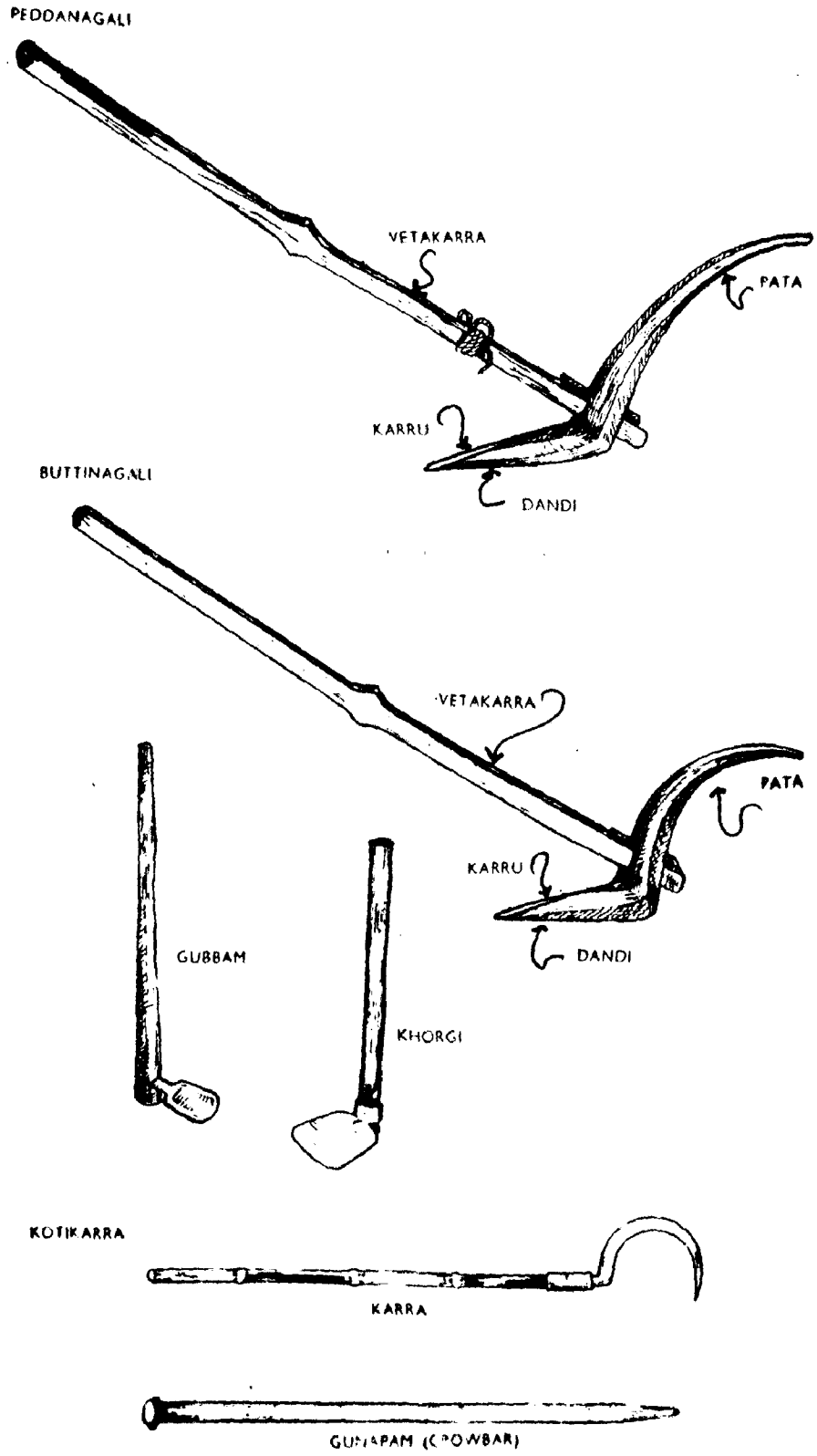
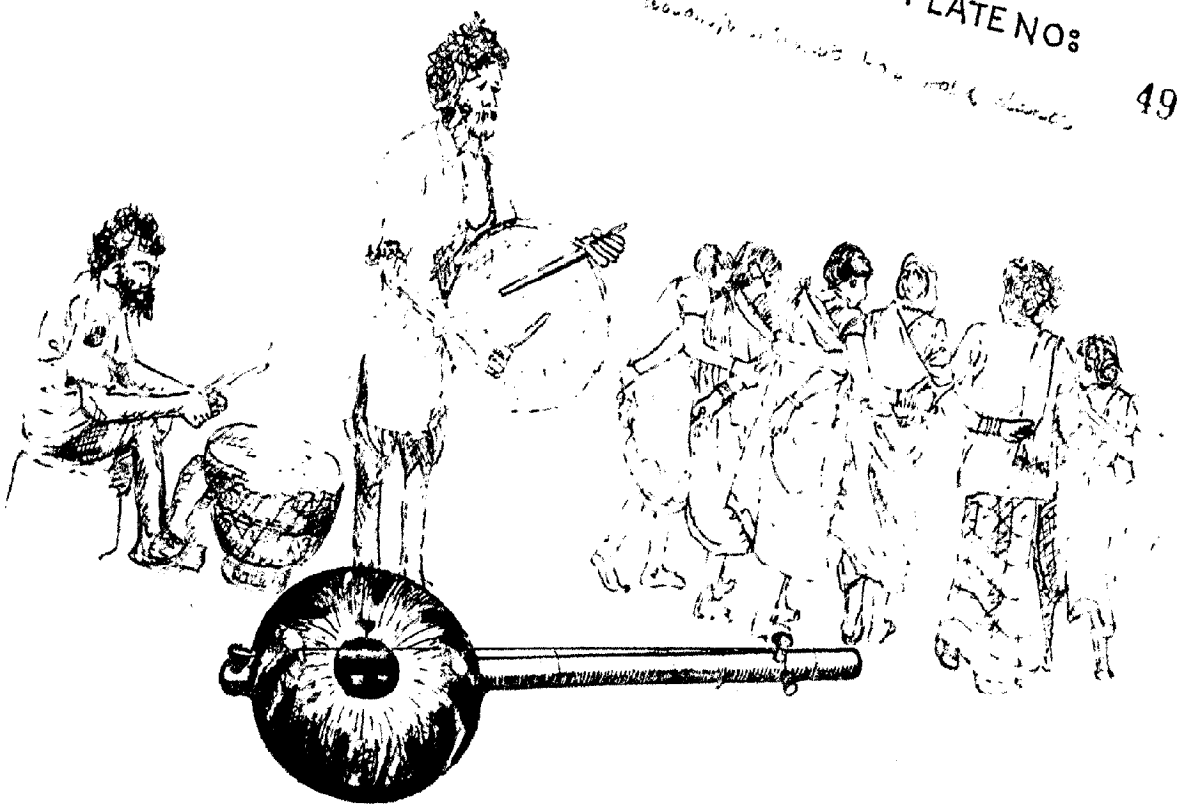
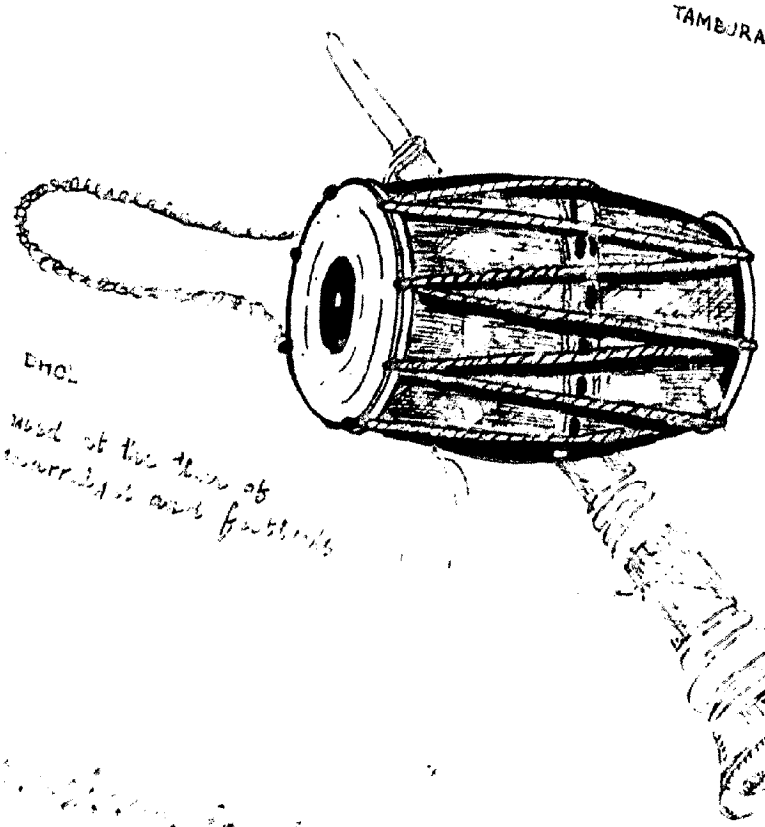

PEDDANAGALI
VETAKARRA
PATA
KARRU
DANDI
BUTTINAGALI
VETAKARRA
PATA
KARRU
DANDI
GUBBAM
KHORGI
KOTIKARRA
KARRA
GUNAPAM (CROWBAR)

PLATE NO: 49



TAMBURA

accompaniment for folk songs



DHOL

used at the time of ... and festivals

SANNAYI

PALM-LEAF BASKETS USED FOR WATER LIFTING OR AS FOOD CONTAINER

TUMBLER

KUTIKUNDA

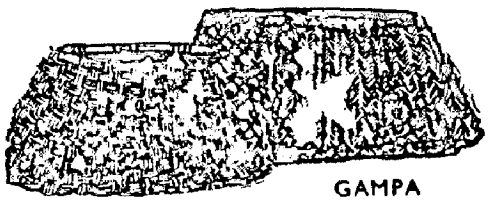
KUTIKUNDA

KANCHU GINNE

KANCHU GINNE

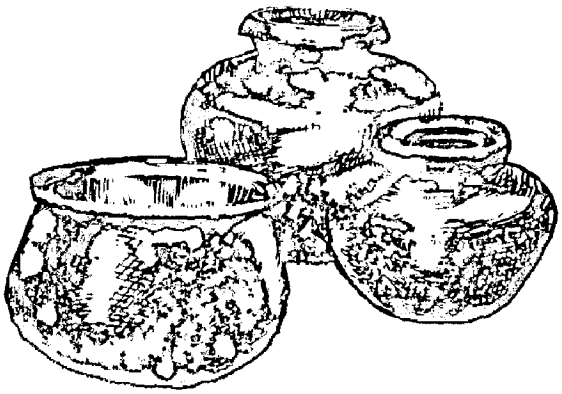
DOKI

TEDDU



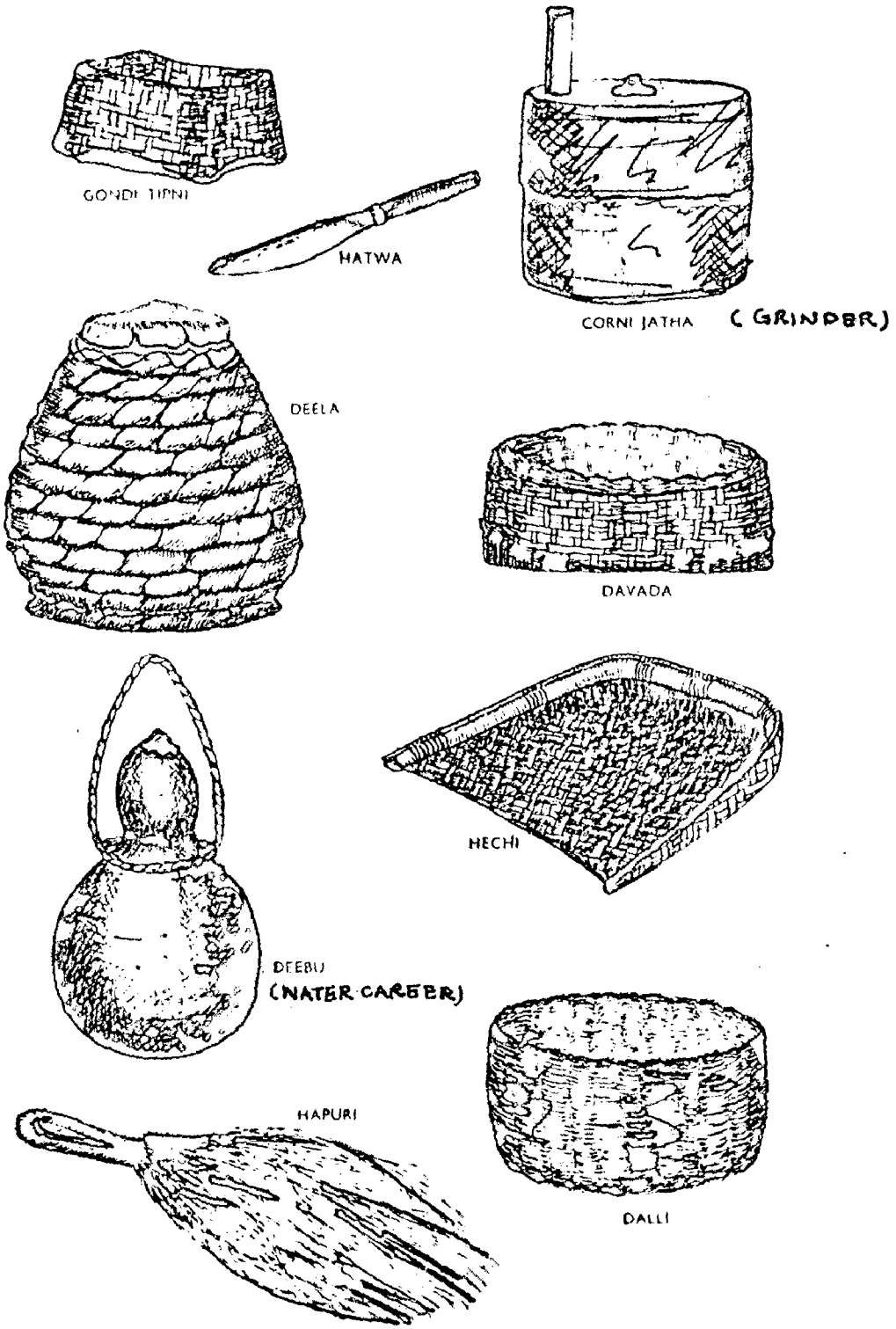
GAMPA

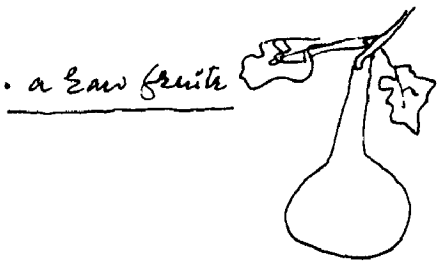
GAMPA



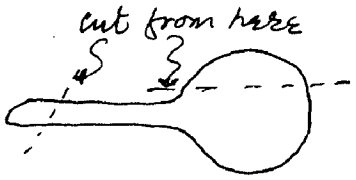
BINDELU

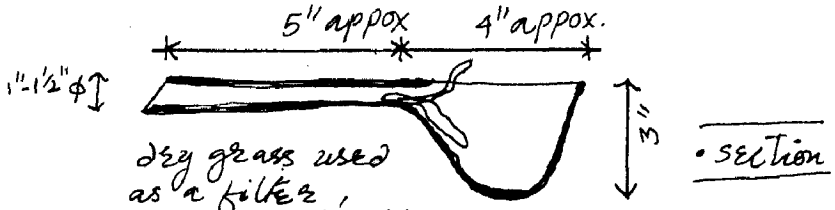
Domestic utensils


GONDI TIPNI
HATWA
CORNI JATHA (GRINDER)
DEELA
DAVADA
HECHI
DEEBU (WATER CARRIER)
HAPURI
DALLI

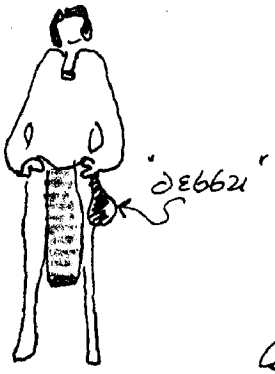


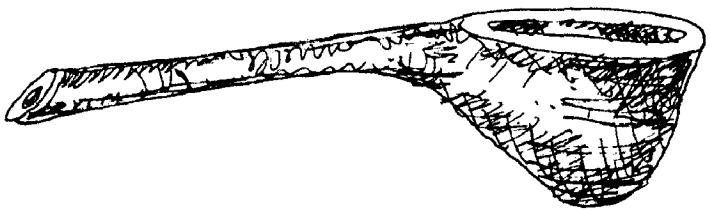
• a raw fruit



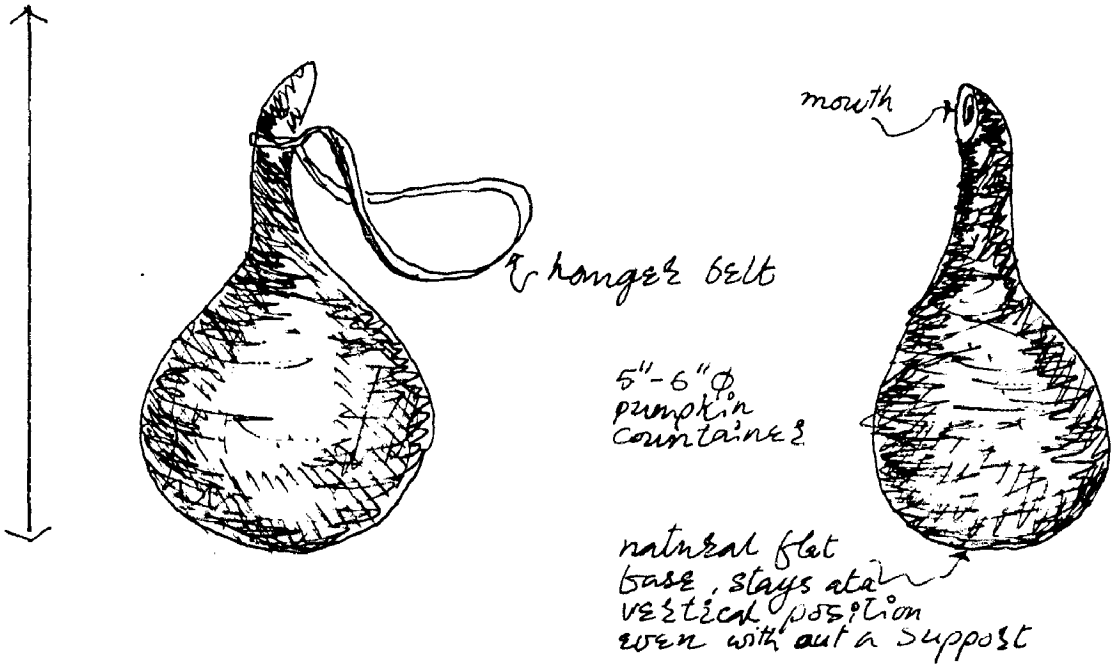


• section

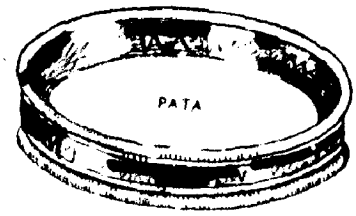


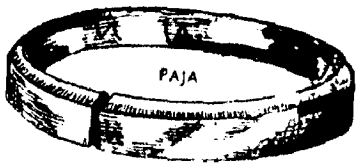


• used as spoon to serve / for direct drinking from the spout.



• a detail of PUMPKIN ziquos containers (DEEBU)


PATA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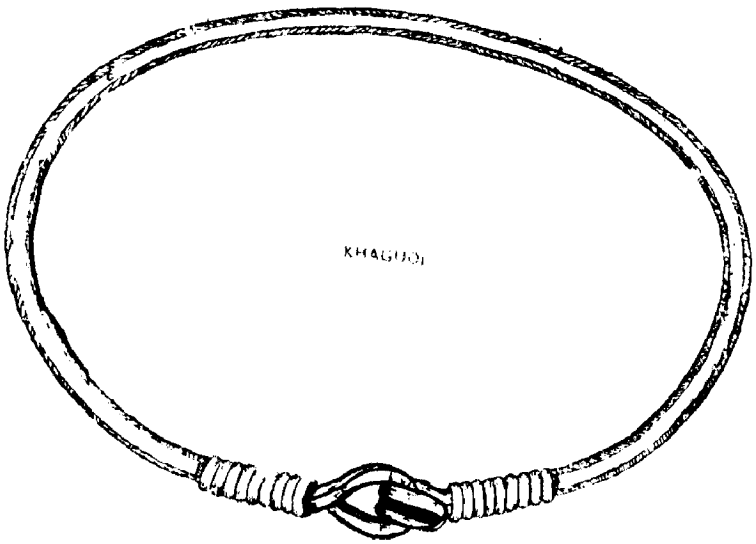
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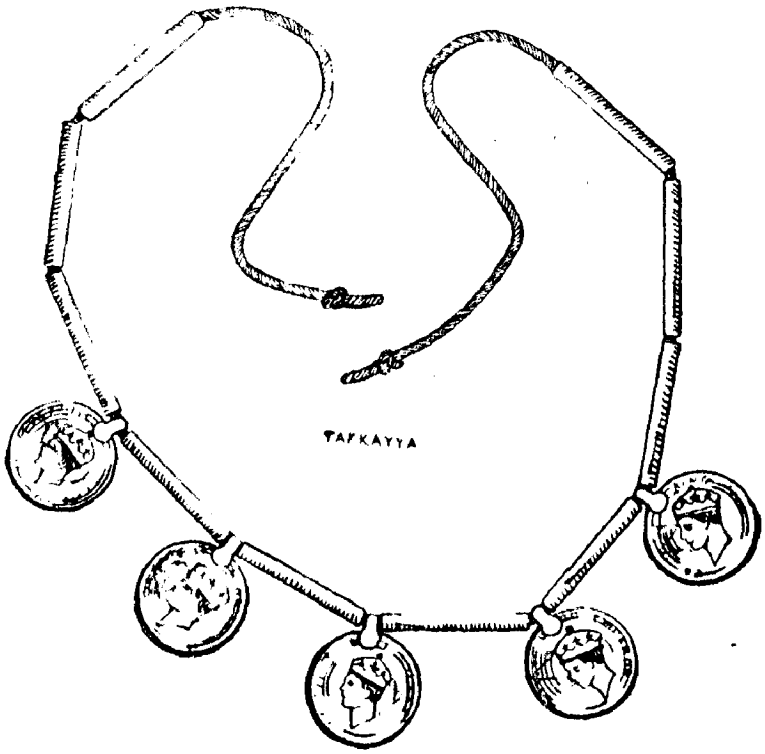
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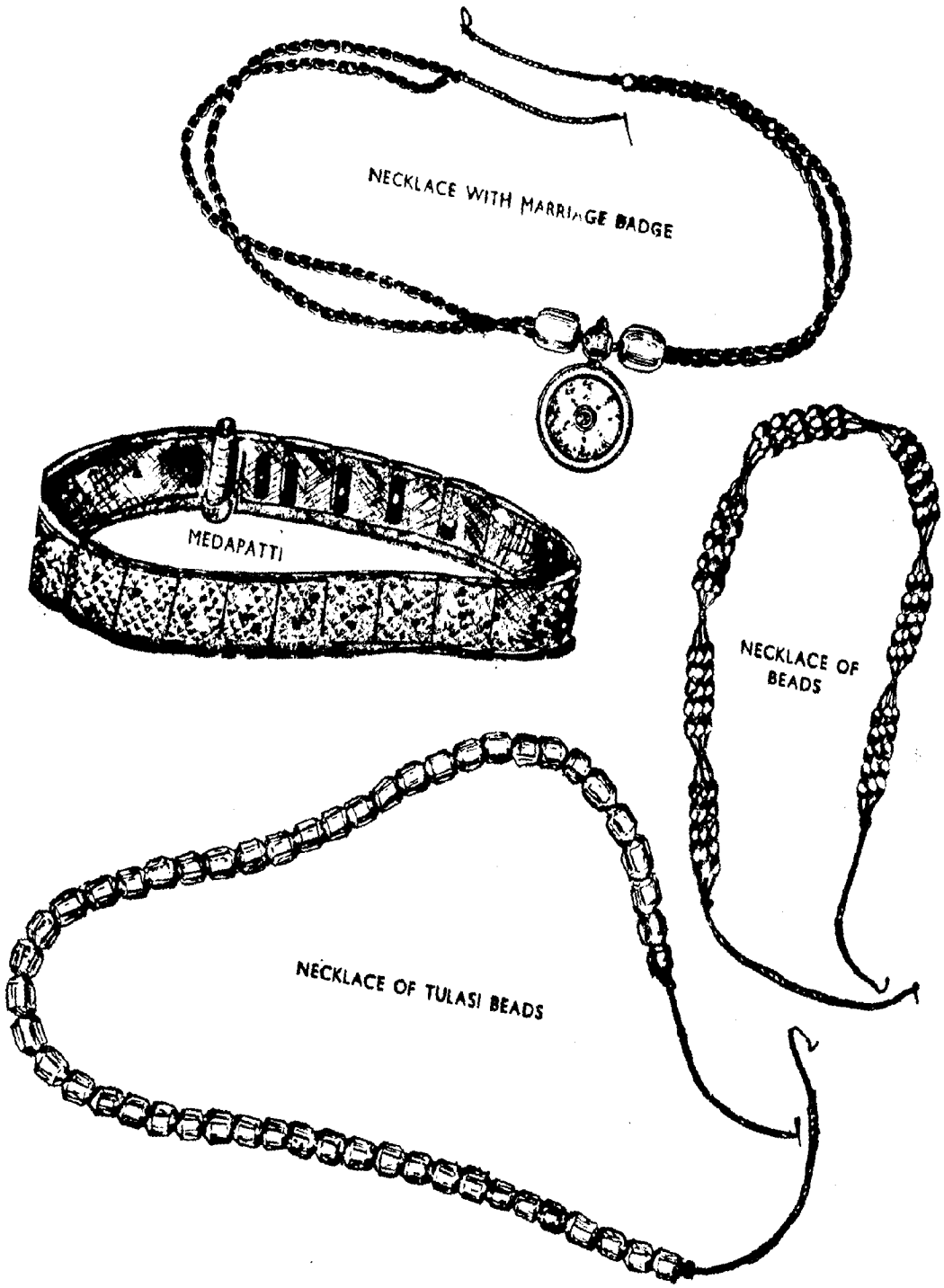
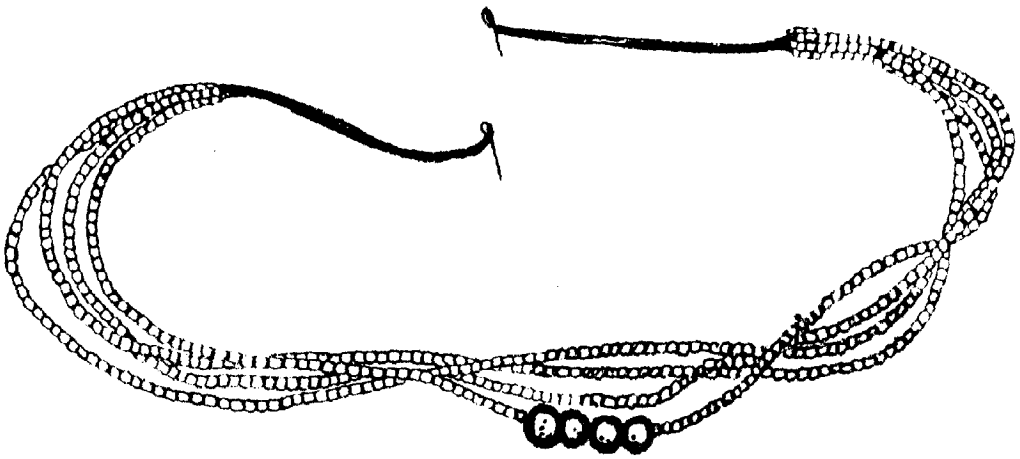

NECKLACE WITH MARRIAGE BADGE
MEDAPATTI
NECKLACE OF BEADS
NECKLACE OF TULASI BEADS

Ornaments



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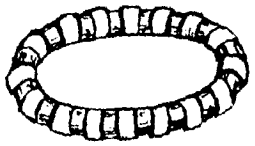

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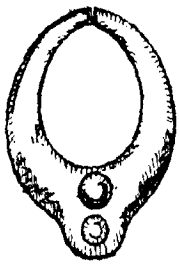

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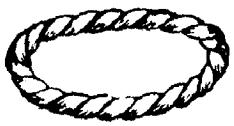

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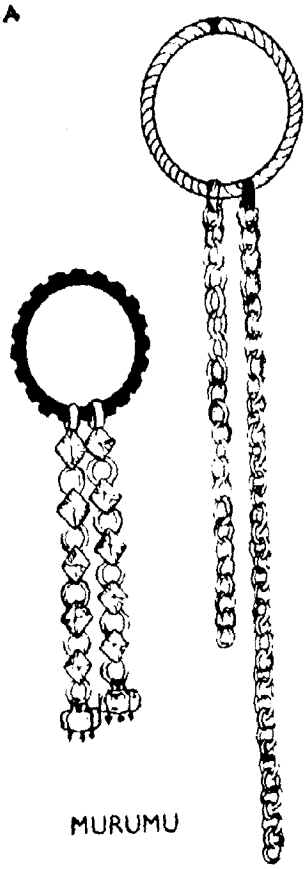
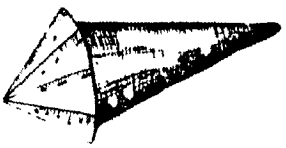


MURUMU

ORNAMENTS

PLATE NO: 56



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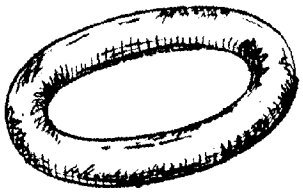
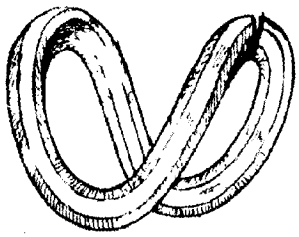


KADEVE



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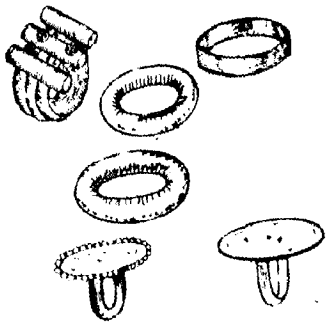
SINGIDI



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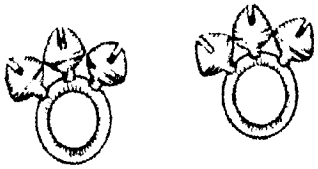
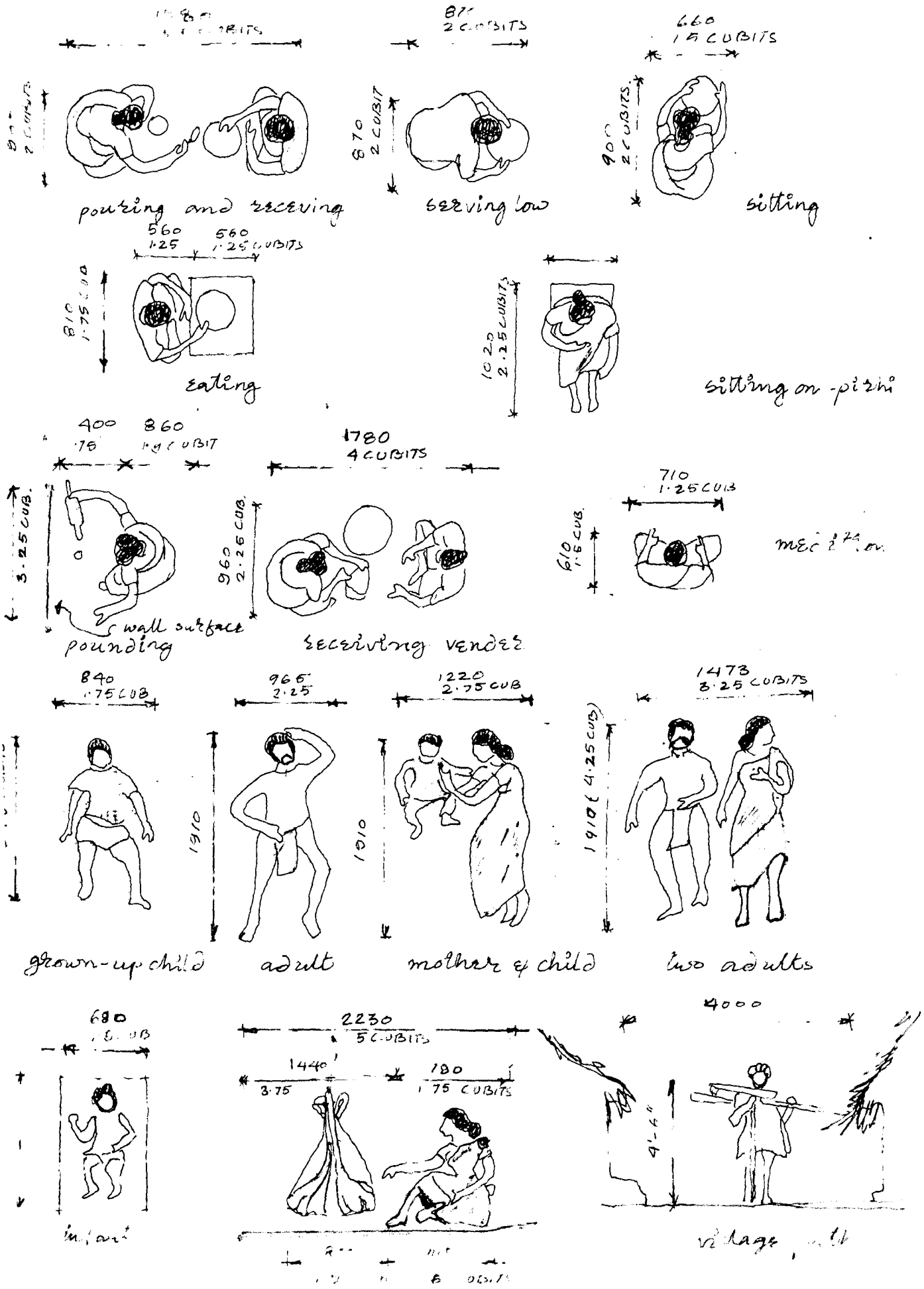


MUVVAS

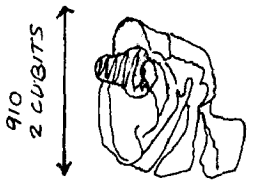
ANTHROPOMETERIC DIMENSIONS

PLATE NO: 8



ANTHROPOMETERIC DIMENSIONS

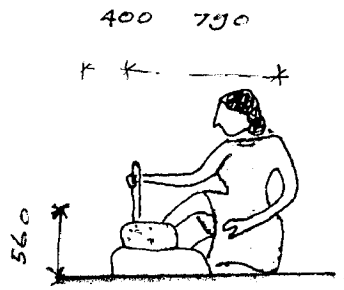
PLATE NO: 58



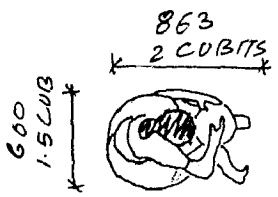
dressing

putting on shirt

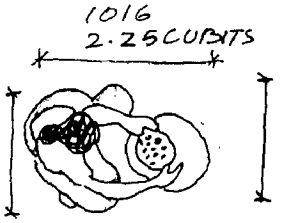
dressing - baby



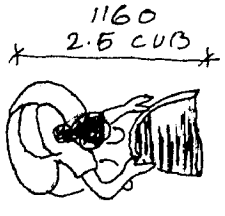
grinding



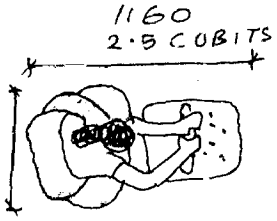
picking



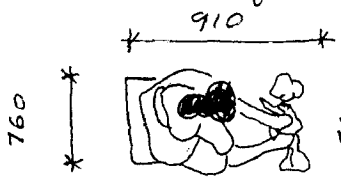
sieving



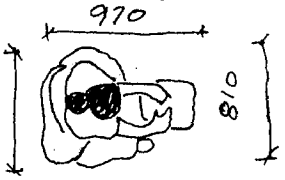
winnowing



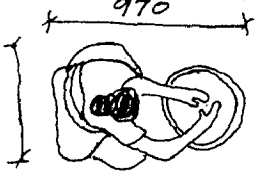
grinding



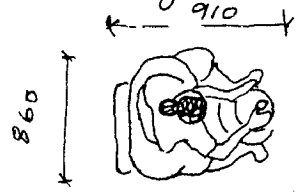
washing



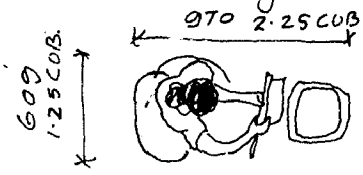
taking out



mixing

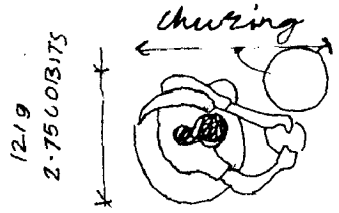


churning

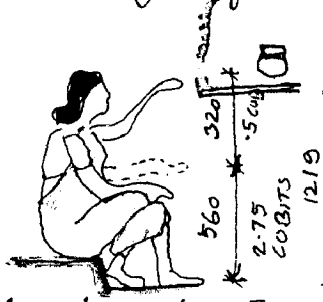


lighting chulla

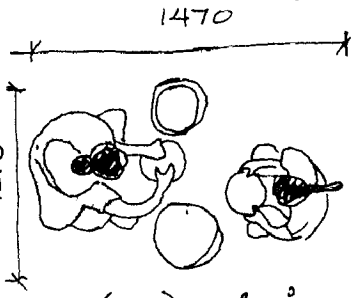
cooking



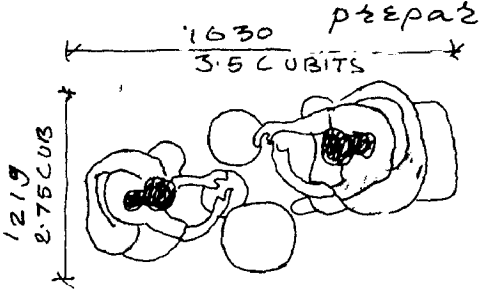
preparing



reach extents



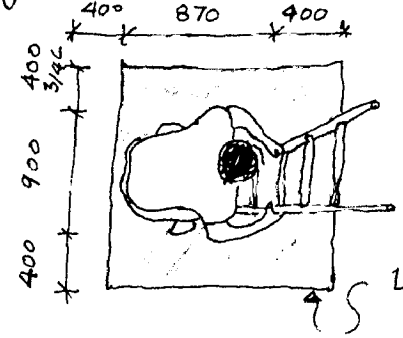
food serving (child)



assisted preparation

limiting dimensions

using the lower platform



loft opening

climbing a ladder

2.3.2 Comfort :

(a) Physical - Basically these shelters are so well designed so that house wife can very easily maintain her house. Every interior dimension is based on the anthropometric study, (See Plate No.). A house wife can control a house, even while cooking or preparing. Loft height is kept low so as to make it convenient for a woman to operate.

(b) Thermal - These tribes mostly use these shelters for relaxation during leisure time, as they prefer to sleep inside, either they go for a wall to wall loft slab or a double roof in the verandah, which helps to conserve the heat during winter and keeps it cool during summer. Even then in 'purillu' type of house they keep a clear space between the roof and the upper structure. for a movement of air, to keep the shelter cool.

The roof canopy is so projected that it projects the mud walls from direct radiation of the the Sun.

(c) Air Movement - The layout of the village is so well thought of that all these houses get direct fresh air. The only source of air entering the house is through the main door, which goes out through the loft opening. This creates a continuous fresh air movement inside the house. In certain cases a small 3" dia. vent is also provided for cross circulation.

(d) Protection from dust - Most of the shelters have a paved court yard in front or has a very rough undulating courtyard, which to a certain extent protect dust from entering into the house. Most of these houses have a high plinth and a door frame with threshhold. The interiors are daubed with a mixture of mud and cow dung every week.

2.3.3 Safety : (Unlawful entry)

These tribal villagers are not as afraid of wild animals as to theft, for this reason, all 'middillu' type houses have either a heavy wooden carved door bought from the shandy or an ordinary door. Some of them even have a double locking system. In other houses the tribals do not give much importance to this. Therefore, it depends upon the individual's fiancial capacity.

These shelters do not have any boundary wall of any sort, except around around their kitchen garden in some cases which is meant for protecting it from stray animals.

2.3.4 Protection from daily hazard :

(a) Climate : Tribals protect their super-structure and mud wall from collapse, by projecting the roof canopy by 2' - 3' all round the building so that

during the rainy season rain water drains out away from the wall surface. Normally they protect their plinth by storing logs abuting the plinth.

The external as well as internal walls are bedaubed once a week to prevent any cracks on the walls. On the rear side of the building they leave about 4' - 5' gap, constructing a retaining wall to avoid any landslide during rainy season.

The roof canopy in the front of the shelter is kept so low that it avoids direct solar radiation.

(b) Risk of Building Collapse - Every shelter has some kind of plinth and the heights vary according to the persons' financial capacity. A 6" thin bamboo reinforced mud plastered wattled wall (RIVVA), is normally constructed as a party wall or for their poultry pen.

The double roof also prevents dry grass from dropping into the living area from the roof.

(c) Insects - A shelter which has a constant menace from snakes is protected by an indigenous method, by putting asafoetida with water into small pits around the shelter. This has to be renewed on every month. In all other cases they plinth is so raised that it prevents small insects from creeping into the house. They even apply turmeric paste to their thresholds to serve the same purpose.

In most of the 'middilu' type of houses, they normally put a 6" layer of compact river sand in the foundation pit to prevent their structures from being infested by pests. All other members of the structures are given a thin coating of mud (collected from white ant hills) mixed with fir wood ash, These are then painted with earthen colours to prevent them against insect attack. Cooking smoke inside the living room also helps them in keeping out insects.

2.3.5 Protection from periodic hazards

(a) High speed wind - All these village settlements are located on the shadow region of the wind, which helps them to protect their roof envelope.

(b) Heavy rains - These villages have fully utilised the natural slopes of the hill by making it into terraces, so that in case of rain, the water does not disturb their shelters. Areas around the shelter, village path are so well paved with stone that it does not permit any rain water to stagnate.

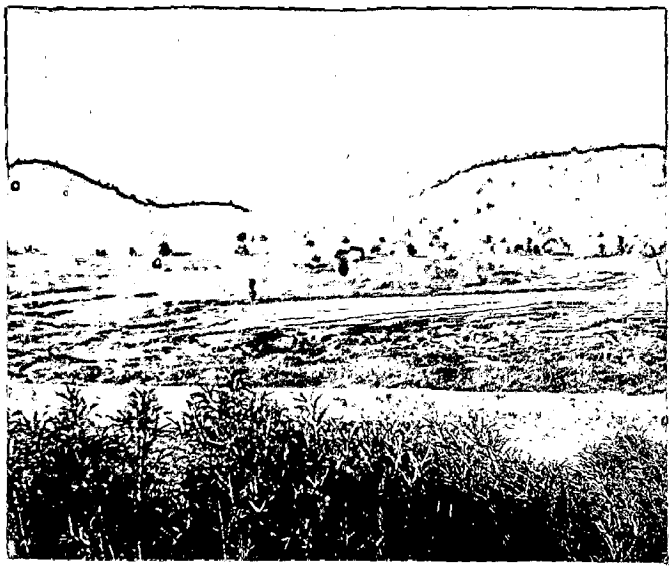
Most of their shelters have a double roof in one form or other. The main living area is always covered by the loft slab, and in case of the verandah a thick bamboo reinforced ceiling prevents any type of water leakage from the roof above to drop below.

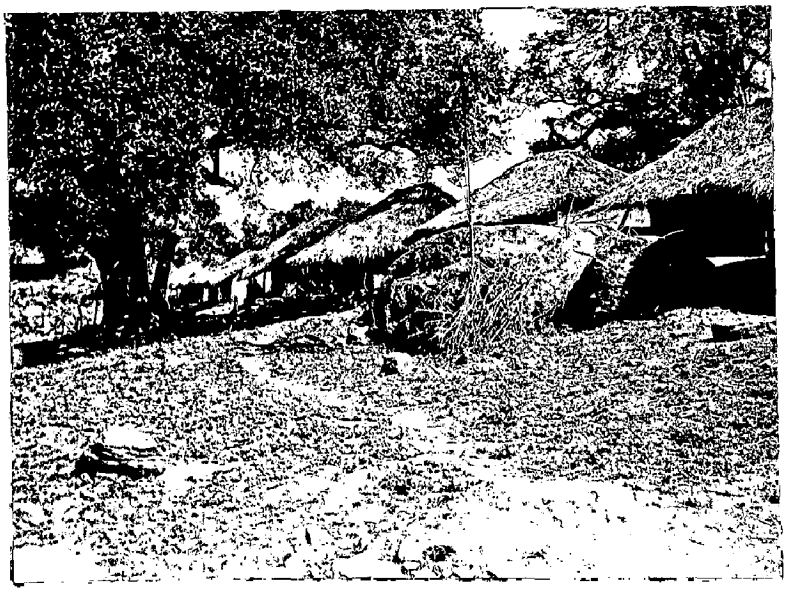
(c) Fire - The most fire-prone element of these tribal shelters is their thatch roof which is only seperated by the intermediate loft slab, which prevent the fire to spread into the living area. In addition to this, their wooden structural members are coated with smooth thin layer of mud plaster, mixed with fire wood ash, to discourage fire.

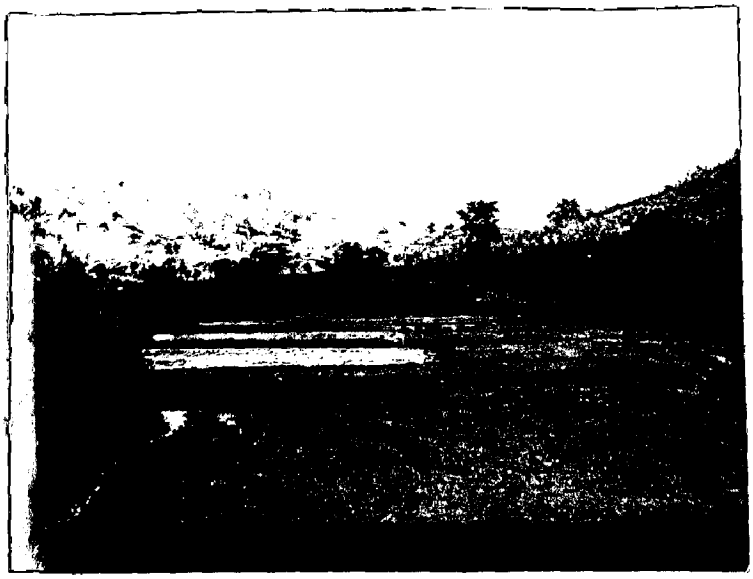
2.3.6 Ancillary Units :

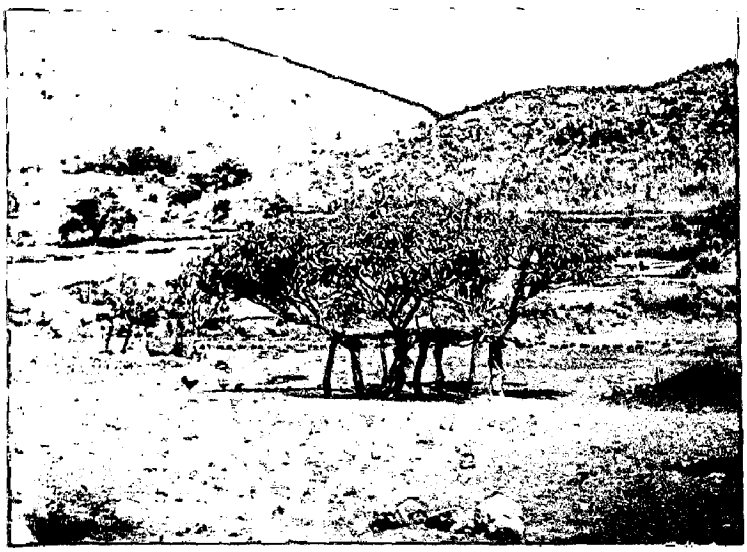
(a) Cattle Shed - These are owned by individuals of "middilu" Vāstuka in village (A) and (B) and are located in the front couryard, of the Vāstuka, it is so located that the owner has a direct watch over their live stock, whereas in the village (C) it is located just in front of the row housing; having a common elongated shed. In the later case the common family system necessitates this type of shelter housing live stock.

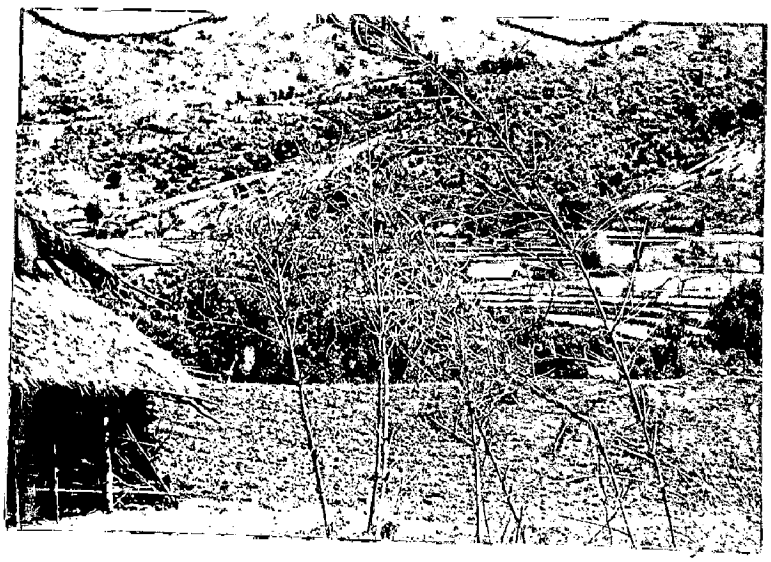
Most of these structures are skeletal in nature without a plinth, having interlaced flexible reeds walls or walls reinforced with bamboos. The roof of these shelters are also similar to that of the Vāstuka, having 'Gopuri' grass thatching. The entire structure is erected on eight forked uprights tying is done with 'adda nara'. Normally this shelter has also a small stack for

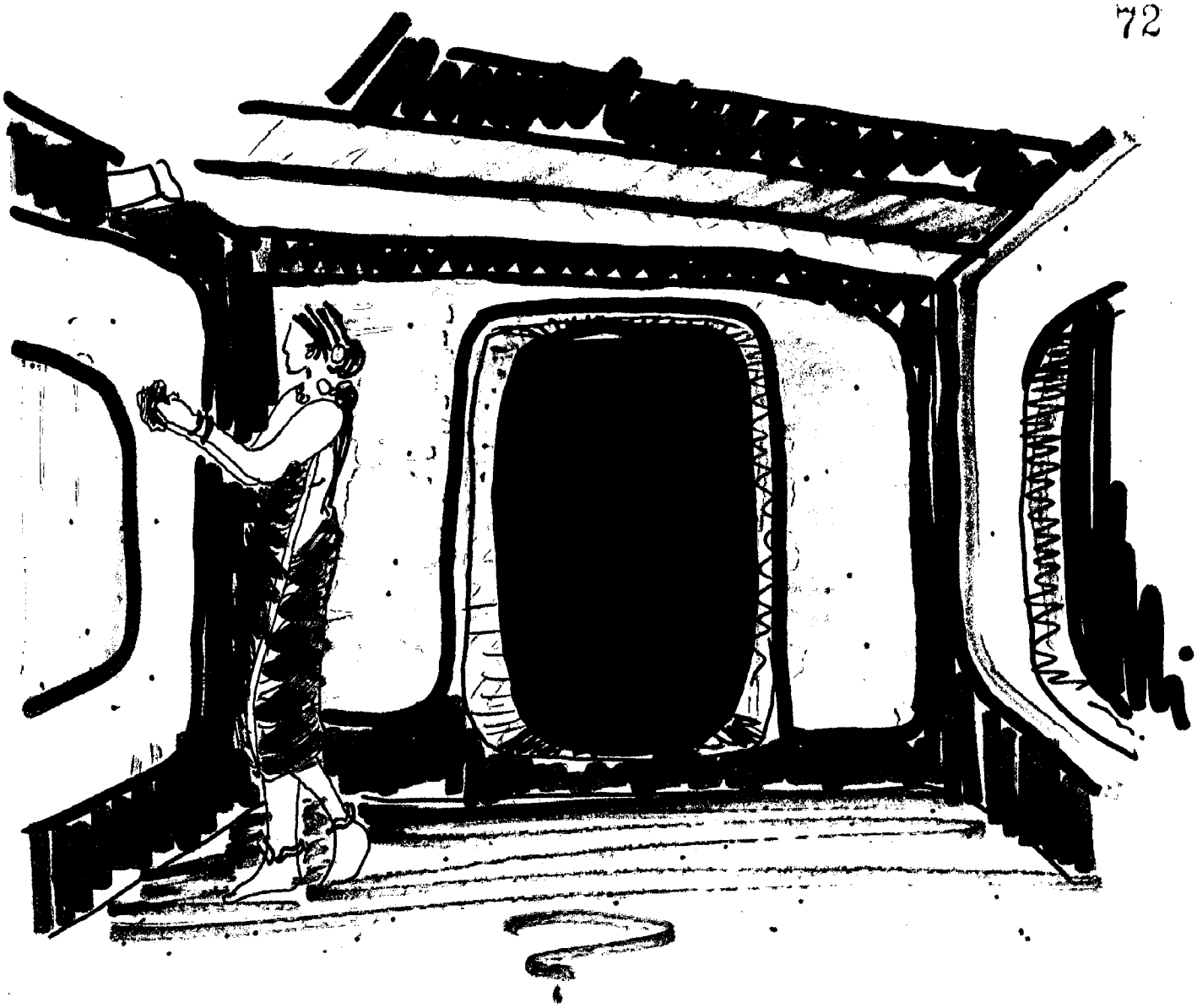


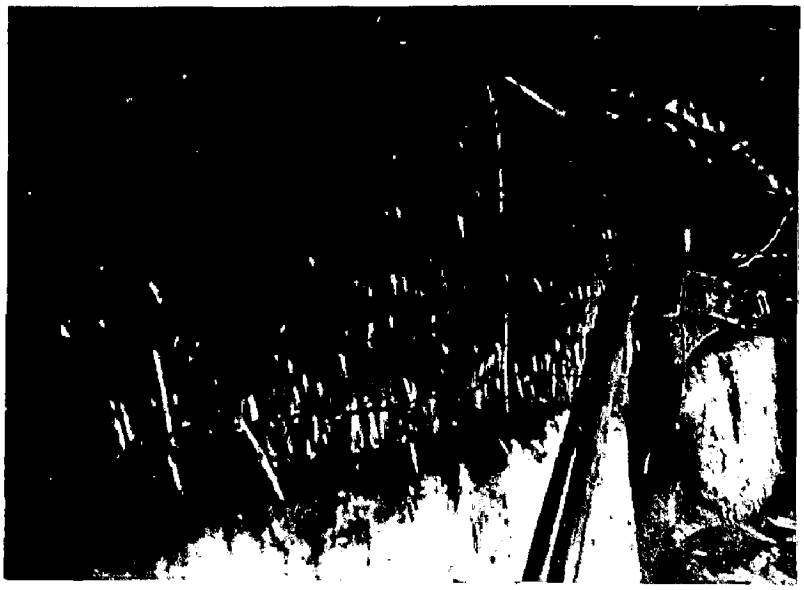


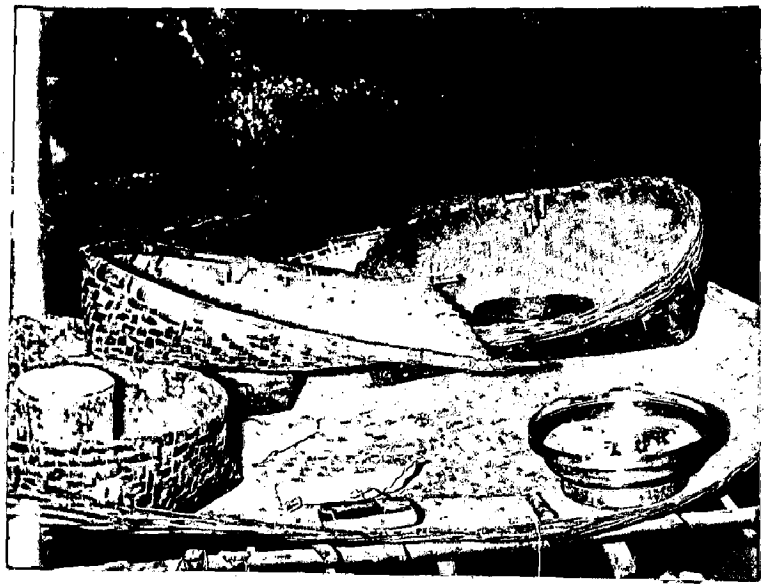


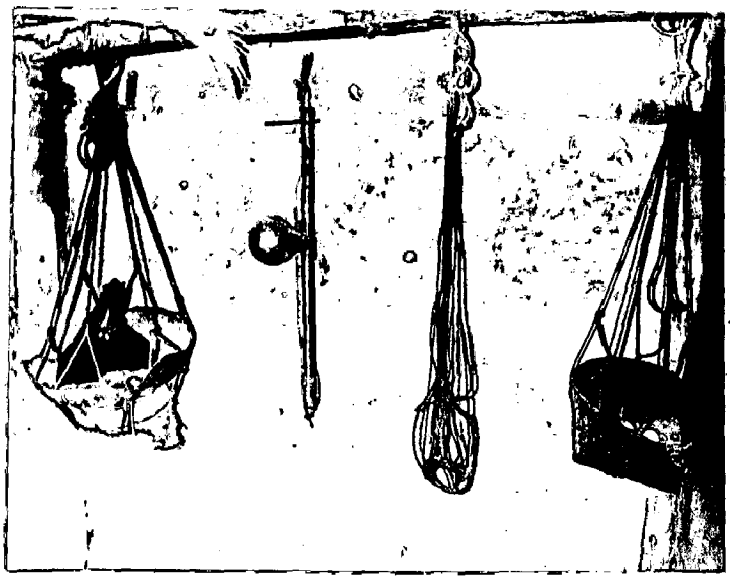


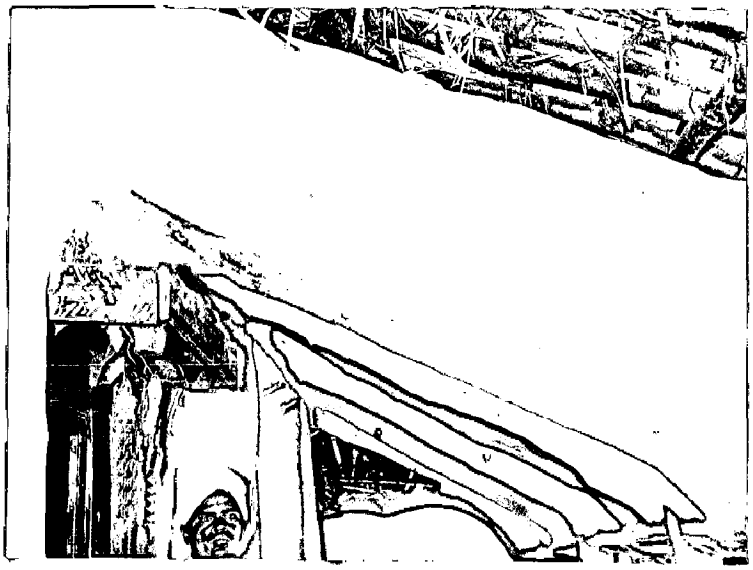


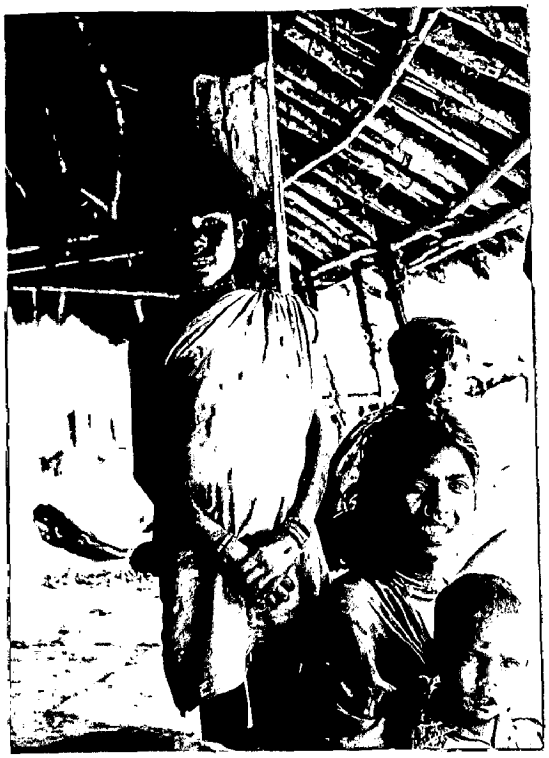


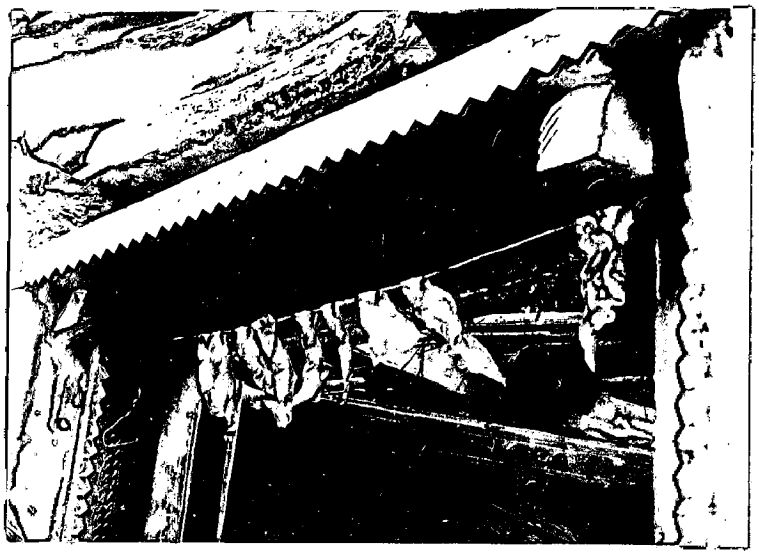


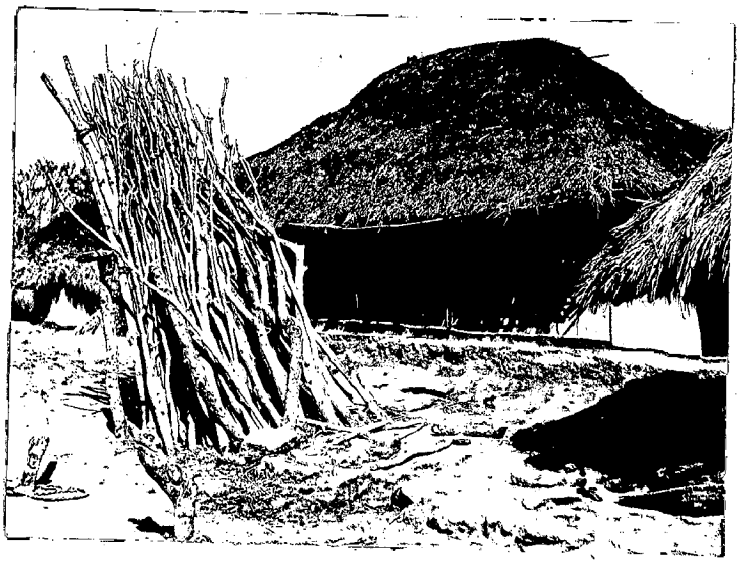












3.3.5 Findings and Infrances :

Tribal Art, is vast and very diverse and does not have any historical frame of reference. The tribal aesthetics repeats again and again only that version of reality accepted in their society, either they assist in ritual or they perform a hygenic role. Their symbols are perpetuated because they have the weight of the past behind them. Tribal art is an endless incantation given to visual form.

One can feel from tribal architectural dimension, the intensely human thought and the whole creation throbs with life and vitality. Each and every form having same human scale, proportion, colour, and texture which harmonized with their surroundings, is a perfect example of organic tribal architecture. Within the village structure there are always smooth and easy associations of forms and plastic continuity.

A tribe does not isolate colour from its source of perceptions (he himself). Tribal architecture appreciation of work concerns the chemistry between a built environment and the tribe.

THe tone and texture of the village is the same as its earth base, its scale and configuration creates a

dynamic massing that tends to blend with natural topography of Araku. Secondly the painted surfaces clearly distinguish the community from other. Roof forms and texture are quite pronounced and are an important exterior physical expression. The use of thatch makes the roof an important natural decorative element in the shelter design.

These villages have its own human proportion and developed on modular dimension. The use of dimensions of hand, foot, palm, etc. by local builders have created not only harmony but has given these villages a tribal dimensions.

CHAPTER - IV
SUMMARIES OF FINDINGS

4.1 Village Form :

In the past, the setting of these tribal villages used to shift with their shifting mode of cultivation. After the infusion of stable agricultural methods the choice of a village setting become more specific; depending upon certain natural factors like availability of natural materials for construction, proximity to a water source, easy accessibility to and from other inhabited areas etc. The role of climate and fortification, have played and still continue to play a minor role in this aspect.

The stabilisation of village setting has facilitated the growth and grouping of ancillary units along with the living units giving each village a cogent form.

4.1.1 Cluster & Grouping :

Cluster of dwelling spaces or grouping of the different units depend primarily on the social structures of the tribe in question.

In all cases, the positioning of the tribal chief's house is of great significance. The houses of other families or members are grouped around this.

Ancillary units like cattle sheds, for example, are positioned adjacent to or in front of the dwelling units in cases where they are individually owned, otherwise they are combined into one large corral, positioned in front of the mainunit.

Open spaces, either in the form of access ways or communal spaces segregate the different social groups thereby maintaining the delicate social structure. In all of these tribal villages, however, a large communal space acts as the pivot around which the a shelter units are constructed.

4.1.2 Shelter Design :

(a) The Vāstuka or Central dwelling space forms the nucleus of livable spaces wherein all activities like sleeping, cooking, eating etc., take place. This room is approached through a verandah. A store abuts the central living space.

Basically there are two types of structures, depending upon the economic standing of the family. One has a full double roof; the space in between is used as a store apart from helping to insulate the habitable area. The second type of structure has side walls upto a certain height, above which a grill of reeds reaches upto the roof, aiding cross ventilation. This type of structure has a small loft for storage.

In the former type of structure a space, housing livestock and poultry, is planned adjacent to the 'family sanctuary', as these are valuable assets to the tribals. In case of disasters when certain other dwellings are destroyed this space is converted into a living area where the affected family is housed temporarily. This shows that their shelters are flexible enough to meet diverse needs as dictated by their life style.

(b) The process of daily living of the tribals extend beyond the Vāstuka, to certain other shelter forms which are covered under the head of ancillary units. They are :

(1) Cattle shed (combined and individual)

(2) Field shelter

(3) Fire wood stand

(4) Place of worship

(5) Oil Extracting Unit

Cattle sheds, as mentioned earlier, are either individual; attached to the dwelling of the family who owns the livestock, or they are combined to form one unit where the cattle is owned by members of the particular family set up. In the latter case this unit is located in front of the dwelling units. Either way the main reason remains that cattle and poultry are housed close to the nucleus dwelling units.

Fire wood, which forms the main source of energy for the Girijans is stored in their backyards. Timber is stored vertically to a height o f 3½ cubits along the direction of wind which helps in seasoning the weed.

Field shelters which are of a skeletal form, serve many needs. During the day catfle are tethered to the skeletal uprights with fodder and agricultural implements being stored on top. At night, mainly during the harvest season, these shelters are used by the persons who guard the standing crop against damage by animals or pilferage by others.

The main place of worship, for the entire tribe is situated at a strategic point in the village common, always under a tree which forms the shelter for the deity. Apart from being a place of worship this area is also used as the community meeting place.

The oil extracting unit is not housed in an enclosure. A tree and wooden pole form the machinery of extraction. The process consists of crushing seeds in the hollow of a tree with the help of the pole. This is normally a family affair with all members of the family participating, each family takes a whole day to finish their work. The tree and the surrounds are common to the community and the poles and containers are, however, individually owned.

a simple one dimensional 'A' frame is supported in the centres by forked uprights in cases where the spans become large.

4.1.5 Construction Techniques :

The methods of construction adopted in all these tribal villages are similar. The skilful handling of indigenous materials reveal an honest expression in their structures.

Building a shelter, is a community affair for the Girijans, with many families assisting in the construction process. The normal period of construction is about two months. In the first month the skeleton structure, consisting o f foundation and superstructure, is erected. After a gap of a fortnight the roofing is placed and final finishing is done.

The tribal conceives his structure in his mind and proceeds to execute it with the help of his all purpose tool - his mind. His only accessories are a crowbar and a spade used for digging cut the clay.

The jointing of wooden members are of an open type, with grass rope being used judiciously where ties are necessary.

4.1.4 Physical Performance of Materials and Structure

Tribal structures reveal an ingenuity in the use of local materials. The basic material used in all constructions is mud - the combination of argillaceous clay, straw and cowdung has been arrived at after years of experimentation.

The sturdy structures of clay stand on masonry foundations, topped with thatched roof over a bamboo framework. The exterior walls are covered with stucco and finished with whitewash.

The performance of these materials are exceptional under the prevailing climatic conditions and other external agencies. The thick mud walls help to conserve heat during winter and keep out the cold during the summer months. The 'Gopuri grass' used for thatching, show excellent resistance to moisture, while still retaining its 'breathing' qualities.

These indigenous materials are easily replaced after their effective time span is over.

The lightweight of the materials chosen and the simple structural form adopted make their assembly and erection comparatively easy. Strong walls enclose spaces with relatively large spans. The roof form, consisting of

Some interesting techniques are revealed in the protection of structural elements from daily hazards. A coating of thin mud plaster on wooden members help to protect them against termites. The coating of turmeric paste to thresholds serve a similar purpose. Pits are dug around the dwellings where Asafoetida or 'Hing' buried, this helps in keeping away snakes and other reptiles.

The degree of detailing and finishing depends upon the economic standing o f the family in the tribe. These take the form of crnately desigaed doors and smooth finished walls etc.

4.1.6 Tribal Aesthetics :

The tribal aesthetic comprises of only that which is accepted in their society, inspired by their spiritual beliefs and experienced in their day to day life.

Every element is related to a human scale, proportion colour and texture harmonize perfectly with the surroundings, forming a smooth transition from the inside to the outside. The tribals have developed their aesthetic sense from nature, hence there is an order in every form. Individual personality is tempered by traditional values curbing the tendency to dominate, resulting in visual harmony.

4.2 INTEGRATED EFFECT ON ARCHITECTURAL FORM

The architectural form of these tribal villages are not determined by any single, predominant force, rather it is an intricate web of many factors, which join together to create a cohesive whole.

The communal life style and traditions of the Girijans are responsible for the continuity in the pattern and layout of villages.

Since the Girijans spend a considerable part of their life outdoors, as evident from their activities, the basic dwelling is compact, housing only those areas which need to have an enclosure. Hence their dwelling spaces are cozy and intimate, offering privacy and solace after dark, in marked contrast to their hectic life they lead during the day.

Economics plays an important role in the design of individual structures. Within the tribal hierarchy a person having a higher financial standing goes in for a more elaborate structure, complete with a loft, higher plinth and a decorative carved wooden door. Ancillary units too are determined by the number of cattle or poultry he owns. It should be noted, however, that though it is

within the capacity of certain individuals to use "modern materials and artifacts" they do not express any desire to do so. This view is instrumental in the maintaining a harmony of building form.

Climatic considerations are dealt with by the dwelling form and materials - thick mud walls, and double roof of "Gopuri" thatch on timber frames help to insulate the structure depending on the varying climatic conditions.

The natural materials available, alongwith the indegenous construction techniques and detailing adopted by the Girijans make for an unique architectural character, typical of the region.

These tribes take great pains in their preparation for building; materials which need seasoning, like logs, bamboo and 'Gopuri grass', are collected well in advance, prepared and stored, when they can afford to pay for labour in cash, or arrange for community feast, the building execution starts. Hence they do not face any scarcity or shortage once the construction activity is begun. This reflects on important character - foresight.

Cosmological influence, normally associated with primitive architecture is conspicous by its absence. In other words their architectural forms are not affected by

symbolism arising out of superstitious beliefs. On the contrary it could be said that the architectural forms of the Girijans have evolved out of their practical knowledge and collective approach to life, which directly exposes their feeling and emotions.

The scale of their shelters, open spaces and settlements is totally related to their life style so that each individual is able to identify himself as a part of his community, and the community itself as a part of nature.

In conclusion it could be said that these tribals have created an environment, which not only caters to their human needs but one which also blends completely with the nature, without upsetting the delicate ecological balance. around him - He is still able to associate himself with the whisper of leaves, the song of birds, trickling of streams, the soft earth under his feet and the vast expanse of the sky above him from horizon to horizon - This is where - we as urban builders have failed miserably.

4.3 CONCLUSIONS AND RECOMMENDATIONS

After studying and analysing these tribal villages in total, I have come to the conclusion that their architectural characteristics and their immediate environment are expression of tribal community and need preservation. A rationalised and scientific approach towards the problem would permit continuance of such tribal spirit. It is possible that in our enthusiasm for doing good we may overshoot the mark and do evil instead, to the primitive people and gradually the culture of these people and its physical manifestation may wither out.

RECOMMENDATIONS

Specific recommendations emerging from this study of the three villages are given here.

1. While planning for tribal welfare programmes, we should not ovdr-administer these areas or overwhelm th em with multiplicity of schemes.

2. Tribal welfare programmes should be oriented towards retaining and enhancing their art, architecture and culture taking into consideration their attitudes and atrributes.

3. Approach roads connecting these villages with one another should be maintained so that the basic amenities could be made available to them and encourage mobility of the people.

4. Modern methods of coating roofing material and other structural members with preservative, which do not affect their original characteristics should be encouraged.

5. Similar investigations of different tribal regions should be made all over the country, in order to get a clear picture of the respective tribal/ vernacular architectural characteristics, before any proposals are suggested under the guise of tribal development.

6. Certain materials like the Gopuri grass, which is replaced frequently is becoming scarce. Areas could be alloted where such materials can be grown so that they provide a continuous supply without depleting the natural forest resources.

7. Studies connected with vernacular architecture can be introduced into the curriculum of architectural schools. If possible, so as to give a better insight into the problems and prospects of these areas.

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