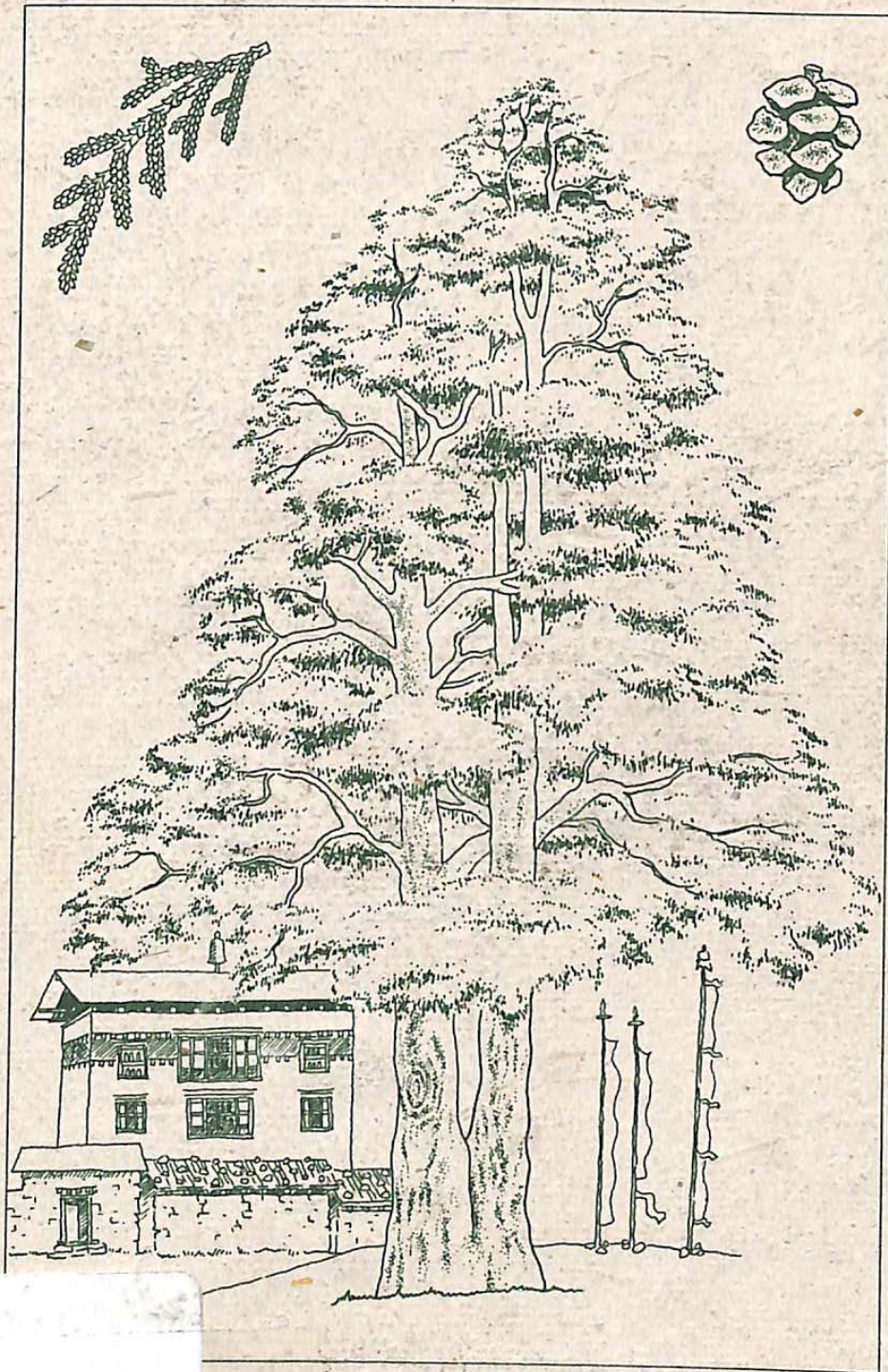


PLANT IDENTIFICATION BOOKLET SERIES

COMMON TREES
IN THE TEMPERATE FOREST
OF BHUTAN



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National Environmental Commission
Thimphu

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FOREWORD

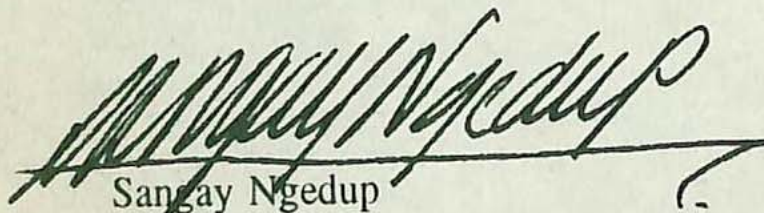
The citizens of Bhutan have traditionally venerated nature with all its live beings, plants and animals. The most magnificent of these are the trees in our forests. These forests have formed the basis for the livelihood of the Bhutanese people from time immemorial, and today they still form the very foundation for the relative prosperity of the country.

It is therefore the policy of the Royal Government of Bhutan to ensure that the forest cover of the country is maintained not only for the benefit of the present generation of Bhutanese people, but also for our children and our children's children.

Bhutan's forest policy, and the firm manner in which it is being implemented, is presently admired throughout the world.

However, if such a policy is to be successful over a long time perspective, it must be understood and supported by the entire population. In order to enhance the knowledge of Bhutan's nature, the National Environmental Commission intends to publish popular books about the various aspects of these natural resources.

This little book, describing the more common trees in the temperate forest of Bhutan, is a contribution to this effort.



Sangay Ngedup

Secretary

National Environmental Commission

ACKNOWLEDGEMENT

The National Environmental Commission is grateful to members of the staff of Curriculum and Textbook Development Division (CTDD) of the Department of Education and of the Forest Research Division and the Afforestation Division of the Department of Forest for all the valuable contribution they have made in the production of this booklet. We hope to receive the same kind of support in our future endeavours.

We are grateful to Mrs. Rebecca Pradhan and Mr. Wijnand van Ijssel from the Forest Research Division, Taba, for their constant involvement and support without which this booklet would not have taken shape.

INTRODUCTION

This Identification booklet of the most common trees in the temperate zone in Bhutan is the first in a series of identification booklets on plants and animals of Bhutan. The need of producing such guidebooks have been felt to create environmental awareness in the minds of Bhutanese people. The National Environmental Commission hopes that this booklet and subsequent booklets to be produced in the near future will help in achieving our goals.

Bhutan can broadly be divided into five zones: the subtropical, warm temperate, temperate, sub alpine and alpine zone. This booklet contains 15 of the most widely found trees in the temperate and sub-alpine vegetation zones of Bhutan.

It was a difficult task to pick 15 trees from the multitude of tree species that are found in the temperate forest zones of Bhutan. The overall criteria for the selection is based on what is easily found in our immediate surroundings. In addition, the selection has also been done on the basis of their wider distribution and socio-economic values. Hence there are some trees included which one may not always find in the immediate surroundings - for instance, the ones which grow mainly in the sub-alpine zone between 3000 and 4000 m. Although mainly distributed in the temperate and sub-alpine zones, some of them can also be found at lower altitudes.

The booklet has the illustrations on the right hand side of the page with the information of the tree on the facing page on the left hand side. Realising that this booklet will be used by school children, the detailed diagrams, which other identification books often include, has been deliberately left out. All the illustrations are usually represented by a whole tree and either leaves or needles. Where other characteristics were felt necessary for identification purposes, flowers, fruits and seeds have been included as well.

The first half of the booklet contains the descriptions and illustrations of coniferous trees and the second half, of the broad-leaved trees. We have also shown the summer outline and the winter outline of the broad-leaved trees.

Three different names for each tree are included in the text portion. **Common Name** is the English name by which the tree would be identified all over the world where English is the standard language or the medium of instruction in the schools. However there is also the need to know the names of the trees in our local languages. Hence under **Local Names** Dzongkha (D) and Nepali (N) names are included. Where available and when different from Dzongkha name, Sarchop (S) name has also been included. Although it is not expected that the user of this booklet should know the botanical (scientific) names, it has been included for the benefit of those readers who are keen to know them.

A section called "Special Features" has been included to give interesting additional information for some trees. However, if "special features" is not given, it does not mean that they are not interesting, just that we do not know of any interesting information or that we feel the information we have is not of immense importance.

Although examples of few specific places where particular trees can be located have been mentioned in some cases, these trees can be found in several other places as well.

The National Environmental Commission assumes all responsibilities for possible mistakes and would welcome suggestions for improvements for possible future printings.

(Weeping) Cypress

LOCAL NAME : Tsenden (D)
Dhupi (N)

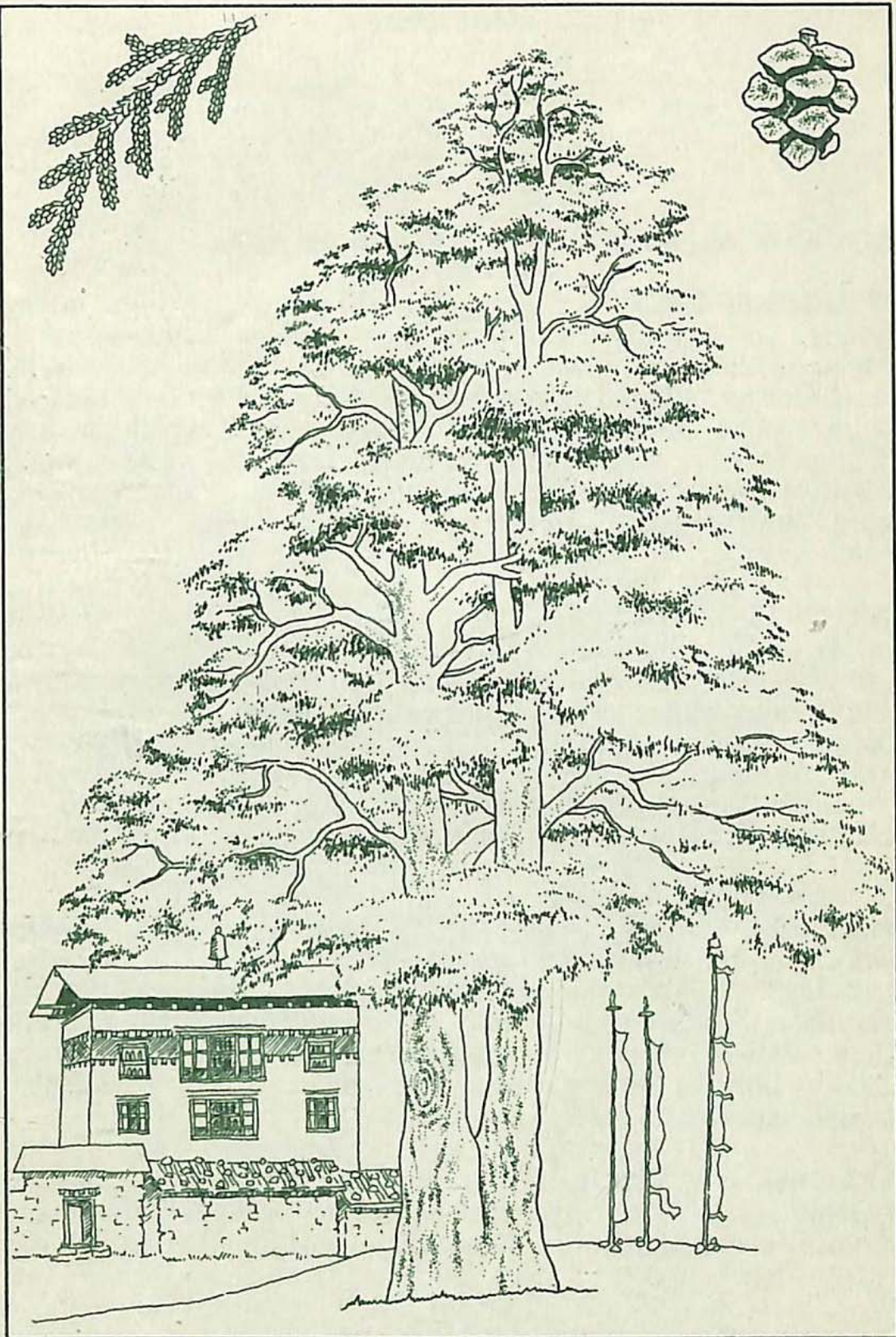
BOTANICAL NAME : *Cupressus corneyana*

WHERE IT GROWS : It grows naturally in Bhutan between 2550-3000 m but is also planted at lower altitudes. It grows well on steep limestone areas and is occasionally found in our forests (Pho Chu valley North East of Punakha and on the West slopes of Pelela). Plantations of Cypress can also be seen at several places between DochuLa pass and Mendegang or at Taba (Thimphu valley) at the road junction towards the Forestry Institute. It grows fast in plantations.

WHAT IT LOOKS LIKE : When old, it is a tall impressive tree, up to 50 meters. The trees can be found usually next to old dzongs. It has green leaves all year around. The leaves are smooth and hanging down (weeping). Compared to other conifers of the country, the leaves do not look like needles.

HOW WE USE IT : The timber is good for construction and is preferred for religious buildings such as temples. Wood and branches are burned as incense, as in the incense ovens (*sangthap*) at the entrance of monasteries and temples.

SPECIAL FEATURES : It is said that Guru Padmasambhava planted his walking stick next to a rock where he meditated at Kurje, Bumthang. The stick, is believed to have taken root and became a *Tsenden*. This *Tsenden* can still be seen at Kurje Lhakhang. *Tsenden* is thus considered a sacred tree and is known as the **NATIONAL TREE OF BHUTAN**. Today they are very common around religious buildings. Beautiful and impressive examples are at Pangre Zampa (Dechencholing), Drukyl Dzong (Paro) and Tongsa Dzong. Some botanists think that the trees in Bhutan belong to a species (*C. himalaica*) only found in this country.



Blue Pine

LOCAL NAME : Thongphu Shing (D)
Chang-Shing (S)
Dhupi (N)

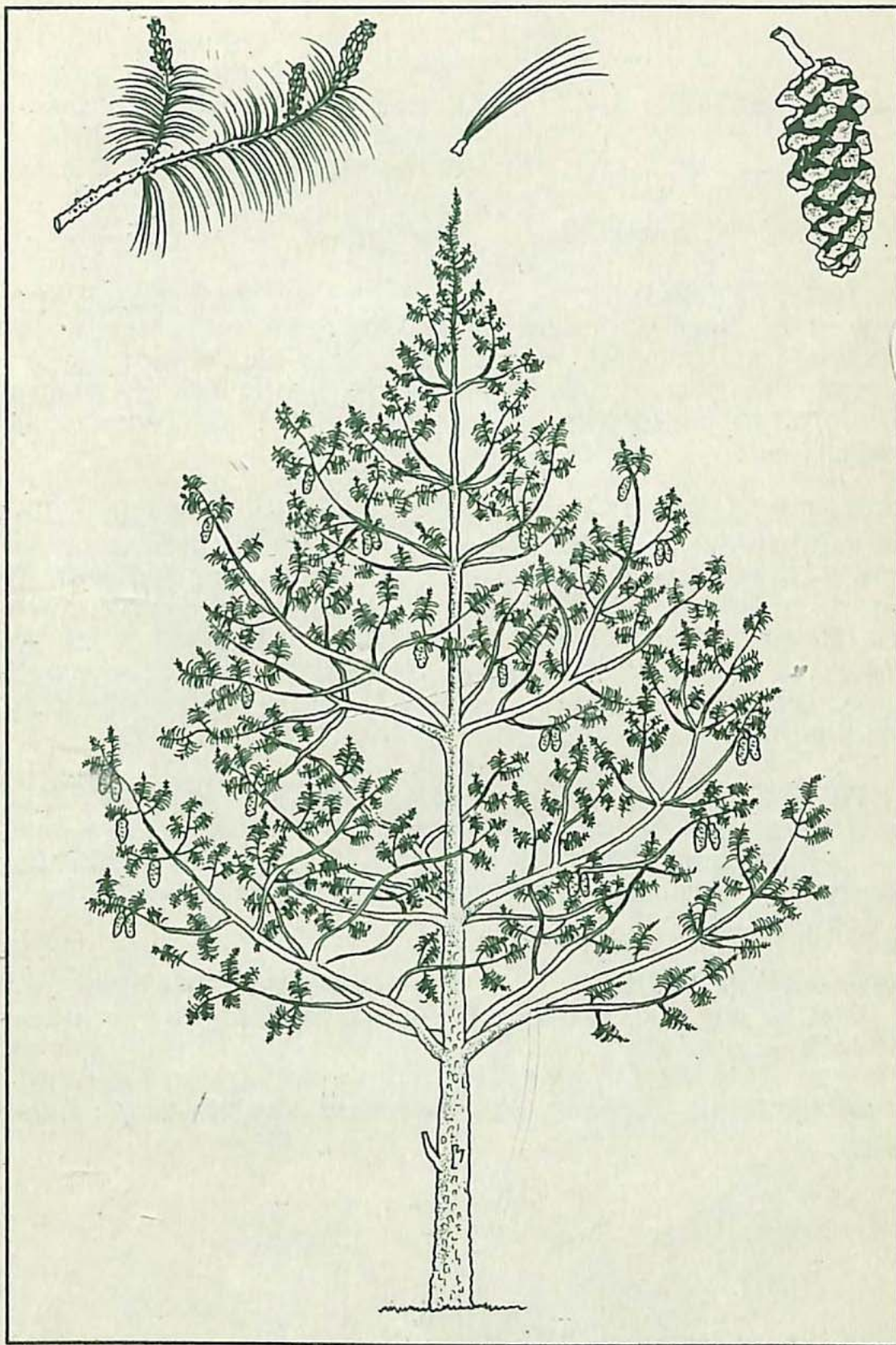
BOTANICAL NAME : *Pinus wallichiana*

WHERE IT GROWS : Blue Pine grows mainly in the western and central parts of Bhutan, on the lower valley slopes of Thimphu, Paro, Haa, and Bumthang, at altitudes of 1700 - 3300 m. In Eastern Bhutan (between 1800-2400 m.) it is often replaced by a typical Bhutanese pine *Pinus bhutanica*, which is very similar to Blue Pine. It regenerates very easily and invades pastures and orchards. On lower valley slopes, it often grows as pure Blue Pine forest. Higher up it mixes with other conifers and oaks.

WHAT IT LOOKS LIKE : Blue Pine grows up to 50-55 m in favourable conditions. The needles are long (10-20 cm) and grow in small clusters of 5 needles. Their colour is bluish-green. *Pinus bhutanica* can be distinguished because its needles are drooping compared to Blue Pine. The young Blue Pine tree grows fast, usually a meter a year. As with the other trees, it forms one new circle of branches each year at the top. Thus by counting the number of circles of branches you can count the age.

HOW WE USE IT : Blue Pine is the most popular wood in Bhutan for construction of houses, dzongs and other buildings. It is also popular as wood material for furnitures and carvings. As the wood is full of resin, villagers often use Blue Pine splinters, heavily mistreating the tree. The leaves can be used as litter in the cowshed and as manure. Blue Pine timber is also exported to other countries.

SPECIAL FEATURES : Blue Pine is a so-called "pioneer species". It is the first tree species to occupy barren land. Another special feature of the tree is that cattle do not graze it.



Fir

LOCAL NAME : Dungshing (D),
 Wangshing(S)
 Gobre Salla (N)

BOTANICAL NAME : *Abies densa*

WHERE IT GROWS : Fir forests are the highest forest type in the country, growing from 3000 m up to the tree line at 4000 m. At 3000-3500 m it is often mixed with other conifers. It prefers moist areas (like Hemlock). Higher up it grows as pure Fir forest or mixed with Juniper, often with Rhododendrons as undergrowth.

WHAT IT LOOKS LIKE : Fir growing below 3600 m grows up to 30-40 m. Above this altitude, the tree will not be as tall as in the lower altitude. The needles are 2-4 cm long and grow in one plane on each side of the branch. The surface color is green and the underside is white. Fir needles are rounded at the tip compared to the pointed tips of Hemlock. Fir has a rough appearance. Fir cones are dark blue and grow upright on top of the branches.

HOW WE USE IT : The wood is soft and light. It is used for particle board and for roof shingles. The villager first cuts a little square "window" in the stem to see if the wood splits neatly. The tree is then cut and the lower part of the stem is used for shingles.

SPECIAL FEATURES : The cones appear once every 4 or 5 years. When ripe, the cones break into many pieces. In winter when there is no grass available young Firs are commonly grazed by yak. This leads to a problem in establishing new Fir forest. Dead Fir forest, probably due to drought, can be seen at ridge tops.

