

TREES OF THE SIKKIM HIMALAYA



TOPDHAN RAI & LALITKUMAR RAI

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Topdhan Rai
Lalitikumar Rai



INDUS PUBLISHING COMPANY
NEW DELHI

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Foreword

Sikkim is a picturesque state of India which covers an area of 7,096 square kilometres. The vegetation ranges from the subtropical in the foothills to the alpine in the snowclad great Himalayan ranges. Between these two extremes, there are many intergrading habitats and vegetational types, where trees are a dominant component.

Trees are interwoven with the history, culture, religion and philosophy and in fact all facets of the life of the hill people. Therefore, an account of trees of Sikkim is most welcome. In all, there are about 400 species of trees in the Darjeeling-Sikkim Hills, but only 80 species have been described here. This book contains some of the best as also the least known tree species. The descriptions are written in an easy style; and each species carries a botanical and a family name together with the common Lepcha, Bhutia and Nepali names.

Sikkim attracts tourists and this book will help to familiarize with the trees of the region not only the lay public, but also students and tourists. The book is, therefore, a step forward in ushering an era of eco-tourism i.e. tourism which is ecologically friendly and enhances the knowledge about trees. Furthermore, there is a deep-seated veneration for trees in the Indian ethos. In fact Indian philosophy has emerged and got concretized in the sylvan surroundings of forests where human race has lived in harmony with nature. History has taught us that the civilizations that did not have respect for trees have fallen. Furthermore, agriculture in the hills lasts as long as trees in the forests last, because trees ensure health of watersheds. Trees are now recognized not only as carbon sink but also as "lungs" of a country on which depends the oxygen-based life on the earth. Thus trees ensure long-range ecological security to all life.

I have no doubt that the present book will not only invoke respect for trees but also make people knowledgeable about them. The authors of this book deserve hearty congratulations.

T. N. Khoshoo

T.N. Khoshoo
(Formerly Secretary to the
Government of India)

New Delhi

The Sikkim Himalaya



The external boundaries are approximate

Introduction

The hills of Sikkim and Darjeeling constitute the Sikkim Himalaya. It is a landlocked upland country open only towards the "Dooars" (traditionally known as the "Bhabar") at the southern part of the Tista basin. In fact, geographically, Sikkim Himalaya is the drainage basin of river Tista, where numerous watersheds of the region operate to feed this mighty river.

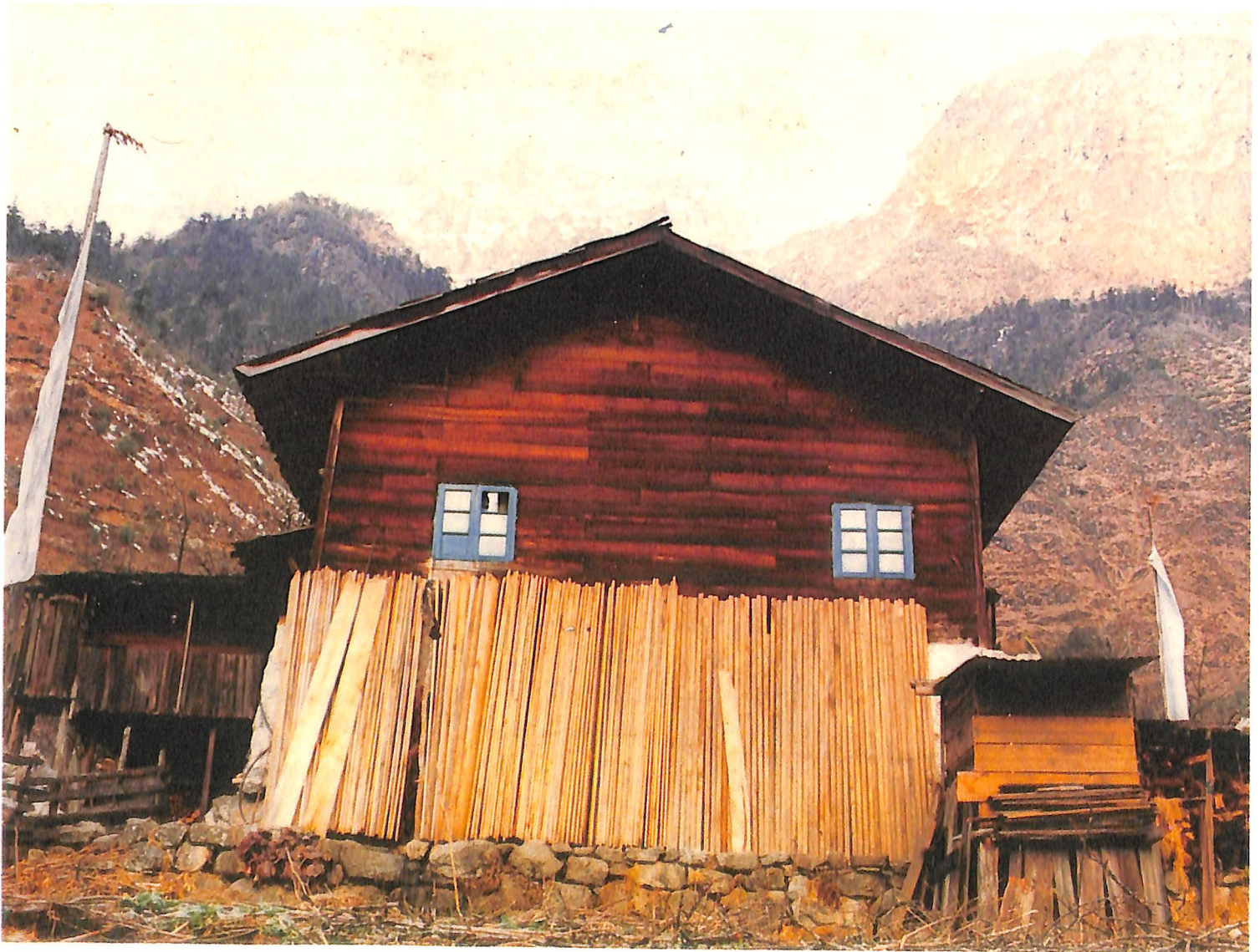
The tribal aborigines of the region, the *Lepchas*, used to call it "Mayel-Lee" or the Paradise and with the arrival of settlers the enchanting landform was hailed as "Be-Yul Demadzung" (*Bhutia*, hidden valley of rice) and "Sukhim" (*Nepali*, the new land). The poetic epithets, though sounding somewhat high-strung, were under any circumstances the real picture that was there to see for the people, their lives and times. Only in the recent years the Sikkim and Darjeeling Hills have witnessed the imbroglio as well as the progress brought over in the Indian sub-continent, otherwise it was a land unseen and untouched for many centuries.

Situated at the eastern wing of the Himalayan sway the landscape is covered by snow at the higher heights and a lush greenery of tropical rainforest envelope the lower hills. These forests which account for more than 33% of Sikkim Himalayan landscape are considered an asset strewn in the wilderness. The forests are full of trees going by every shape, size, colour and descriptions, and these support a teeming plant population falling under myriad forms and figures. The people and the quality of life they experience are heavily dependent on, and often dictated by, the forests that grow on these hills.

The two parts which go together to make up the Sikkim Himalaya are the Sikkim Hills and the Darjeeling Hills (Map 1). Geography, geology, botany, the human factor and many other things indicate that these two sets of hills are considered as the chips of the same old block and efforts to present a composite picture of Sikkim Himalaya is almost impossible when one of the two is dropped off. Among the two groups of hills the Sikkim Hills represent the greater half and Darjeeling Hills constitute the lesser half. These landforms are thought to be of a very recent origin and much younger than the Western Himalayan ensemble. The

Darjeeling and Sikkim Hills together cover an area of about 10,245 sq. kms and harbour over 5,000 different species of plants. Outstanding among the floral wealth are the orchids, rhododendrons, trees and a host of plants which are of medicinal and other utilities.

Over a much greater stretch within the Sikkim Himalayan flora the stand of trees are most noticeable by way of its sheer bulk, size, distribution and utility. The considerable impact of the trees over the different type of life styles and at its every level may be evident through a random examination at any of the household. Almost all the household items necessary inside the home, outside it and the house itself, including the roof, often comes out from

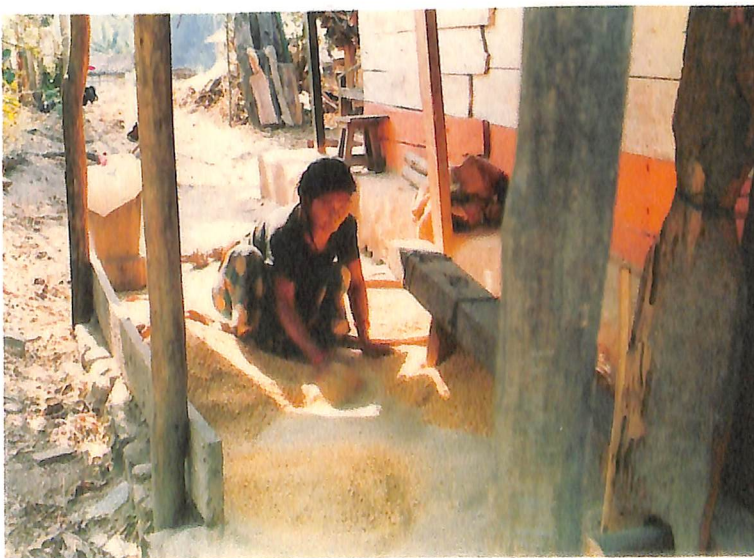


Apart from the plateglass on window panes this house in Lachung is almost exclusively made up of the silver fir (*Abies webbiana*). Even the roof, and accompanying pig-sty, hen-coop and the flag-staves come from the same tree. *Abies webbiana* is the most dominant tree species above 8,000 ft amsl.

The special Bhutia tea *solja* or 'butter-tea' is prepared in the vessel made up of *toonee* wood. These tea-churners are part and parcel of Sikkimese culture and lifestyle.



The *dhekee* is the universal rice-pounder among the hills. It is generally made from heavy wood such as *Schima wallichii*, *Shorea robusta* etc.



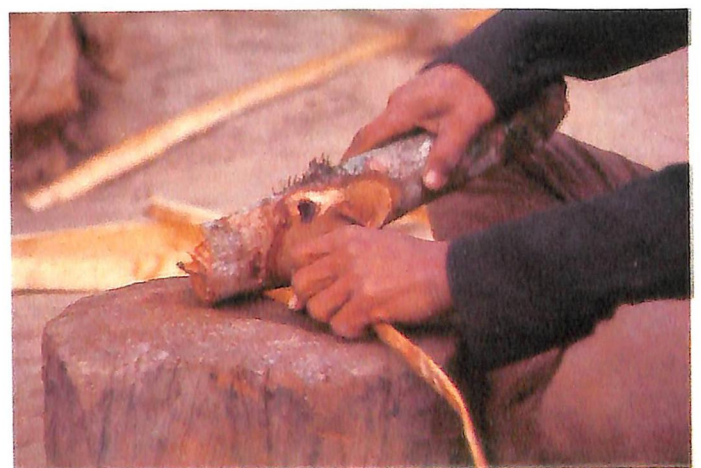
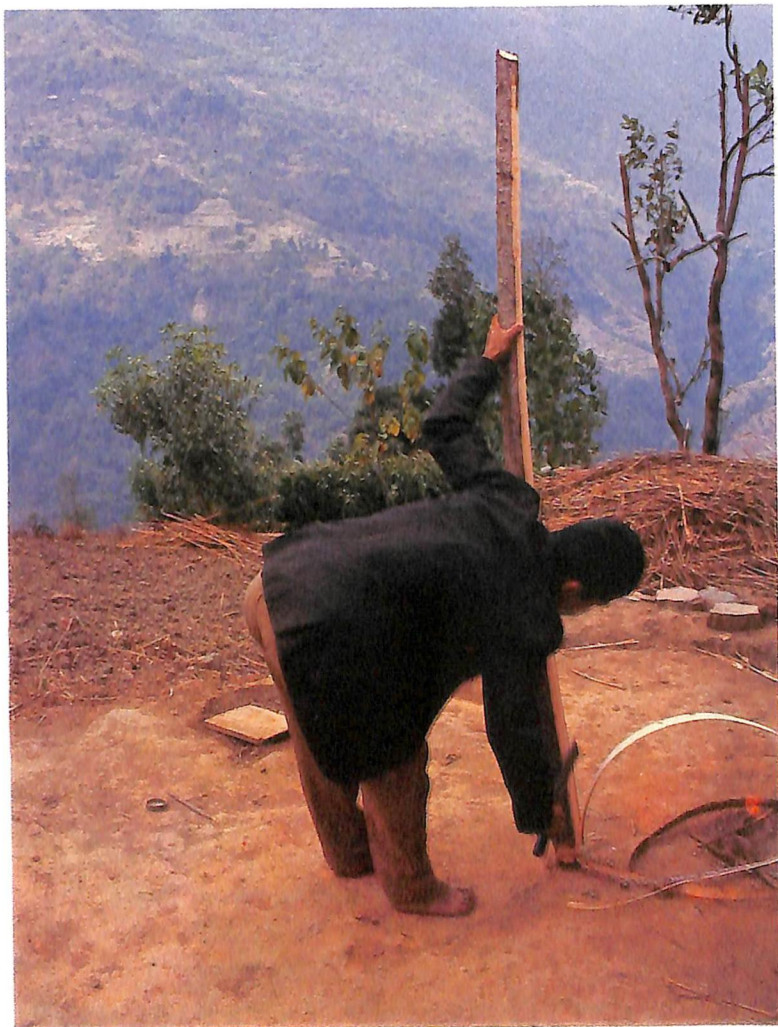
the jungle in the form of different kinds of wood and tree-products. The forests itself, their type and composition, are strongly influenced by the monsoon and topography. The three seasons identified for this region are summer (from April to June), the rains (July to October) and winter (from November till March). The course of monsoonal winds strike the outer hills of SingaleLa ridge and the high-riding clouds enter the inner Sikkim Hills reaching ultimately the Great Himalayan barrier in the north for the final flush. Rains and the high humidity which follow it are the major climatic realms found at these regions.

Some 60 families containing more than 400 species of trees are found in this small region but there are more still which are yet to be accounted for. Everyone of it provides single or multiple use to the people living in these hills. The use of trees as a source of construction material and implements of daily use is fairly low in comparison to the fuelwood and charcoal demand for which large number of trees are cut every year. The technology for alternative source of energy being at a very tender age of development at these areas the bludgeoning pressure of fuelwood requirement has to be met by the trees alone. Like elsewhere on this planet, the Sikkim Himalayan forests, with their valuable trees and associated forest assets, may be considered as one fast-vanishing natural resource. The Darjeeling Hills suffered the worst ever felling disaster when slopes between 3,000 and 6,000 ft elevations were cleared for tea

plantation programme some hundred years back. At present the threat to trees come from various quarters but the major one is invariably the population factor. Many trees are also encountered in husbanded form in the hills and people keep those for fodder, fuelwood (as energy plantation), as a nurse-tree (in cardamom fields), and other purposes. Almost half of the tree species in the Sikkim Himalaya may be classified under fodder material and many are of therapeutic utility and miscellaneous uses such as dyes, resin and other minor forest products (MFPs).

For the people who live here a large part of the economy and social way of life is dependent on the trees that grow around them. Even the folk songs and dances feature a couple of tree names, their uses or some interesting characters suggesting that these trees exercise a considerable influence and have become an extension of the people's life who have criss-crossed their lives among the woods.

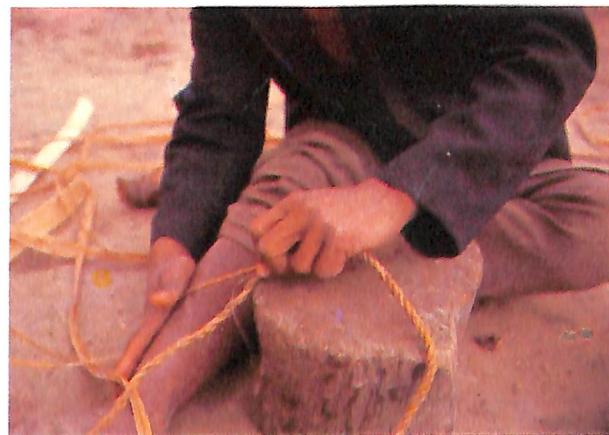
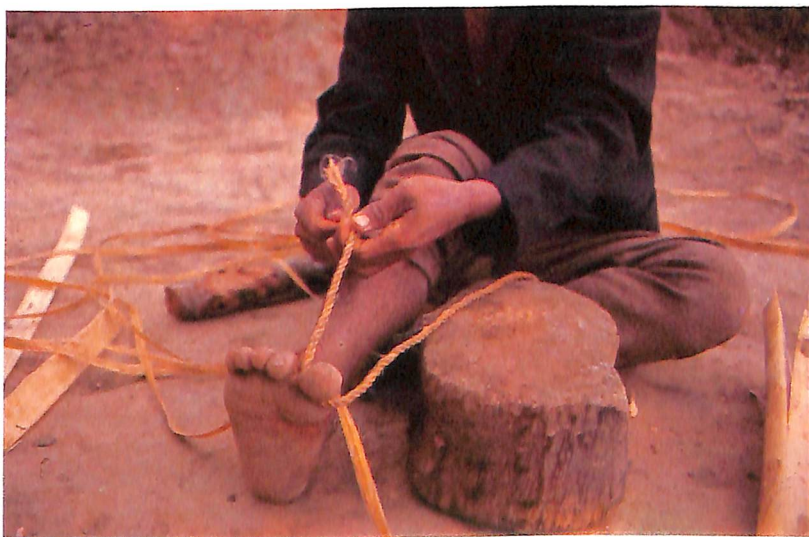
As for the tree itself, it would hardly do justice to consider it only as a useful object. Apart from what it "gives", the trees are also responsible for checking soil erosion and



maintaining the stability of any landscape, as well as laundering the air we breath everyday. It appears that every living tree is also a beautiful creation of nature, each having its individual and distinct persona, character and aesthetic bearings. "I think I shall never see / A poem as lovely as a tree," the well-known lines of Joyce Kilmore do certainly place the tree in its proper perspective. Still, trees are better than poetry, in that, one is able to read it even from a mile!

The trees are for us and we to them. A considerably large block in man's history can be identified with the trees and also spun around the story we can find the various deeds of man when the nature was man-handled, exploited and humiliated. Even so, the bonds between man and his trees have overcome countless hurdles and it is only the time which can tell who will be the first to sever this bond of friendship. It seems, and with good reasons too, that we are the likely ones to do so. Nature has so far never deceived mankind. And it is also learnt that *we* are the ones who deceive ourselves. Keeping in view the many battles fought and won, we may become hopeful and strive to win this crucial war between nature and anti-nature. Saving our natural resources means saving this planet.

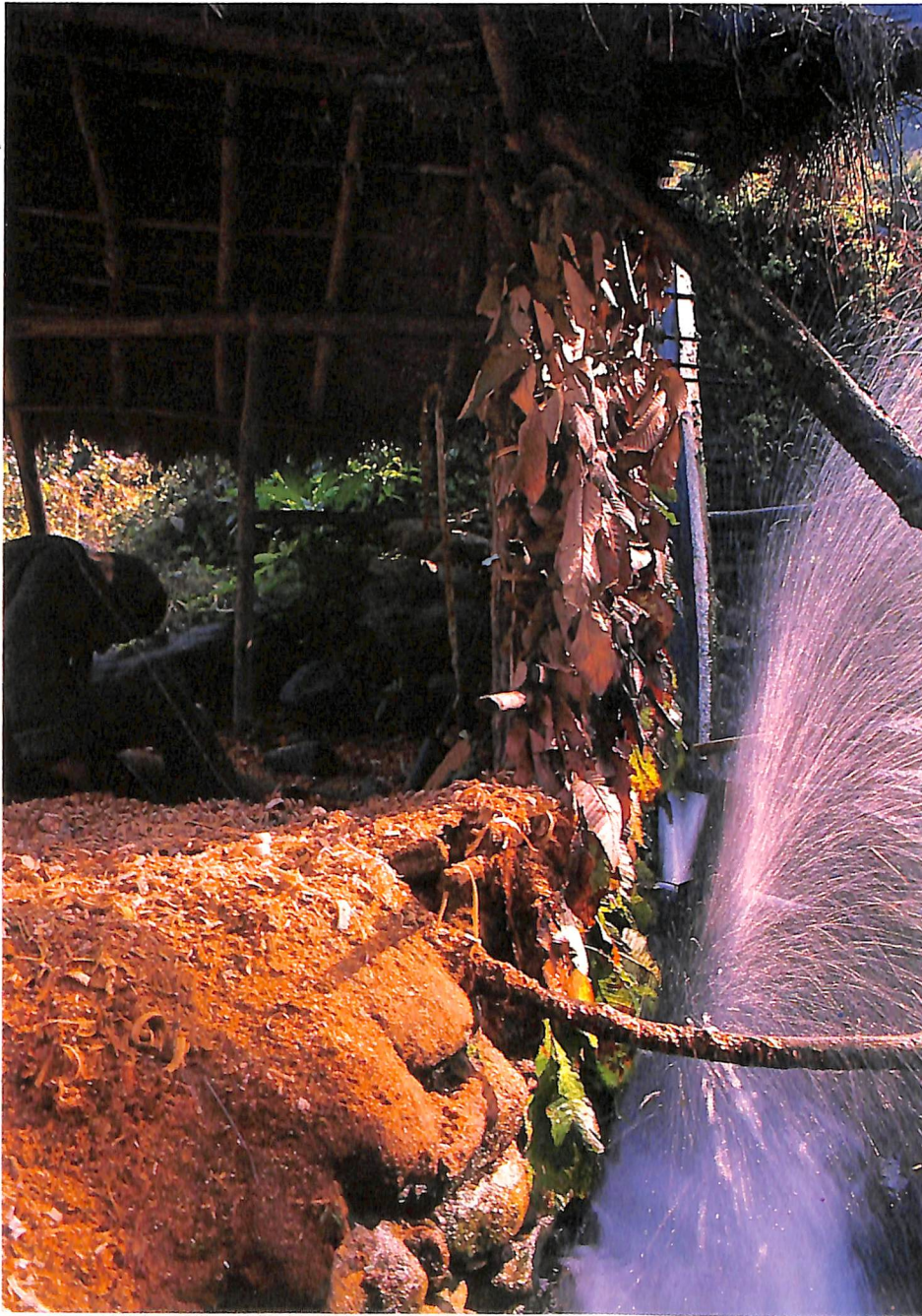
This over-exploited planet is also known as our 'home'.



Rope-making from the *odal* (*Sterculia villosa*)

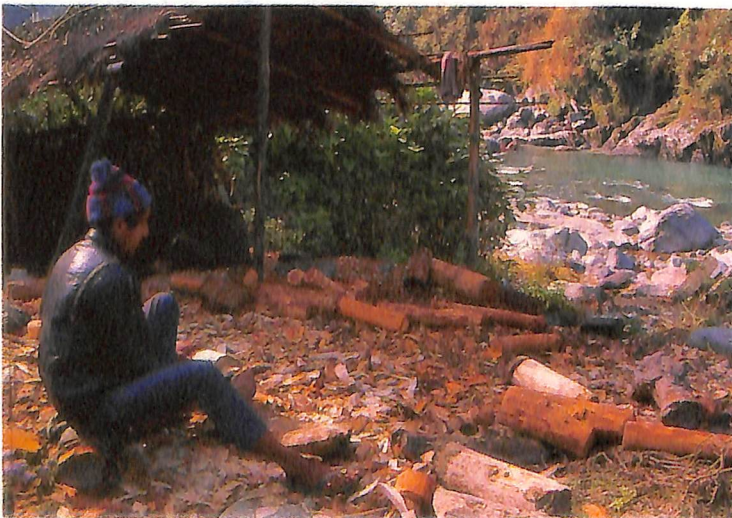
After the outer bark is chiseled out, the blaze or inner fibrous bark is peeled off. It is then beaten to a more pliant form. Thereafter the strands are twisted, twirled and connected. The ropes made from *odal* are quite strong and dependable. It is mainly used for securing cattle and goats.





A turnery plant in Sikkim

First, the logs are cut into stumps of required size. Then it is clamped on to the rotating shaft and different forms are carved out of it. The waterwheel which drives the shaft is usually made up of *panisaj* (*Terminalia myriocarpa*).





An improvised 'saw-mill'

This manual outfit, known as *dharun*, is here from a perceptibly long time and though looking quite dilapidated it has a menacing output under skilled hands. Two persons operate a *dharun* at tandem and the configuration is also quite simple. There is virtually no problem involved with time, design or material in making a *dharun* and the whole concept is a moving affair. Many *dharuns* sometimes work in packs, roaming the forests from one corner to another, damaging the forests immeasurably in more than one way. The invasion of *dharun* has rendered the power saw-mills practically obsolete and a rarity in the Sikkim Himalaya.

This problem, the '*dharun* cult', is more rampant in the Darjeeling Hills.

Try this one for size!
Hardly thirteen and
in the timber brigade.



Trees and land degradation in the Sikkim Himalaya

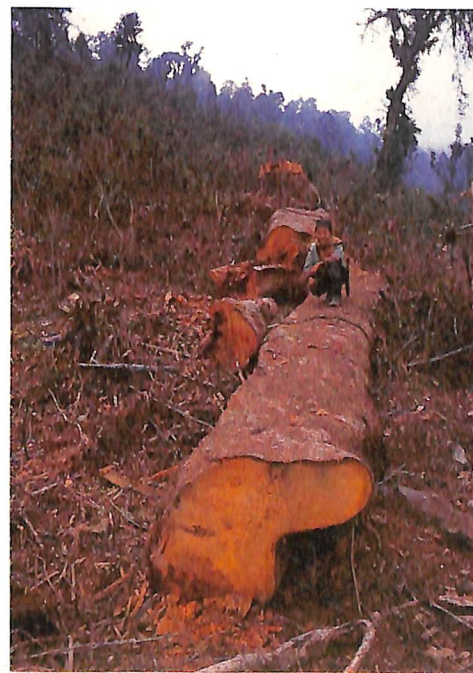
The forests, which is a collective name of many different trees, have a considerable bearing on human life, be it over the plains or hills. But usually in a hilly region the forests are directly linked with water table and landslides. Both of these 'gravity areas' (disturbed water table and origin of landslides) have enough scope to be turned into veritable catastrophes, bringing with it a load of misery and countless death. The immediate next line-up under fire would be—soil environment, hill farming and biodiversity.

The first sign of human intervention in the hill forests is shown by these fallen logs. Heavy dependence for fuel and constructional timber over the forest has contributed much in changing the face of these hills. After the trees are cut off, normally agriculture follows. With bad terracing and faulty agricultural systems the land degrades more. The clearings become more prone to landslides and once a slide is initiated it is quite difficult to check it. In the coming years still more trees are pulled down and swept away by the slides, eventually making the landscape a blistering eye-sore.

An instance of land degradation primarily due to landslides. At some tricky locations the landslip is hard to control even if the adjacent land is well wooded.

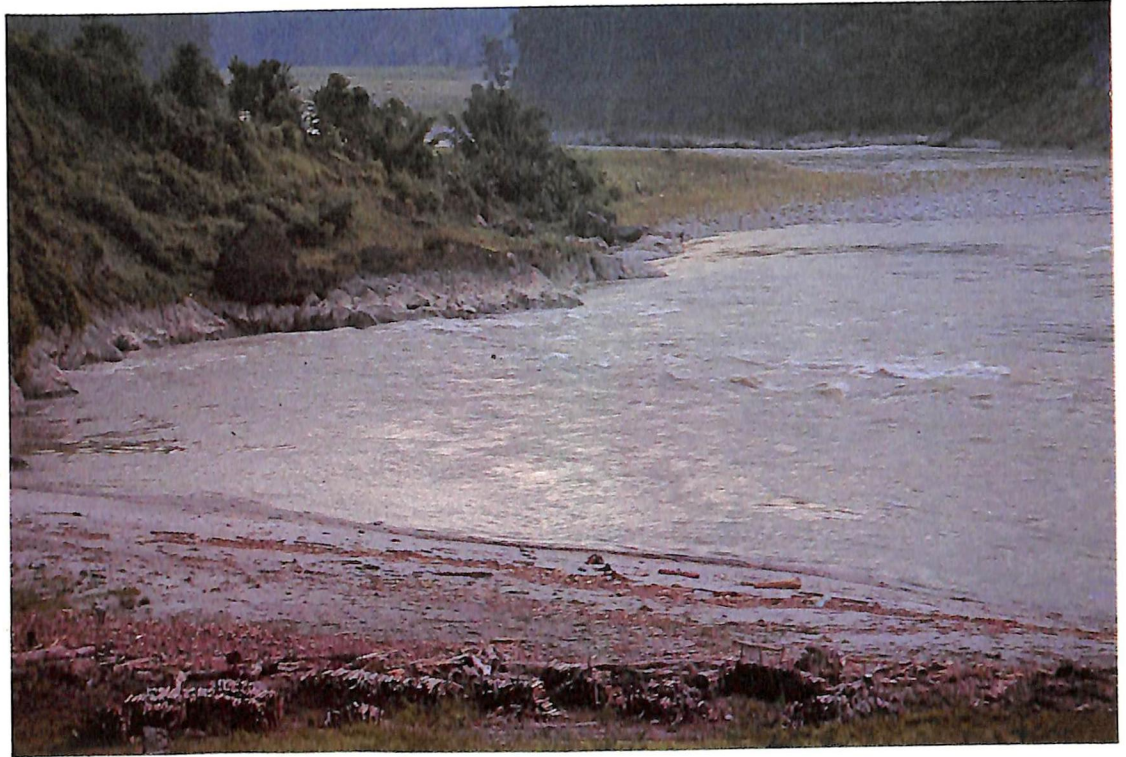


Fuelwood collection inside a temperate woodland.

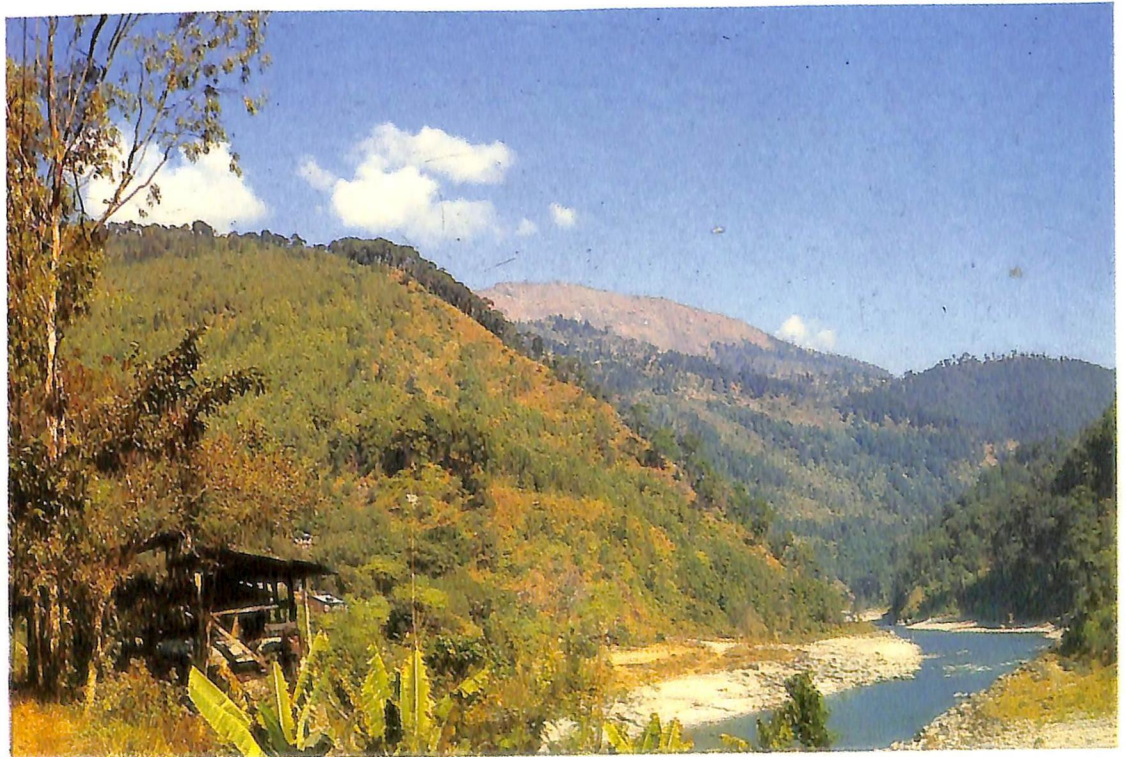


One down, still many to go . . .
The last fallen log in this particular coupe.

Many trees on disturbed lands are brought down by landslides and swept away by the Tista. The picture shows recovery of driftwood from the river near Rangpo. Many such 'recovery depots' are found all along the river for miles.



A hill top in the Tista valley completely mowed down. The first casualty is the top soil. After that the water table recedes. Disturbance in hydrological cycle can mean anything from underdevelopment to large-scale famine.



The Species

Abies webbiana (*Abies densa*)

PINACEAE

The Himalayan Silver Fir

Dunshing, *Bhutia*; Gobray salla, *Nepali*

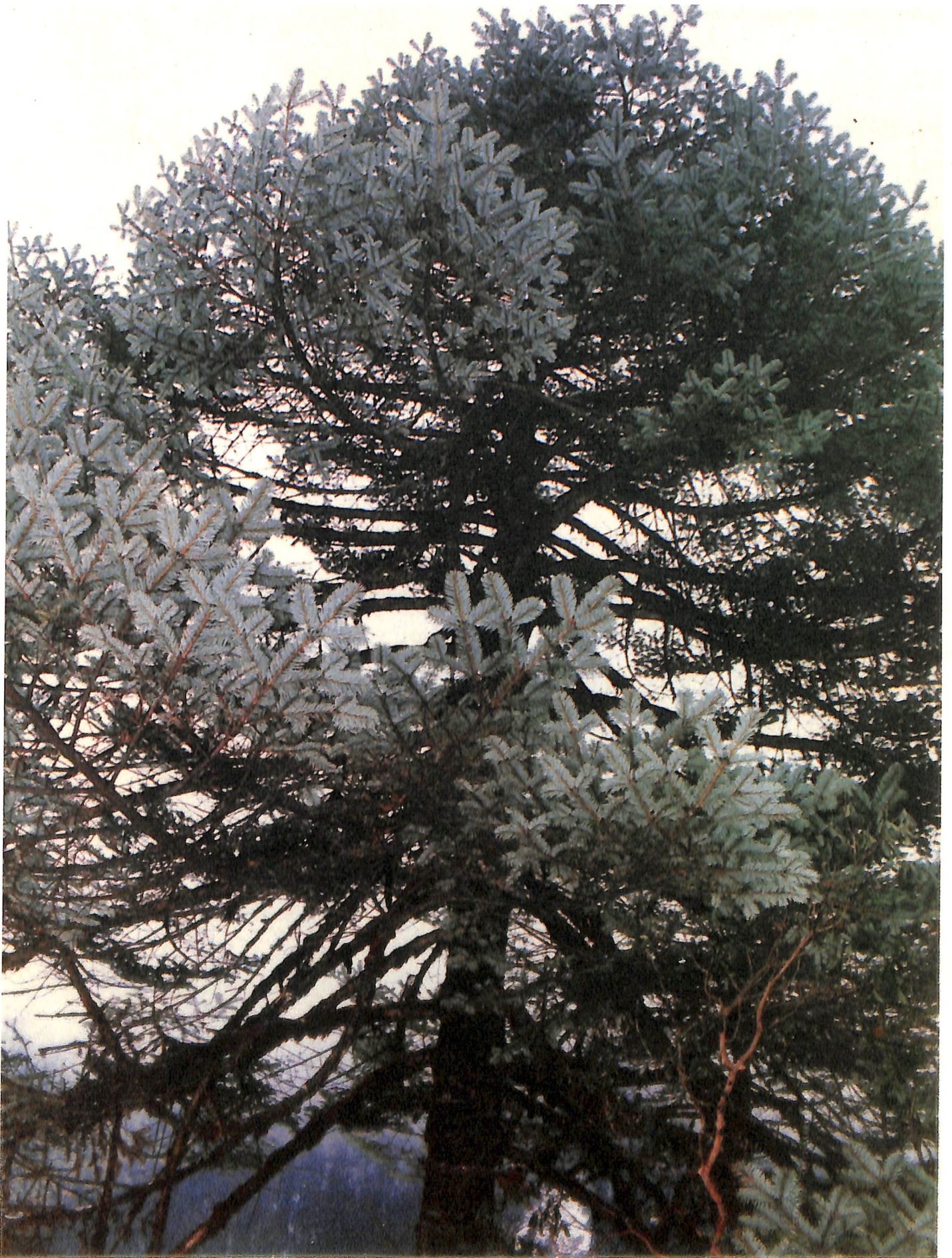
The Himalayan silver fir occurs both in the Hills of Sikkim and Darjeeling. The altitudinal range of its growth is between 9,000 and 14,000 ft but, it is most common around 11,000 to 12,000 ft. In the Darjeeling Hills it grows over the SingaleLa ridge, on the crests, and generally in scattered clumps. But where it has tolerable shelter as on the Phalaloong spur below Sandakphoo, it forms dense forests, the trees being very fine with well-grown straight stems. At lower levels it is usually found with *Tsuga brunoniana* and rhododendrons and has a dense undergrowth of small bamboo (*Arundinella* sp.). The higher grounds of Sikkim Hills are more or less practically covered by this tree.

It also grows as a pure stand but at lower limits it turns into a mixed community, the chief associates being spruce, larch, the maples and chestnuts.

The branches are horizontally spreading and the small flat leaves form a pinnae. The cones come out in October-November, and are of dark blue in colour. These come up in small erect clusters. The bark is dark brown, rough and thick.

Dunshing wood is soft, white and slightly resinous. The tree is a moderately fast grower. Most of the constructional works in the locality use the silver fir due to its easy accessibility, preponderance and workability. The wood takes quite a fair degree of polish. The bark is used for salt trough for the sheeps in Sikkim.

Abies webbiana at Phuni,
North Sikkim, c. 10,500 ft amsl.



The Maple Group

This small group of *acer* (or maple) in the Sikkim Himalaya is composed of *Acer campbellii*, *A. oblongum*, *A. sikkimense*, *A. hookeri*, *A. laevigatum*, *A. papilio*, *A. pectinatum*, *A. osmastonii*, *A. sterculeaceum* and *A. stachyophyllum*. Two varieties are recorded for *Acer hookeri*, viz.—var. *majus* and var. *normale*.

Most of the maples found here are easily recognisable and between them too are quite easy to make out. The leaves are usually palmate (except in *Acer oblongum*). Due to the long slender petioles and its flexible joints the leaves are quite free to move. A slight breeze will make all the leaves start a beautiful movement akin to millions of dancing butterflies.

All *Acers* belong to the family Aceraceae.

Acer thomsonii in flower.
Darjeeling, 5,600 ft amsl.



Aesculus punduana

HIPPOCASTANACEAE

Satpatay, *Nepali*

A moderate-sized tree of the river-terraces the *satpatay* can reach upto 4,000 ft elevations when the ground is not very dry. It is a deciduous tree and can grow over 40 ft in height. The compact crown which is composed of palmately compound leaves makes it a very handsome tree, especially during its flowering time. The leaves and flowers closely resemble the horse-chestnut (*Aesculus hippocastanum*), indigenous to the Asia Minor and Greece.

Aesculus punduana
Inflorescence. Kalimpong,
4,500 ft amsl.





Ailanthus grandis in the Rangit valley, c. 3,000 ft amsl. The tree is so much similar to *lalee* in appearance that even seasoned botanists wish to have a closer look. Sometimes *toonee* is also mistaken for it, but above 3,000 ft almost every tree looking like *Ailanthus* must have to be a *toonee* because *Ailanthus* hardly crosses the 3,000 ft mark. In fact, identifying a tree is much easier when one knows the growing range of species.

***Ailanthus grandis* SIMARUBACEAE**

Maldit-kung, *Lepcha*; Gokool, *Nepali*

The tall and majestic *Gokool* is very common in the lower hills of Darjeeling and Sikkim. It grows upto 120 ft or more with a straight bole and is never gregarious. The bark is grey and blaze is yellowish-buff. This readily distinguishes and it from the *lalee* (*Amoora walli-chii*).

The leaves are paripinnate with leaflets usually paired in six. Flowers appear in May-June and fruits which bear elongated wings come out in February-March.

The wood is used for fuelwood.



Alangium begoniaefolium ALANGIACEAE

Palit-kung, *Lepcha*; Akhanay, Singaray, *Nepali*

Alangium begoniaefolium is also known as *Marlea begoniaefolia*. Once much abundant in the past this plant has now become quite a rare sight in the wild. It grows between 3,000 and 4,000 ft elevations and is planted for its fodder value. The tree in its natural conditions rises up to 40 ft in height with zig-zagging branchlets and shining, fanciful leaves. The bark is smooth, thin and shining silvery grey in colour.

The wood of *akhanay* is white, soft and even-grained. Occasionally it is used for making small objects of general utility in the countryside kitchens. Much-flowered inflorescence about 2 inches long comes out in May and by August fruits begin to appear.

A variety of this species is also recorded from the higher Sikkim hills above 6,000 ft altitude.