A study of wooden architecture and sculptural carving of the western Himalaya is a highly rewarding field of research. Its special significance in the history of Indian art and architecture lies in the fact that this is the only region where ancient traditions of wooden architecture are preserved till the present century - Kerala and South Kanara in South India rank only next to our area in this respect. Before undertaking a study of this aspect, it would be worthwhile to present a survey of wooden architectural traditions in India since the earliest times, against the backdrop of which we shall study the structural features of our area of study.

It is a well known fact that in India, buildings were constructed in timber from the earliest times. Unfortunately, no remnants of these structures are to be seen now owing to the perishable nature of the material. In the absence of any concrete archaeological evidence, we have no choice but to rely on the wealth of our ancient literary texts in Sanskrit that not only help us reconstruct our ancient past, but also touch upon so many aspects pertaining to the construction of wooden structures. On the basis of this literary evidence, all scholars of ancient Indian architecture such as A.K.Coomaraswamy, Fergusson, E.B.Havell, Percy Brown, etc. have accepted that wood was the earliest and the only
material used for construction of all kinds of structures and it continued to be used in later ages also, even when other materials of a more permanent nature came to be adopted for the same purpose.¹

The earliest references in our literature, i.e. the vedas, clearly suggest that the towns in that period were surrounded by a rampart and wooden palisades, while within this enclosure the buildings were almost entirely of wood.² This has been observed by Percy Brown in the following passage:

"With the early inhabitants of India, the timber age appears to have been a long one due no doubt to the vast extent of the Mahavana or Great Wood in which they were cradled, picturesque references to which find a place in their epics. So closely connected with their existence were these forests that the early people developed a dexterity in wooden construction of a very high standard. Their pronounced manipulative skill in this material may be accounted for by their prolonged apprenticeship to the woodworker's craft when they were forced to rely on the trees around them for many of the necessities of life."³

The Rgveda mentions wood as the first material that the divine architect Visvakarman thought of for fashioning the universe:

"Kim svidvanam ka u sa vrksa asa yato dyavapratvi nistataksuh"⁴ meaning,"which was the forest and what was the tree out of whose wood the heaven and earth were created?" Writing about the vedic period, J.N. Banerji observes:

"...in the fashioning of the ritual implements that were necessary for the correct performance of particular sacrifices, wood was the principal material that was used."⁵

In the Rgveda, frequent references to the word "tvasta" meaning carpenter are sufficient proof that wood was the chief construction material.⁶ The carpenter is recorded as holding the place of honour...
among all artisans and on his handiwork, the village community depended for some of its most vital needs. The word "harmya" occurring frequently in the vedic literature is evidently used for wooden structures, and the sacrificial posts or free standing pillars known as yupa and stambha or skambha respectively were also of wood.

The many-storeyed structures referred to frequently in the Ramayana, and the Mahabharata - where they are mentioned as "anekasata-bhaumani" - and in the Jatakas were also of wood, as has been observed by A.K. Coomaraswamy:

"The material chiefly employed in the construction of multi-storeyed tiered roof structures was timber, used in any case for the roofs, windows, doors and supporting pillars." The Jatakas give us a fair idea of the materials used for construction. The very fact that carpenters were employed for constructing a dwelling house, that beams and planks were used for "one or two storeyed houses, numbering the pieces from the main post onwards," reveals that the chief construction material in those days was wood. The simsapa and sara wood were used for ceilings and pillars of royal palaces.

The royal palaces, caitya halls and devakulas described in the Jatakas were constructed of timber, and carving and painting on wood was very much in vogue as has been explicitly mentioned in the Ummaga Jataka. According to Dhammapala, the great Buddhist commentator, cities largely of wooden construction began to appear in various parts of the country; they were planned by an architect.
named Mahagobindaa who is stated to have planned the layout of several capitals in northern India in the 5th century B.C.\(^{16}\)

In the 4th century B.C. came Megasthenese, the Greek envoy to the court of Candragupta Maurya at Pataliputra, whose description of the latter's palace has been quoted by almost all historians. Megasthenese writes:

"The main portion of Chandragupta Maurya's palace consisted of a series of hypostyle halls containing pillars of wood, each of which was clasped around with vines embossed in gold and ornamented with designs of birds and foliage in gold and silver, thus excelling in magnificence the famous royal palaces of Susa and Ekbatana." \(^{17}\)

The significance of this description is greatly enhanced by actual archaeological evidence, although nothing has survived of these fortifications except fragments of the wooden ramparts unearthed from Bulandi Bagh near Patna.\(^{18}\) The excavations at the site of Kumrahara village in Patna carried out by Spooner have unravelled the remnants of a mighty pillared hall of the Mauryan palace which he describes as a masterpiece in wood.\(^{19}\) According to him, it probably formed a part of Chandragupta Maurya's palace and the woodwork of its superstructure was extremely solid and massive.\(^{20}\) The high standard of workmanship in the construction of a wooden palace unearthed from the same site has also been noted by other scholars.\(^{21}\) Percy Brown observes that the Temple No.40 at Sanchi which "dates from the Mauryan period or a little later"\(^{22}\) was originally a wooden structure. This author, who attempted a reconstruction of this temple,\(^{23}\) observes that it "appears to have been built mainly of wood, the pillars and railings being of this material, and the roof also was of timber covered with
tiles. Owing to the impermanent nature of their construction, no chaitya-halls of such an early type have survived."24

The literary evidences have been corroborated by not only some archaeological discoveries, but also by a number of our architectural treatises. For example, the earliest text on the subject, the visvakarma-prakasa, mentions that the chief building material was wood.25 The skanda purana deals briefly with wood as construction material. It asserts that the wooden pillars made of sandalwood, khadira, bilva, asvattha, tinduka, devadaru, sriparni and banyan are auspicious.26 Apart from these, mention is also made of yupa, the sacrificial pillars which are to be placed in different directions in the yajnasala.27 We are told that Visvakarma, the divine architect, had set up yupas of various dimensions in the sacrificial hall.28 Wood was employed along with bricks in the construction of buildings.29

The Matsya Purana refers to the use of wood not only for building structures but also for making images:

"An image may be made of gold, silver, copper and bell-metal, sandalwood, iron, brass or other beautiful wood."30

Varahamihira's Brihatsamhita, a text of the 6th century A.D., contains a chapter entitled 'vanapravesadhyaya' which informs us that wood was employed for making residential houses. The chapter, in fact, is devoted to an account of going to the forest for bringing wood for the construction of residential houses.31 This is an important reference that till as late as 500 A.D., wood was largely employed for building purposes. The opening lines of this chapter tell us about the auspicious dates and days when one should
enter the forest for bringing wood for constructing the house. \(^{32}\)

Thereafter follow the details regarding the ceremonies and rituals in connection with the selection of trees suitable for construction and other allied information. The Brihatsamhita is an invaluable text, for it furnishes information not only on wooden residential houses but also regarding sculptural material. The author recommends devadaru, sandalwood, sami and madhuka for making images of the deities. \(^{33}\)

Before cutting down a tree for timber, the sculptor should make offerings to it on the previous night, propitiate the tree and the spirits - good or bad - haunting it, requesting them to leave it and change their habitation. \(^{34}\)

Varahamihira classifies the images of the deities into seven categories on the basis of the materials from which they are fashioned, the first on the list being a wooden image (darumayi). \(^{35}\)

The same classification and procedure of selecting wood for making images of the deities are mentioned in the matsyapurana, \(^{36}\) sukranitisara, \(^{37}\) bhavisyapurana \(^{38}\) and visnudharmottara purana. \(^{39}\)

In the first book entitled "pratimavidhi" in the Chapter 131 "pratham: Brahma parva" of the bhavisyapurana, Narada explains to Samba rules for carving images of the worshipped deities, and enumerates wood as one of the materials employed, others being gold, silver, copper, clay and stone. That the wooden sculptures deserve special notice is stated clearly in the following passage:

"atha te sampravaksyami pratimavidhivistaram sarvesameva devanamadityasya visesatah ārca saptavidha prokta bhaktanam subhavrddhaye kancani rajati tamri parthivi sailaja smrtah varksai calekhyaacaketi murtisthanani sapta vai varksvidhanam te vira varnayisyamyasesatah." \(^{40}\)
The *Visnudharmottara Purana* devotes a full chapter entitled "deva-
layartha darupariksanam". This chapter contains information on
procuring wood for the construction of temples and making sculp-
tures as well as rules for marking off different sections of the
images and building posts on the trunk of the tree:

"agram mulam prayatnena kartavyam tasya cihnani
agram devasya mirdhanam padam mulam tu karayet
arcakrta viparyasta tiryagva maranavaha
agramulam viparyasam stambhanam ca vivarjayet
agramulaviparyase krte vesnakasayam vrajet
pruvagra cttaragra va druma yojya grhaasu ca
tasmat sarvaprayatnena cihnastam karayed druman
agre mule ca dharmajnastatah samvak pravesayet." 42

The *Sukranitisara* mentions eight kinds of materials used for carv-
ing out sculptures of the deities:

"pratima' saikati paisti lekhya lepya ca mrmmayi
varksi pasana-dhatuttha sthira jneya yathottara." 43

The *Bhavisyapurana* and the *Brihatsamhita* have evidently drawn
upon ancient traditional practices. The *Manasara*, a text dealing
with architectural construction, has a chapter entitled "stambha-
lauskanam" that touches upon the subject of collection of wood from
the forest (darusamgrahana").

The chapters 269 and 270 of *Matsyapurana* are devoted to a
discussion of iconography and iconometry. In the verses on
"lingalaksanam", we are told that lingas should be made of such
materials as precious metals, crystals, clay and wood in the manner
laid down in the previous lines:

"evam ratnamayam kuryat sphetikam parthivam tatha,
subham darumayancapi yadva manasi rocate." 46

Wooden sculptures of the deities are referred to as "darughatita"
by Gopala Bhatta in his *Haribhaktivilasa*; almost all his information
Raja-Bhoja's well-known treatise samarangana sutradhara, a text of the eleventh century, draws upon the earlier treatises when it states that wood was employed for architectural construction and fashioning sculptures of the deities, in addition to gold, silver, copper, clay and stone:

"pratimanamatha brumo laksanam dravyameva ca, suvarna-rupya-tamrasma-darulekhyani saktitah, citram ceti vinirdistam dravyamarcasu saptadha." 49

This list is identical to that of the bhavisyapurana. It has been pointed out by J.N.Banerjee that like early architectural remains, extant early stone sculptures in the round and relief carvings may have been influenced by their wooden prototypes with regard to the form and technique. Further he observes: "It can be very well presumed that some of the characteristic features of the several extant early Indian sculptures in the round and many relief carvings show their intimate connection with wooden sculptures, which were common in ancient times."51

Very few wooden images of any antiquity, according to him, have so far been discovered, and the reason for this is evidently the humid climate of our tropical country. Since the publication of Banerjee's book, a number of specimens of early wooden sculptures have been brought to light. The earliest among these is a three-dimensional sculpture of a female figure carrying a child, probably representing the Mother Goddess and dating from the Mauryan period according to Gopikrishna Kanoria who found it from Pataliputra. Sir Aurel Stein had unearthed some wooden sculptures of the Buddha from Central Asia along with a number of wooden utensils, implements and architectural fragments. Recently, Chhaya Bhattacharya reproduced a number of wooden sculptures of the Buddha.
These sculptures are among the 696 objects collected by Stein, Sven Hedin and others from Central Asian sites of Kizil, Tumsuka, Kumtura, Murtuk, Khocho, Toyok etc., dating from 1st century A.D. to 7th century A.D. and are preserved in the collection of West Berlin museum. That such images continued to be made in the mediaeval period is known to us from the account of Al-Beruni who refers to the sculpture of the Sun god at Multan being made of wood and covered with red cordova leather and also to the idol of Sarada in Kashmir having been carved out of wood.

These details are sufficient proof that wood carving and making sculptures in this material were fields in which Indians excelled from very ancient times. These are significant facts, for in the western Himalaya, this ancient tradition of carving and fashioning sculptures in wood has survived till this day. We shall devote a separate chapter to a study of these sculptures in one of the following chapters.

A scientific system of collection and classification of different kinds of wood used for building different types of structures or various parts of the structure has been referred to in almost all architectural texts and puranas, e.g. visvakarma-prakasa (Ch. IX), matsu taps (Ch. 257), brihatsamhita (Ch. 53, verses 120-123), etc. The elaborate instructions that have been given in these texts are evidently the result of long experience and deep-rooted traditions. The chapters entitled daru-aharana or
vanapravesa inform us that certain rituals had to be observed while going to the forest to collect wood. The visvakama-prakasa contains a detailed discussion on going to the forest for bringing timber for construction, undesirable timber trees, curing of trees felled for timber, lightening blast, etc. The matsya purana, basically a religious work, contains eight chapters on temple, palace and residential architecture. An elaborate account of their architectural features, precise measurements of buildings, pillars, doors etc. is given in these chapters. What is of interest are the references to the use of wood for constructional purposes. Prescriptions are stipulated as to which trees are suitable for this purpose and which are not:

"Neep, neem, bibhitak, slesmatmak, mango and kantaki trees should be avoided. Asana, asoka, mahua (madhuka), sarja, sala are the auspicious timber trees. It is very auspicious to use sandal and panasa wood for a building. Deodar and haridra are auspicious when used in the building in one, two or three pieces. But if more pieces are used, it is dangerous. Doors should be built of udumbara wood."  

The chapter entitled vanapravesa of the samarangana sutradhara mentions the dates and days on which it is auspicious to go to the forest and cut down suitable trees for obtaining timber. It is significant to note that this account is identical to that of brihatsamhita (Ch.59), although there is a long gap of 600 years between the composition of the two. Only those trees should be cut down for construction purposes that can bear the load of structures and superstructures. It needs to be emphasised that devadaru (cedrus deodorus) figures among the 15 trees enumerated in the samarangana sutradhara. This very tree is used for construction and for making sculptures in all the areas of the western Himalaya.
Wood was employed not only for building residential houses or palaces, but also for temples, the earliest term for which was prasada in Sanskrit and pasada in Pali. This term should not be misinterpreted as meaning the royal palace which is a later connotation. From the puranas and the architectural treatises, we learn that in the earliest phase of its evolution, the Hindu temples were made of wood, and a strong and well developed tradition of wooden temple architecture existed in our country. The silparatna (Ch.14) enumerated wood among the different substances of which a temple should be made. The samarangana sutradhara (Ch.49) contains detailed guidelines on the use of materials to be used for the construction of temples, pillars, beams and logs on the model of ancient sala or residential houses, as is evident from the last verse of this chapter quoted herebelow:

"lti surabhavanam saptatidararvanam - mihasadama
catuskeninviteyam pradistah,
janamayamavakosananda subhrastulekha bhavati suviditesa
silpinam kamadhenu." 67

The words to be underlined here are "daravaranam" and "surabhavanam" which point out to the wooden origins of early architecture and its adoption in the temples which were no more than replicas of the residential houses. Not only the temples, but the Buddhist monasteries or sangharamas were also built of wood on the pattern of a sala (residential house). It was only later when the monastic organisation developed that they became elaborate brick structures with many adjuncts. 69

The samarangana sutradhara describes the characteristic features of variety of temples, their superstructures devoid of sikharas and
Their roofs being of the chhadya variety. The large number of pillars in the temple halls are made of wood and support the ceiling which is elaborately decorated with wooden motifs and different sets of mouldings. These references show that as late as the 11th century A.D. when the above-mentioned text was written, wooden temples were being built in Central India. They have not survived due to uncongenial climate and incessant invasions.

Now the question arises as to why wood was the first material to be used for construction and why it assumed such a lot of importance in the course of time. When we turn to our ancient literature for an explanation, we learn that the idea of employing wood for structures came to human beings on account of their long and intimate association with trees. In pre-historic times, large and shady trees provided shelter to them from the sun and rain. In the course of time, when human beings started living in dwellings, they are said to have set up a central post, over and around which they constructed a shelter of thatches for themselves. The puranic literature viz. the vayu purana (Ch.8), the markandeya purana (Ch.49) and the brahma purana (Ch.8), contains passages informing us that the earliest building in India was modelled after the tree. We cite here a passage from the Markandeya Purana as an example:

"parvatodadhisevinyohrniketastu sarvasah (verse 15) 
tastu dvandvopdyatartham cakruh purva purani tu 
marudhanvasu durgesu parvatesu darisu ca 
sansrayanti ca durgani varksam parvatamaudakam 
krtrmanca tatha durgam 
grhakara yatha puram tesamasan mahiruhah 
tatha sansmrtya tat sarva cakruversmane ta praia 
vrkaasyevam gatah saha saha thevancapragata 
yah sakha kalpavrksanam purvam dasanavam 
ta eva sakha gehanam salatvam tena dasu trata."
In brief, the above passage means "Living on mountains and by the seaside, they (human beings) lived wholly without habitations. Strife sprang up in consequence; their faces felt cold and heat and hunger...As trees were their first kind of houses, so with a remembrance of all that those people built their houses. As some branches of a tree go in one direction and others go in another direction, so they fashioned the branches in their houses. Those branches became the rooms (Sala) in the houses in consequence among the people." 74

We come across a similar account in the samarangana sutradhara which, though of a later date, is an important architectural treatise. Its author Raja Bhoja Deva has clearly stated the reason why and how the earliest man selected wood for constructing his dwellings and in which period:

"In the Krtayuga, men used to sport with the gods in groves, hills, rivers, lakes and forests. They secured all sorts of enjoyable things from the Kalpadruma. Having lost the Kalpa tree, they began to dwell on other trees. But gradually, they were disgusted with trees and began to chop them off with stone and began to build houses. Remembering the form of Kalpadruma, they constructed their houses consisting of one, two, three, four, seven or ten Salas." 75

That tree served as a model for constructing a house is further supported by the classification of pillars as well as the names of various architectural parts of a house which are derived from different parts of a tree. First we take up the pillars called stambha or skambha in Sanskrit, of which five principal varieties are mentioned in the puranas, viz. the matsya purana 76 and Garuda purana 77 and architectural treatises such as the manasara 78 and the samarangana sutradhara. 79 These are known as brahmakanta, visnukanta, rudrakanta,
sivakanta and skandakanta. The suffix "kanta" is stated to have been derived from "kanda" meaning the trunk of a tree and is synonymous with the shaft of the pillar. The word "sakha" i.e. branches used for jambs and "udumbara" for lintels - the word "udumbara" means a fig tree, the wood of which was used for fashioning lintels, hence the name - again point to the tree being the prototype of man's earliest dwellings. The same idea has been expressed in the matsya purana and in P.K. Acharya's Encyclopaedia of Hindu Architecture:

"Trees are stated to have supplied to the primitive man the model of his future house. Sala: (house) is stated to have been derived from Sakha, because originally the branches were arranged lengthwise, crosswise, up and down and thatched to make the first house." 81

This clearly explains how the earliest man drew inspirations from the trees and why he resorted to them obtaining material for constructing his dwellings, which continued to be used for centuries, even when the structures became larger and more elaborate.

Another evidence of our earliest architecture being of wood is provided by the architectural studies of A.K. Coomaraswami, according to whom the bodhi-gharas; carved in the reliefs of Bharhut, Mathura and Amaravati were wooden structures of the scaffolding type and in some cases, pillars support heavy timbered superstructure; corbelled outwards. 82 Then there is the faithful reproduction of every detail of timber construction in numerous examples of rock-cut cave temples and stupas of the Buddhists constructed between second century B.C. and second century A.D. In fact, they are no more than exact facsimiles of their wooden originals and enable us to conjecture as to what those ancient wooden structures looked like.

Percy Brown, has reproduced a number of illustrations of conjectural
reconstructions of wooden originals in his book "Indian Architecture", \(^8\) (Fig. 2).

The monolithic pillars set up by the Mauryan emperor Asoka in the third century B.C. for the propagation of Buddhism are also believed to be copies in stone of the sacrificial wooden pillars or yupa of the vedic period. It is also probable that these pillars had originated from the "dhvaja-stambhas" of vedic times, of which the best known were the Indra-dhvajas which were always made of wood and erected by kings, as we learn from the epics and puranic literature. Its importance, as late as 500 A.D., can be judged from the fact that Varahamihira devotes a long chapter to its discussion in his Brhatsamhita. \(^8\) The same view has been expressed by Govinda Krishna Pillai in his book "The Way of the Silpi": "It is more likely that the later is the dhvaja of the Hindu temples." \(^8\) The dhvaja had its origins in the wooden sthuna of the vedic burial mounds mentioned in the Rigveda. \(^8\) And it is well-known that the yupa had its prototype in the sthuna. Whether the Asokan columns originated from the dhvaja or yupa, the fact remains that their original form was derived from wood.

The rock-cut sanctuaries in the Barabar hills are the earliest examples in India of the rock-cut method and some of the chambers here are exact copies in the rock of existing structures in wood and thatch. \(^8\) The facade surrounding the doorway of Lomas Rsi cave is an accurate reproduction of the gable end of a wooden structure chiselled in the rockface. \(^8\) The diaper pattern of lattice work on the upper portion of this semi-circular doorway is also a copy of perforated wood (Fig. 5). \(^9\) In the interior of the rock-cut
Sudama cell in the same hill group, every detail of timber construction is copied in the living rock.  

At Sanchi, Bharhut and Buddha Gayā (Bihar) again, we witness a number of features of wooden architecture copied into stone such as the vedika enclosing the stupas which is an exact reproduction of a wooden railing, the torana or gateways with three horizontal beams, the harmika or square railing enclosing the pedestal etc. An idea of the extent to which the technique of old timber method persisted in these structures can be formed by the shapes and the joints of the railings which are those employed by the carpenters. The tenons of the uprights (thaba) and the scarf-jointings of the copings (usnisa), the peculiar form of the triple crossbars (suchi) used in the stupas show that the artisans who built them were more used to working in timber and had wooden models in mind.

The horse-shoe arches of the caitya halls, the basket-pattern decorations, continuous bands of square blocks that appear frequently on the facades of the Buddhist viharas and caitya halls of the Deccan corresponding to the end of rafters in wooden structures, etc., are among other features transcribed from wood to stone at the dawn of the present century. In recent years, S. Nagaraju has devoted much of his study on Buddhist architecture of western India to examining the debt of rock-cut cave temples of Bhaja, Kanheri, Kondane, Ajanta, Kondive, Aurangabad, etc. to wooden originals in the emulation of hemispherical dome above the central nave, the quadrantal roof over aisles, the vedika bands, caitya arches, merlons, etc. He has traced the gradual process of development of rock-cut
architecture; that in 250 B.C., it drew heavily on wooden models, and then it broke away gradually and by the second century A.D. it shed most of the elements of wooden tradition and the artisans gained confidence in working on rock. These features of timber construction persisted till as late as the Gupta period, as is evident from the existence of dentils on the Gupta temple doorways such as the Parvati temple of Nachna, Kankali Devi temple of Tigawa, etc. Dentils are "bands of cubes towards the top of lintel, a series of small projecting rectangular blocks, especially under a cornice." This tradition of carving dentils on the temple doorways seems to have persisted in secular architecture of eastern India, from which probably it has been derived in the Gupta period. This observation has been made by an American scholar Joanna Williams who writes:

"The wooden doors with protruding lintels continue to be made today such as modern doorways in the villages of Bihar for use in houses of bricks or earth. The rear seems to reveal the original form with lintel boards set upon jambs. The projecting ends of the lintel as well as pegs at the top serve to engage it firmly in the fabric of the wall and prevent slippage. The front consists of a veneer of more neatly joined pieces corresponding to the pattern of stone doorways from the 6th century on except for the diagonal joints which are more natural in wood than in stone." 98.

Wooden structures were erected not only in north India but in south also, where the wooden architectural traditions have survived in Kerala and south Kanara. Here also, some features of later stone temples reproduce their wooden models quite literally, e.g. the double brackets supporting the cornice in the earliest Pallava buildings. 99 The same is true of the monastery caves of Nasik, the ratha temples of Mamallapuram, the stone temple of Madura, etc. Here it seems that stone was always treated as though it were wood. Not only the architectural styles but the decorative features
were also borrowed from carpentry. The familiar form of the wooden beam or post fashioned from the trunk of a tree simply by trimming a log into quadrangular or octangular form dominated the mind and hand of the sculptor even when he was carving out pillars of stone supposed to look as though they were supporting solid roofs of rock. It would not be an exaggeration to say that the craftsmanship of the carpenter lies at the basis of Indian architecture. As in the north, in south India also, we are told that when some rich man or king thought of erecting a stone temple, the carpenter was sent for. He projected the patterns from wooden structures onto the edifice. This accounts for the similarity of wood and stone carvings on the doorways, facades, pillars, capitals and ceilings.

In the western Himalaya, the same traditions have persisted almost unchanged till the present century. Till now, we can find carpenters who are not only masons erecting dwelling houses and wooden temples but are equally adept at stone carving. More often, it was the same carpenter in ancient times who also helped construct and carve a stone temple. This accounts for the similarity of stone temples of Kashmir having double or triple tiered roofs superimposed one on top of another with the vimana type temples in wood which we have placed in category III. The stone temples of Siva at Pandrenthan (pl.55), of Payar and the submerged shrine in the Manasbal lake in Kashmir not only bear a striking resemblance to the aforementioned temples, but also suggest that similar wooden temples must have existed in this land in ancient times, but no vestiges of them remain because of heavy destruction of Hindu temples by Sikandar Butsikan in the 14th century. It is also possible that some of them
were destroyed by fire. Another interesting example is provided by the two ornate windows on each side of the doorway of Hidimba Devi temple in Dhungri village near Manali (Kulu). This type of wooden window is occasionally found carved in stone in some later pent roof shrines as well as in some sikhara style stone temples in Kulu, Mandi and Simla hills. Apart from these, the structural features of wooden architecture that have survived in the stone temples of the western Himalaya are the presence of unnecessarily large stones, dovetailing and bolting together of the walls, the turning of stone pillars on lathe and the absence of the use of cement.

More important than these similarities is the continuity of age-old traditions of wooden architecture in the western Himalaya till the present century. It would not be an exaggeration to say that this is the only region in India where we find preserved the ancient-most art forms and architectural features that have been swept away from the rest of the country due to foreign invasions, inclement weather and perishable nature of the material employed. Time and again, scholars of Indian art and architecture have commented, with a feeling of regret, that it is not possible to form an idea as to what ancient forms of architecture looked like, the only specimens, according to them, being the buildings carved in the reliefs of Bharhut and Sanchi stupas. We will cite the views of only two scholars in this regard. Ananda K.Coomaraswamy’s opinion is as follows:

“We know practically nothing about early secular buildings from actual remains, but there are so many good pictures of them at Sanchi, Bharhut, etc., sculptured in low relief that we can tell exactly what they were like. The ground floor was probably used for shops or for cattle, a second storey was supported on
pillars. A narrow veranda runs along the second storey projected by a Buddhist railing, while the rooms behind have a barrel roof and Chaitya windows exactly resembling those of the caves.  

Percy Brown writes:

"Built mainly of wood and other perishable materials, all the early Buddhist Sangharamas have disappeared, but reproductions of them on the bas-reliefs supplement our information as to their design."  

If Coomaraswamy and Percy Brown had visited Himachal Pradesh, they would have written in a different manner, for specimens of buildings represented in Sanchi and Bharhut reliefs can still be seen in the residential houses of this state. A study of these dwelling houses reveals that there are points of striking resemblance between them, although they differ in some details. When we compare the two, we find that in both the cases, the lower storey is of considerable height and there are very few and narrow windows. Like the dwelling houses of Himachal Pradesh, the houses carved in the Sanchi reliefs - we may surmise that the residential houses in the Mauryan and Sunga periods - also were two or three storeys high. The upper storey was meant for the family while the lower storeys was used for storing grain or for the cattle. A closer study of the Sanchi reliefs shows that the upper storey overhanged the lower part and was perhaps entirely made of wood (figs. 16-17). All these features are common to the dwelling houses of our area.

These similarities apart, there are a few differences also. For example, the roof in the Sanchi relief dwellings is always circular, not sloping as is always the case in Himalayan residential houses and sacred structures. The circular wooden roofs of the Sunga period was evidently formed of ribs and planks laid over them in somewhat the same manner as a ship is constructed. This kind of roof
seems to have been in vogue in wooden structures all over India in ancient times except in the western Himalaya where sloping roof is a necessity due to heavy rains and snow. It seems that circular and sloping roofs were in use at the same time, the former in the plains and the latter in the mountainous regions. Apart from this dissimilarity, the dwelling houses of our region come nearest to Sunga period structures.

The wooden temples in Kulu valley - mostly the ones termed Type I - invariably have a carved wooden window above the doorway, i.e. on the gable. The purpose of this window was to let the sun-rays in and light up the dark interiors of the sanctuary. This was a common feature of all the caitya halls of the Buddhists in the rock-cut cave temples. The sikhara style stone temples of 600 A.D. onwards also had this window known as the gavaksa or blind sun window. It seems that originally this feature was an essential part of secular wooden architecture in pre-Mauryan and Mauryan periods, from which the Buddhists borrowed it. It has continued, and still continues, to figure on most wooden temples of Himachal Pradesh (pl. 29) where the ancient - most art forms and traditions have survived almost unchanged for centuries.

The uninterrupted continuity and survival of ancient traditions of wooden architecture has amazed all those who have had the occasion to visit the western Himalaya. What accounts for it? The answer is simple. The entire region abounds in deodar and pine forests. The fragrant deodar (cedrus deodorus), a wood which grows in the areas situated at a height of 6000 ft. to 10,000 ft., is the principal glory of this region. If well seasoned, it forms an excellent
construction material, since it can withstand the ravages of climate. Being insect proof, it can last for over one thousand years, as has been testified by the existence of wooden temples of Laksana Devi and Sakti Devi in Chamba dating from the 7th century A.D., Markula Devi temple in Lahul, Dakhani Mahadeva temple in Nirmand (Kulu district), the woodwork of Buddhist temples and monasteries in Ladakh and some sculptures in wood made in the 9th-10th centuries preserved in the Buddhist monasteries of Ladakh, Lahul, Spiti and Kinnaur.

Apart from the abundant and easy availability of deodar wood, there are other reasons also for the persistence of wooden architectural styles here over thousands of years. One is that until recent times, wood was available in these areas free of cost. Secondly, stone cannot be quarried everywhere; the transportation and dressing of stone are very costly and cumbersome. This is probably the reason why stone temples were constructed only by kings who could afford the high cost, whereas most wooden temples owe their existence to the priests or local villagers. Very good stone carvers are hard to come by. Sometimes, the carpenters tried their hand at stonecarving. Such artisans can still be met with in remote villages of Kulu and Simla districts. We found that in spite of considerable skill in working in stone, they prefer to use wood because they find it much more subtle, soft in texture, smooth to work on, better suited for expressionistic work, easier to cut and carve. During our research tours, we came across a number of miniature stone shrines by the side of wooden temples, e.g. within the enclosure of the Kotesvara Mahadeva temple in Koti village in Simla hills, which have a tall
round ornament surmounting the roof. This is a crude attempt to reproduce an honorific umbrella in stone. The staff of the umbrella is represented below the fluted ornament. These features show how difficult it is to reproduce a multi-tiered roof in stone and also explains why wood is preferred by local artisans. There were other reasons also - wood covers larger spaces with fewer and less cumbersome points of support than is possible with stone. For the same outlay, twice the space can be covered and more than twice the splendour obtained by its use. Last and the most important reason was climatic conditions and frequency of earthquakes. This point deserves to be dealt with in some detail.

The walls of all the structures - be they temples, mosques, palaces, castles or residential houses of ordinary people - constructed in most areas of the western Himalaya, i.e. areas situated between 3000 ft. and 10,000 ft. above sea level, consist of alternating courses of long and massive wooden beams and stones (or bricks in Kashmir). This construction technique is peculiar to this region and an indigenous invention of the local masons. When used along with dry masonry, wood serves the function of mortar or lime, i.e. it binds and strengthens the stone courses together. This is why wooden beams are always laid in horizontal or vertical position. The observations of a practising architect William Simpson on this method of construction deserve to be taken into account:

"In the well-built houses and temples, the wood is very carefully arranged, the beams being perhaps a foot or so in depth, extending the whole length of the wall, a beam on the outside and another on the inside, the space between being filled up with stone. The wall at right angles has its beams laid on the first mentioned wall, and thus they go on alternately...From this, it will be understood that this mass of woodwork is capable of holding together itself, without the stones which are filled in between to make a solid wall."
It is sufficiently clear from this passage that the sole reason for placing beams between the stones at regular intervals was to bind and hold together the stone or brick work in the walls. This was necessitated by the absence of mortar. The same opinion has been expressed by James Fergusson:

"Nothing can be more suggestive than the solid square basement on which the structures are raised - one of their minor peculiarities is the use of timber for mortar. In a country where stone and wood are abundant but lime is not, nothing can be more ingenious than the alternate layers of timber binding the courses of stone together and the mode in which they are treated constructively as well as ornamentally is as curious as it is novel. The most interesting points with regard to these solid bases is the mode in which they are made to support an overhanging structure of wood which is the use for which they were originally designed and to which they were exclusively applied." 104

We would add a slight modification to this observation that this practice is not novel but traditional and has been in force for several hundred years. How wood is used by itself or in combination with stone and mud in the walls and roofs of structures in various districts of the Himachal Pradesh shall be discussed in detail in the chapter on Domestic Architecture. Here it suffices to mention that the style of construction and the choice of construction material were dictated by climatic conditions. Timber along with stone and mud is the most commonly used building material for it provides the best protection against heat in summer in the lower hills and severe cold in winter in mountainous regions such as Pang i and Brahmaur (Chamba), Kashmir and Kinnaur. The ceilings of all the structures are made of wood and covered with a variety of materials such as wooden planks and boards, fir, shingles, grass or slates depending upon the availability of the roofing material, the aim being to keep out both heat and cold.
In areas which are subject to heavy snow and rainfall, the roofs are always sloping or pent shaped. The gable line of the pointed roof is not straight. In such a pointed roof, there is an angle producing steepness towards the eaves. The number of angles depends on the rows of planks. These planks are raised slightly to give a greater drip to the snow and rain drops. Most of the roofs built in this manner are covered with slates but the original frame is made of wood.

Apart from protecting the inmates from heat and cold, heavy snow and rains, these timber-bonded structures are earthquake proof. The absence of mortar between the stones and the timber framework not only contributes to the solidity as well as stability of the walls, but also enables the structures to stand against the movements of the earthquake. The terrible earthquake of 1905 destroyed countless stone temples in sikhara style and other stone structures but the wood-and-stone structures escaped undamaged. The still standing wooden temples discussed in the following chapter, the Naggar Castle and countless dwelling houses of the rural folks have proved the worth and suitability of this construction method.
CHAPTER III: REFERENCES


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"Krtesu tesu sthanesu puna cakru grhrani ca
Yatha ca purvamasa vai vrksastu grhasansthita
Tatha karttum samarabdhascintayatva punah punah
Vrksascaiva gatah sakha natascaiva gara
Atha urdhvam gatascany ainan tiryaka gata parah
Budhadvyanvisya tathanya va vrksasaka yatha gatah
Tatha krtastu tai sakhastamachhalastu tah smrtah."

See Coomaraswamy,A.K. : op. cit., Fig.36.
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105. The same is true of the wooden architecture of Kashmir. It has been recorded by many a foreign traveller and writer, even casual visitors to this land. We will cite only one passage from Arthur Neve's book Picturesque Kashmir, London, 1900, p. 323: "As we see from the river, many of the wooden structures, dignified with the name of houses, look frail to the point of danger. Yet these dilapidated houses, three or four storeys high, survived the great earthquake of 1885 in which many stone buildings fell".
CHAPTER IV: THE WOODEN TEMPLES OF HIMACHAL PRADESH.

The entire Himachal Pradesh is dotted with a large number of wooden temples, all of which are made of wood-and-stone. Like most buildings in that material, they appear to be quite picturesque. Nowhere, perhaps, is the visual appeal so insistently present as in their impressive and interesting carvings. Most of the temples, lately discovered in hitherto inconspicuous places, provide a cultural vista that is overpowering in its grandeur. It does not require any artistic talent to respond to their appeal. Any sensitive person will be drawn to the aura of otherworldly splendour and divine grace which the carvers have bestowed upon them.

The distinguishing features of these temples, from an artistic and architectural point of view, are their wooden sculptures carved in high or low relief, and the peculiar gable style of architecture. Almost all of them abound in some kind of woodwork of great beauty and delicacy. Woodcarving as a decorative art has a long history of development in the western Himalaya. Through the ages, it has attained a simplicity of expression and a high standard of technical skill. It is not their technical skill alone but their great artistic delicacy which makes them unique.

These wooden temples are as profusely carved as their counterparts in stone in other parts of India. There were diverse