CHAPTER II

GENERAL SURVEY OF WOODEN ARCHITECTURE

In this section it is proposed to give an over-all picture of wooden architecture in Gujarat, firstly as it appears on the ground, secondly as it appears in records. In presenting the survey we have adopted a different principle than the usual one in architectural writing. The usual principle has always been to 'start from the earliest beginning' and to bring the account down to the recent past. This may be called the 'historical' method, but such a procedure would involve us in logical difficulties which would vitiate the account. The reasoning is as follows :-

(a) The historical approach can only be adopted when the total history of the subject is known and the major analytical conclusions already established. But in our case this is not so. Wooden architecture of a remote period is known from literary fragments and Buddhist relief carvings, but it is not at all established whether the wooden tradition of Gujarat has any links with it. The mere fact that both use wood should not make us presume a relationship. For this reason, the survey of woodwork in Gujarat cannot logically start with the Buddhist evidence even though that is earlier in time. There is here another danger. If the Buddhist evidence is used as a starting point, then it means we are already commencing the account with a fully established Great Tradition which Buddhism certainly was. But the wooden tradition of domestic architecture in Gujarat is not an all-India phenomenon; it is a regional tradition and has all the appearance of being a
folk-tradition, i.e. a Little Tradition, and it would thus be illogical to seek to derive the latter from the former. A classical tradition may arise from a regional one, but a local folk-tradition can hardly be assumed to have originated from a classical tradition. In general we take it as logical that the more complex forms originate from the simpler, that therefore the Great Tradition may have arisen from the Little Tradition, but not vice versa. That is why the account of Gujarat cannot start with the Buddhists.

(b) As already mentioned, the wooden architecture of Gujarat in its surviving specimens covers the period from approximately 1600 A.D. to 1900 A.D. On the other hand, the culture known as 'Gujarati' goes much further back roughly to the 10th century. There is thus a complete break in woodwork between the early beginnings and the later survivals. Dr. Sankalia writes, "Gujarat chronicles and epigraphs make no mention of a palace built by a king or any citizen. ... owing to its perishable nature, therefore, no wooden building of the Caulukyan period has survived." (1)

The fact that woodwork must have existed prior to 1660 A.D. is deduced from the appearance of details in stone temples of an earlier period which are obvious imitations of wood (see page 76). The conclusion of scholars is, that there must have been a strong wooden tradition in the region which influenced the structural details of stone construction. Technically speaking, it is the stone which clearly shows a wooden origin, and not wood which seeks to imitate stone. This is used to establish the fact that wood is the earlier tradition. But an account of woodwork cannot be commenced with its imitation in stone, even though the stonework is older in time. This would be like putting the conclusion before the evidence. So, here again, we have preferred to begin with an examination of the actual woodwork first before showing its relationship to the earlier stone.

The above arguments lead to a method by which, instead of starting with the 'beginning', we start with that closest to us in
time and then gradually work backward. In short, we go from the known to the unknown.

(1) DISTRIBUTION OF WOODEN ARCHITECTURE:

The wooden building is found in three basic variants in the region, and these are -

(a) Buildings having a full half-timbering in their construction with the intermediate spaces filled up with brickwork or with light materials such as bamboo wickerwork. (Fig. 3.a)

(b) Buildings having a partial half-timbering in their construction appearing next to regular load-bearing walls in brick or stone laced with bonding-timbers. (Fig. 3.b).

(c) Buildings having horizontal bonding-timbers embedded within brick or stone walls. (Fig. 3.c).

The above three categories correspond to the dominant types appearing in each class but it must be emphasized that there is no neat and clear sub-division between classes in all cases. The bonding timber, for example, appears occasionally in the fully half-timbered structure (category a). Thus, there are many mixed types of structures, and these will be described later in the details. But nevertheless, the above main categories do exist and they are relevant to our survey.

The three categories are found predominantly in three territorial sub-divisions and thus represent a horizontal distribution pattern. One can call them 'styles' of construction, for each is characteristically different from the other and easily identifiable in the typical case. But we have refrained from using the expression 'style' because these differing techniques may, and do often, appear without any corresponding change in the house-plan. In other words, we find a constant house-plan but a differing method of using woodwork, i.e. the change in constructional technique is not matched by a change in house-plan. Houses which
outwardly look the same may inwardly have different methods of construction; to here speak of differing styles would be misleading.

The distribution of the three categories has been plotted on a geographical map of Gujarat, Fig. 4. It is based upon information collected personally during field trips and as it tallies with other supporting data, its correctness may be considered as established. This will emerge in later discussion. One aspect of the map must be clarified. As already explained, wood as a structural material predominates mainly in urban areas; in villages it appears sporadically. So that the distribution of wooden construction according to its prevalence would have to be shown as concentric circles drawn around towns and cities, in which the intensity of use would decrease from the centre of each circle towards its periphery. Such a map would be true so far as each locale is considered by itself, but it would not be useful in order to establish the regional pattern of distribution. Thus, for example, a circle drawn around Ahmedabad would tell us that within it the use of wood was intensive and outside it meagre. But it would not tell us whether the intensity in Ahmedabad was more than in, say, Suret, nor would it tell us about the category of the woodwork employed. Therefore, instead of a map based upon such urban circles, we have made a map showing the three categories in their regional distribution and disregarded the urban/rural differential. This differential may be assumed to exist in any case within each region when reading the map.

A glance at the map (Fig. 4) will show one striking feature at once: namely, that the physical distribution of the woodwork corresponds very closely with the ancient divisions of Gujarat called Sureashtra, Anartta and Lata. The category 2 appears pre-dominantly in Futch and Sureashtra, and an arm of it swings up into the fringe areas of Banaskanta. The category 1 appears in North Gujarat and extends down up to approximately Broach. Between Baroda and Brosch is a zone of overlap where both categories 2 and 3 appear, while category 2 is the dominant type in South
Gujarat. As a preliminary observation at this stage it may be pointed out that the over-lapping zone between North and South Gujarat, i.e. between ancient Anartta and Leśa, corresponds to the historical situation. The boundaries of Leśa were fluctuating, sometimes resting on the Narmada, at other times reaching up to the Mehi, and therefore it is a matter of great interest to find this fluid historical situation reflected in the mixture of structural techniques.

If we now turn back to our three structural categories, examine them for their content, and then compare this with their geographical distribution, we shall discover deeper affinities. The three categories are distinguished by the quantum of wood which they use. Thus, category a (fully half-timbered) uses the maximum quantum; category c (having only bonding timbers) uses the minimum; while category b (partially half-timbered) falls in between. In other words, there is a direct correspondence between structural type and quantum of wood used. Now, the quantum of wood used must in turn be co-related to the availability of the raw material. This is a simple economic proposition and needs no elaboration. And if we compare the availability of wood in the different sub-divisions of Gujarat, we shall see that this has indeed a correspondence with the distribution pattern of the three categories.

Before discussing the co-relationship between distribution of woodwork and availability of the raw material, one possible misconception has to be clarified. Trees are found everywhere, and the temptation is to think that because trees are present 'wood' must equally be available. But this is inaccurate. When we speak of 'wood' in this study, we mean structural wood which can be utilized in half-timbering. And the only kind of wood which can be used for this purpose is straight. Trees which are bent, twisted, stunted or many-branched, i.e. the normal kind of trees, are of no use in half-timbering. The trees we see in villages are of this variety, and much of the forest-wealth in India is of the same kind. Straight-growing trees are relatively few and among the two major species are: sal and teak-wood. Sal is found mainly in northern and eastern India and does not appear in any
Gujarati woodwork. Teak grows in central and southern India and is the preferred timber in Gujarat. When we therefore speak of availability of wood in Gujarat, we primarily mean teak-wood. (There are other timbers which were used in structural work, such as Neem or Mahuda, but their use was in inferior work done mainly in villages).

The availability of timber in Gujarat during the period under review has not been given in detail in any one comprehensive report, and we are left with fragmentary observations made in various old Gazetteers. For Kutch the following is recorded, "Except beadul, pipal, bordi, kanoant and khijdo, almost all the timber used in Cutch comes from Daman and the Malabar coast." (2). All of the first-named timbers are village trees which do not give good, straight wood; hence the need for timber imports. The report is for 1880.

For Saurashtra (then called Kathiawar) we hear in 1884, "Building timber is imported chiefly to Bhavnagar and Jodiya from Balsor, Daman and Dehanu, and still more largely from the Malabar coast". (3). These two towns near the coast of Saurashtra were used to distribute timber further inland.

Regarding north Gujarat the Ahmedabad Gazetteer of 1879 generally remarks on the scarcity of forest, and then adds, "Here (in Dholera) Luvana and Venis merchants bringing logs of teak from Thana, and of blackwood and sandalwood from the Malabar coast, sell them to the district carpenters ..." (4). Dholera had, before the coming of the railway, become a great market for timber and must have served as the intermediate supply-point for Ahmedabad and beyond. It is interesting to find that both these great sub-divisions, Saurashtra and North Gujarat, were receiving their structural timber by sea.

It may here be asked why the teak forests in the Gir region of Junagadh were not being used to supply timber. The simple reason is that both soil conditions and scanty rainfall combined to
produce a very stunted form of teak which is unsuitable for structural work. This is a good example of how the description 'teak forest' can lead to wrong inferences with respect to structural woodwork.

Another source of timber for North Gujarat was Panch Mahal, and the information comes from E.P. Stebbing in his "The Forests of India" where he quotes a reference for 1863, "... I saw at Rumen, which is one of the gates of the country leading to Ahmedabad, fully half a square mile of carts laden with timber, most of which was from Berryshe (Beris)..." (18). This timber was transported by land carriage, and there are numerous other references to this practice. For example, Major Walker, the British Resident at Beroda, had begun construction of Barracks in 1802 and wrote to Bombay, "I understand however that carts were two days ago sent to Broach to bring timber for this purpose ..." (5). Francis Buchanan noticed land carriage of timber on an extensive scale in South India in 1800 (6).

The Beroda Gazetteer of 1883 speaks of the forests of Navsari in South Gujarat (then part of the Geokwad's territory) as the source and writes, "The timber cut in the Vajpur forests is for the most part floated down the Tapti to Kedod and Surat"(7), it adds later, "Teak has been prodigally cut, so much so that in extensive forests no good serviceable teak can now be found."(8). It may be here mentioned that the Dangs had been leased to the British in 1842 and they had begun systematic exploitation of the teak forests. The other teak-producing area of Gujarat, Panch Mahal, was also in British hands from 1863.

The same Gazetteer further says, "The teak, blackwood and sandalwood employed by the village carpenter are imported by rail from Bombay or come down the Narmada river from the Rajpilia country. In the Kadi division (in North Gujarat and in Geokwad territory) the best wood-carving is found in Patten, Sidhpur and Vadnagar. The wood is imported from Godhra or Bombay." (9).

Here we get information about transport of timber by river and railway. In the former case only the Narmada is mentioned and nowhere the Mushi which also passes through teak forests in Panch
Mahal. The possible reason why the Mahi was not so used was that its level of water goes down much more than that of the Narmada in the dry months. Regarding rail traffic, the line to Ahmedabad was completed in 1863 and it must have begun to supply North Gujarat from then on. The coming of the railway to this sub-division is an important datum point, for it coincides, as will be shown later, with a great upsurge in the quantum of wooden construction all over North Gujarat.

The report for Surat and Broach (1877) remarks that there was "no forest" in Broach and that timber came from Rajpipla and Balsar, while Surat is described as having no "revenue-yielding" timber and was dependent, again, on Balsar. (10). Balsar (written today as Valsad) was the main port for export of timber from the Dangs and adjoining forests. This is a very hilly area in the extreme south-east of Gujarat bordering Maharashtra, and it forms an extension of the Sahyadri Range. It has the best teakwood in Gujarat.

If we now review the above data on the availability of timber, we shall have to conclude that for the period 1860 to 1890 timber was by no means easily available everywhere. The main indigenous supplies were from the eastern border areas of Gujarat, primarily Panch Mahal/Rajpipla/Dangs, while the principal demand was in the plains where the main urban centres were located. The long distance between source and demand, the poor state of roads at that time, the hilly nature of the terrain at source, all this must have made timber into an expensive material and that will explain why supplies from as far away as Malabar had to be procured and why such supply could remain competitive. The situation must have changed with the coming of the railway, but only for North Gujarat. South Gujarat was always near to timber sources. In general, we may conclude that Saurashtra and North Gujarat were at a disadvantage in timber supplies as compared to the South, and that Saurashtra was in the worst condition of all. This situation may now be compared with information provided by various manuals on forestry and economic products.
J.S. Gamble divides India into different forest-regions, and in forest-region 'C' includes the Central Provinces, Chota Nagpur, Orissa, Khandesh and Gujarat. He then writes, "In the western part of the region, Teak is the chief tree; in the eastern part, Sal..." (11). Region 'D' comprising the Deccan has more Teak but no Sal. It is Region 'W', i.e. the Western Ghats, which has Teak in profusion and "... is the chief timber of export." (12).

Further on he says, "The Teak tree has two separate regions in the area dealt with in this work - the Western or Indian, which is practically the whole of the peninsula of India, and the eastern or Burmese... The Indian region has for its northern limit the rivers Nerbudda and Mahanadi..." (13).

E.F. Stebbing follows the description of Gamble, and adds, "In this region (Konkan, Canara, Malabar and Travancore) teak is "the chief tree of export, followed by blackwood (Dalbergia latifolia)." He in turn quotes from Oriental Commerce by Milburus of the year 1813 to say, "In the year 1799, 1,000 teak trees were brought down the Reypur River (Malabar)." (14).

On Gujarat Stebbing quotes one Mr. Boyce, Govt. Timber Agent at Surat, who visited the Vyara-Bansda area in 1841, and complained about the poor quality of teak obtained from the Dharampur forests in Dangs and "He objected to the method of getting the timber down by bullock carts..." (15).

Another quotation is from Colonel Jarvis, Chief Engineer at Bombay in 1843, "On the eastern skirts of the Goozerst Province, from Deesa downwards to the Nerbudda, are forests of varying breadth. These forests are the broadest and the trees in them the largest where the country stretches towards Malwa. The more useful timbers in these tracts are chiefly Pullus, Tunnus and Mhowa." (The glossary gives the meaning of Pullus as populus ciliata; Tunnus is not given; Mhowa is the well-known Mahuda).

"Crossing the Nerbudda are the Rajpipla Jungles... Teak is found there..."
"Above the Ghauts leading to Kandeish are some teak forests, but the most extensive portion is below, in the hilly and jungle tract skirting the Surat Districts." (16).

The same Chief Engineer is again quoted for the Panch Mahal area, "Dalzill visited and reported (1863) on the forests. He stated that the whole country north of the river which runs east and west past Godra up to the boundaries of the district was an open jungle ... Teak was to be found everywhere, in many places to the exclusion of everything else; but there was no teak timber of any size left in the forests. For a long period the tree had never been allowed to grow of any size." (17).

" 'To show', he said, 'the extent of trade in timber (chiefly teak logs and rafters) I saw at Rumā, which is one of the gates of the country leading to Ahmedābād, fully half a square mile of carts laden with timber, most of which was from Bārryāh... and where a speculator had established himself to take advantage of the abundant supply and absence of competition." (18). Rumā is not identifiable; 'Bārryāh' is Devgadhābarī. The distance from Bārī to Ahmedābād is about 120 km. It is interesting to speculate upon the fact as to why the teak of Panch Mahal had remained 'abundant' and 'without competition' till this time (see below).

A most revealing quotation then comes from Forsyth on the northern Sal, "The sal tracts are very inaccessible from the populous regions, the nearest point where any great supply could be had for the railway being about 100 miles, by a bad land route ... the railways finding it cheaper to import pine sleepers from Norway, and ironwood from Australia than to carry the sal timber growing within a hundred miles of their line." (19).

The above gives us an opportunity to compare the use of Sal and Teak in their respective regions. Sal, which grows in northern and eastern India, had become virtually impossible to procure by the late 19th century, and this will explain the absence of a wooden architecture in these regions, for it is only the straight-growing
Sal which could have here fulfilled this role. Teak, growing in southern and western India, was, for some reason, still plentiful enough to provide the timber for an architecture in wood. The discrepancy between the two situations is striking, and it will illuminate the differences in domestic architecture between the two areas. What we find, broadly, for India as a whole is that timber for building was available in the south and west, but had become rare in the north and east. If we apply this conclusion to Gujarat, it will explain why North Gujarat could not get its supply from north India but had to import it from as far away as the Western Ghats. In other words, the supply of building timber moved from South to North. And, as we saw, the quantum of wood used in our three structural categories was in direct proportion to the north-south distribution: the further north, the less wood used.

The "Dictionary of the Economic Products of India" of 1889 is a most exhaustive treatise on the subject, and it is worth quoting from it extensively on Teak:

"In Western India (after Brandis) it does not extent far beyond the Nhye (Nahi) ... In central India it attains its northernmost point in the Jhansi district ... and from that point the line of its northern limit continues in a south-easterly direction to the Mahanadi river in Orissa."

"Teak attains a large diameter; girths of 10 to 15 feet are not uncommon, and numerous instances of 20-25 feet are on record... The forests richest in large timber on the west side of the Peninsula are the Travancore, Anamally, Wynsed, Southwest Mysore, and North Kanara forests. The Dangs at the foot of the Khandesh ghats also have a considerable quantity of large timber. In the centre of the Peninsula are the Godavary forests..."

"It thrives on sandstone, limestone, and granite, and, in some of the valleys of the Khandesh Dangs, grows to great perfection on soil produced by the disintegration of basaltic rocks..."
But under all circumstances (quoting Brandis) there is one indispensable condition - perfect drainage and a dry subsoil. To the absence of perfect drainage I ascribe the circumstance that teak does not seem to thrive on level ground with alluvial soil... In such soil the teak grows freely and more rapidly than on the hills; but the trunks are irregular, fluted, and ill shaped; while on the adjoining hills the tree habitually forms tall, clean cylindrical stems...

"As teak is, for the most part, removed from its native forest by water carriage, and since it does not float till thoroughly seasoned, a peculiar mode of seasoning is practiced in many teak-growing regions. This practice, known as "girdling", consists in making a deep circular cut through the bark and sapwood so as to completely sever the communication in these layers above and below incision. A tree thus treated dies after a few days... The girdled tree is allowed to stand one or two years, often longer, if large ... (it) seasons more rapidly and more completely than a tree that has been felled green." (20).

An analysis of the above information reveals a number of vital points. To begin with, it confirms the geographical distribution of Teak as being mainly peninsular India, and even here mainly the western portion. It was precisely this western portion of India which had from very early times developed commerce by ship, and with which Gujarat must have come in contact during its own maritime trade. It is, therefore, our contention that the origin of the trade in Teak is to be found in the prevalence and cheapness of transport by sea, and not in the possibility of the land-route. The latter, though certainly known, was not the primary mode of supply. Land carriage was effected only after landing the wood at selected ports, i.e. to carry the material from ports to their hinterlands. Sea-carriage must have been the principle mode of supply to the major areas of Gujarat.
The land carriage as a primary mode could have arisen only when certain conditions were fulfilled. One, when demand had so grown as to make it competitive to bring wood by land over long distances. Two, when land communications with the hilly areas to the east of Gujarat had become sufficiently developed to make the trade feasible. Three, when these hilly and tribal areas had become sufficiently peaceful as to permit economic penetration. It must be borne in mind that all of the teak-producing areas of Gujarat are situated in inaccessible hilly tracts inhabited chiefly by the Bhils. These Bhils have been repeatedly described by observers as being given to turbulence, plundering and banditry. It could not have been convenient to enter their territory for any large-scale procurement of timber. This could only have become feasible when the general state of the administration had become settled, and it would appear that such a situation arose only after the advent of the British. The two main teak-producing areas, Dangs and Panch Mahal, were both under British administration, the former from 1842 and the latter from 1853. This would help to explain how it came about that 'abundant' supplies of timber from Baria had remained for so long unexploited.

Another important point relates to the transport of Teak by river. The information given shows that Teak could not be simply cut and floated downstream, but that it had first to be seasoned to make it light enough to float. In other words, the procurement of Teak involved a long-term organizational set-up with security of tenure. It is doubtful if this would have been possible at all times in primarily tribal areas. The above considerations make it appear very likely that the Teak procured at an early period was obtained primarily from more settled areas such as the Western Ghats and the Deccan, and that the primary mode of supply was by sea. Land carriage was then used only to connect ports with the hinterland.

The account of Watt then tells us that Teak which grew in alluvial plains was so deformed as to be by implication, useless for structural work. Now, this is a very significant piece of
information. It tells us in one stroke why, even though the plains of Gujarat were so fertile, they could never become a large-scale source of structural timber. And that even if they were covered with forest, such forest would not provide the kind of straight wood required for half-timbering. If this argument is pursued further, it would mean that even in the remote past the plains of Gujarat would continue to be devoid of structural timber, because the physical conditions governing the growth of Teak would have remained essentially the same. So that the availability of timber sketched out in the above is not merely true for the period described, i.e. roughly 1840 to 1890, but is true for at least the period of this study, namely 1600 A.D. to 1900 A.D.

References prior to 1840 regarding the supply of timber are few, but they confirm the general picture which emerged above. For Saurashtra there is a graphic account of 1808 by Major Walker in a letter to Bombay, "... In a country where wood is so scarce as it is in Kathiawar, fuel becomes a valuable article; and to supply this want (for the Mulukgiri forces) villages are stripped of their beams, their ploughs and every utensil that can be converted into fuel, nothing being left but the bare mud or stone walls of the house." (21)

J.S.Stavorinus was in Surat in 1774-1775 and noted, "Most of the wood for fuel, and all that is wanted for house or ship-building, is brought hither from Damen, by water-carriage." (22). Finally, Thevenot, who saw Surat in 1666-67 and particularly the domestic architecture, wrote, "The Houses of this Town on which the Inhabitants have been willing to lay out Money ... are pretty well built; but they cost dear, because there is no stone in the Countrey; seeing they are forc'd to make use of Brick and Lime, a great deal of Timber is employ'd, which must be brought from Damen by see, the wood of the Country which is brought a great way off, being much dearer because of the Land-Carriage." (23).
All of the accounts, from 1890 back to 1666, agree that timber was brought by sea from Daman. Such an extensive trade over time in a material which was also available within Gujarat itself confirms the analytical conclusions already reached above, namely that the teak in Gujarat was not easily accessible. And Thevenot specifically gives the most valuable information that land carriage was more costly than sea carriage, even for Surat which is so well-situated for supplies from Dangs. Thus, so far as Gujarat is concerned, the origin of the intensive use of teak-wood in domestic architecture cannot be related to the presence of indigenous teak, but to the supply by sea.

In the discussion hitherto, nothing has been said about the effect of rainfall on the growth of Teak. A recent study provides both a general picture as well as the details. The "History of the Dry Deciduous Forests of Western and Central India" by Meher-Homji says, "(i) The dry deciduous teak (Tectona grandis) forest occurs in the Bulsar, Surat, Dangs districts, in the eastern parts of the Broach, Baroda and Panch Mahal districts and also in parts of the Sabarkantha, Dungarpur... districts. After a discontinuity in the cultivated alluvial plains of north-west Gujarat, this forest reappears in the hilly regions of the Girnar and the Gir of the Junagadh and Amreli districts."

"The climatic conditions are characterized by annual average rainfall of 800 to 2300 mm and a dry season of 7 to 8 months."

"(ii) With decreasing rainfall (below 800 mm) and increasing dry season (more than 8 months), teak disappears ..."

"(v) In the plains of northern Gujarat and in the piedmont plains ... the vegetation type changes (to) ... the thorny types... Rainfall is 400 to 700 mm and the length of the dry season 8% to 9 months." (24),
While there are grounds for assuming that the rainfall and vegetation in North Gujarat was more plentiful in the past, there would have been no substantial change during the period under review. North Gujarat merges into the Marwar desert and its vegetation could scarcely have been luxurious even in the best of times.

Having surveyed the situation regarding forest wealth, transport facilities and availability of timber, it is useful to check this with some of the data given in the 1961 Census mentioned earlier. The reason why such a late Census is considered is that this is the only one to record the prevalence of woodwork in an exhaustive manner. Furthermore, the material collected on domestic houses has a great reliability in time because what is being examined, the house, has itself a life of at least 100 years, so that data collected in 1961 still retains its general validity for, say, the year 1861. The Census is thus an invaluable aid in reconstructing an earlier period.

All of the information gathered here was collected orally. While this may not be reliable in individual cases, taken as a whole it gives a very accurate description of selected aspects of the subject. One of the important questions put to house-owners was regarding the age of the wooden dwelling. The answers given by a wide range of owners from different wards of towns tallied very closely with each other, and even if we disregard the exact ages mentioned, the trend of replies is significant. Summarized below are the average ages of dwellings based upon the census replies (my calculation):

<table>
<thead>
<tr>
<th>Sub-division</th>
<th>Town</th>
<th>Average Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saurashtra/Kutch</td>
<td>Bhavnagar</td>
<td>80-100</td>
</tr>
<tr>
<td></td>
<td>Ghogha</td>
<td>150-200</td>
</tr>
<tr>
<td></td>
<td>Porbander</td>
<td>100-125</td>
</tr>
</tbody>
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Some of the significant conclusions which emerge are as follows. The citizens of Ahmedabad uniformly give a date almost 100 years earlier than Patan except for the Nagarvado ward. This is in harmony with the fact that Ahmedabad was more flourishing than Patan in our period and must therefore have begun earlier with woodwork. It is also closer to the sources of timber. Dholka gives a figure very close to Ahmedabad, yet it is clearly more recent. This is again in conformity with the economic situation. Umreth is the only town to give consistently a much older age, 200-250, and when it is recalled that Vadnagar and Umreth were once considered the 'golden wings' of Ahmedabad, this makes sense (25). Vadnagar was subsequently ruined and never recovered its position. Recurring among these figures is the age of 100, i.e. the almost exact age when the railway was extended to Ahmedabad via Surat, Broach and Baroda. Is this figure of 100 to be taken merely as a convenient date mentioned by house-owners in the absence of better knowledge? Or does it correspond to the number of generations which an average family remembers and hence gives as the date of the dwelling? It seems to us that it is the date when wood began to become cheap and plentiful and even the average family could afford to put up a wooden building. All the

<table>
<thead>
<tr>
<th>North Gujarat</th>
<th>Radhanpur</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petan</td>
<td>50 in most cases</td>
<td></td>
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<tr>
<td></td>
<td>100 in Khejadano Pado</td>
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<td></td>
<td>110 in Nishalno Pado</td>
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<td></td>
<td>100-150 in Nagarvado</td>
<td></td>
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<tr>
<td>Siddhapur</td>
<td>80</td>
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<tr>
<td></td>
<td>Many dated 1890 A.D.</td>
<td></td>
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<tr>
<td>Ahmedabad</td>
<td>100-200</td>
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</tr>
<tr>
<td>Dholka</td>
<td>125</td>
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</tr>
<tr>
<td>Umreth</td>
<td>200-250</td>
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<tr>
<td>Debhui</td>
<td>60-70</td>
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<tr>
<td>Broach</td>
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</tbody>
</table>

| South Gujarat       | Surat     | Few of 200 but not identifiable. |
towns of our survey are covered with houses having a mediocre quality of woodwork, devoid of almost all artistic embellishments - yet all made of wood. The fact that such ordinary houses could have been made of wood once brought from Daman and Malabar can only mean that wood had ceased to be scarce and costly - at least for a time - and that could only have happened due to the railway.

The above brings to a close our examination of the distribution of forests, the availability of structural timber, and the relationship to the three categories of construction. There is seen to exist a direct and proportionate relationship between wooden technique and availability of wood.

(2) HISTORICAL SURVEY:

As already explained, the system we are following is to proceed from the time closest to us to that which recedes into the past, i.e. to move from the known to the unknown. In this section we give an account of wooden architecture as it appears in time in its historical dimensions. As a precautionary measure, however, it must be emphasized that historical descriptions of domestic architecture are conspicuous by their rarity. In the introduction to the subject it was mentioned that the concept or definition of 'architecture' in the past was restricted to 'temple and palace', and hence it is these classes of buildings which appear in historical narrations. The ordinary dwelling does not figure as being worthy of notice except as an element of the picturesque in travellers' accounts. As we go further back in time the less information do we get.

But even these descriptions are not to be fully relied upon, for a reason which will become more apparent when we turn to settlement patterns. Here we may only give the gist of the matter. In general, the houses in Gujarat are placed in such a way that they form a kind of protective barrier to the surrounding neighbourhood. The outer walls of all these houses are virtually
bare of openings and present thus a fortress-like character to the outside. The entrance to the enclave of such houses is by a single entrance which is informally always kept under surveillance. Now, the travellers who passed through Gujarat must, in the first instance, have only observed these outer protective walls of the enclaves facing the public highways, and come to the natural conclusion that the domestic architecture of Gujarat was very plain. Had they entered the individual enclaves, they would have discovered a completely different world of considerable architectural charm. But to enter such an enclave was not easy for a stranger because it was precisely to keep him out that such a design was made. Only those who had stayed long enough to set up a more intimate relationship with the inhabitants could form a real judgement of domestic architecture. We have to keep this reservation in mind whenever we come across travellers' accounts.

Our own field survey of Gujarat brought the information received repeatedly from house-owners that their houses were some 150 years old. The manner in which the question was asked was not 'number of years' but 'number of generations' to the person who had originally constructed the dwelling. Most people knew the number of generations, including the individual names, of their forefathers upto the one who had founded the house. Six generations give us the 150 years, so that we may say that the architecture seen on the ground at the time of the survey was substantially the same as in the year 1800 A.D. Here a qualitative proviso must be mentioned. In the survey we selected only those areas where we could see houses which appeared to have some of those qualities which go towards defining architecture even in modern terms. In other words, they had to have some aesthetic qualities. Houses which were obviously made only with an utilitarian purpose, and there were thousands of such houses, were not examined individually but only recorded collectively. Therefore, when we speak of the age of houses in this study we always mean those which are of a slightly higher quality. There still remains, however, a discrepancy between the age of our own
houses and those of the census: a discrepancy of some 50 years (the majority in the census were reported as 100 years). The reason for this discrepancy is that we deliberately concentrated our attention on houses which seemed specifically 'old' or were situated in areas which had an 'old' character, or were 'historical'. Our purpose in doing so was to discover as indigenous and typical a tradition as possible, and our reasoning was that the older the house, the better would it reflect this tradition. The census, on the other hand, included every single house which had any kind of carving on it, no matter how insignificant or how recent. Hence the discrepancy in the two average dates.

While making the survey we could easily notice that there were towns which had changed rapidly during the last, say, 70 years due to commercial and economic activity. Increasing prosperity had induced house-owners to demolish their old houses and construct new ones in modern materials. The richer the town, the more had such change taken place. The town which showed the greatest change was Ahmedabad. All of the main roads had completely new structures, and whole wards had been renovated. The surviving old wooden houses were situated in the inner areas away from main roads and had remained intact only because commercial access to them was inconvenient. The opening up of new roads through old areas of the city would see a complete destruction of the old habitat. The towns which had changed the least were those which had remained behind in the economic sphere. These were, for example, Broach, Cambay, Kędyanj, Here whole streets and whole wards still showed a fully wooden character.

The point of these observations is the following. The old, unchanged character of towns such Broach or Cambay present us with a picture of Ahmedabad as it must also have once been. And the conclusion is, that all of these towns which today show relatively less of wooden architecture must once have been uniformly covered with wooden buildings. So that the picture we derive from our survey is of a Gujarat in the year 1800 A.D. having its urban
centres composed almost exclusively of wooden architecture. And the specific character of this woodwork can be judged from the many surviving examples, for these go back at least to that year. We may add here that we saw no reason to doubt the oral evidence tendered from so many different sources when it did not conflict with either common sense or other historical evidence.

The picture of an immense quantum of woodwork which thus arises is perfectly confirmed by the reports on the large imports of wood which we saw earlier. The large-scale denudation of forests noticed in Panch Mahal and Navsari between 1863 and 1883 the bringing in of wood from as/away as Malabar, all of these indicate a tremendous demand for timber and confirm the conclusions reached by other means. We are therefore fully justified in stating that wooden architecture was thriving between 1800 and 1880.

The evidence from literary records for both this period as well as earlier comes from various scattered sources. These are given as they occur in time.

The 1877 Gazetteer for Surat and Broach has something to say on house-building, "In the matter of house-building, the cheapness of timber brought from the Dang forests gives Surat an advantage over Ahmedabad and other cities of northern Gujarat. In Surat, each story of a building is built so as to be independent and self-supporting. The weight of the building rests not on the brick-walls, but on the large wooden pillars, placed at the corners and at intervals along the inner walls." It then continues, "Under the Muhammadans (1573-1759), even rich Hindus, through fear of exaction or robbery, lived in small poor-looking houses. But in the security that followed the establishment of British power in Surat (1759), Hindus not only began to build large and handsome dwellings, but spent much money in decorating the fronts of their houses with carved pillars and cornices of wood. The heavy eaves and the massive wooden doors were also highly
ornamented. This form of house decoration continued fashionable till, in 1837, the greater number of the large houses were destroyed by fire. A few still remain, some of which are said to have cost as much as Pound 10,000 (Rs.1,00,000)."

The houses built after the great fire of 1837 no longer went in for elaborate carving, but they continued to be in wood, "Instead of being square the wooden pillars in front are rounded (in imitation of the colonial Bombay style), and are taller and slighter than the old ones. The wood-work is almost entirely plain, no heavy eaves, carved cornices, or richly-cut capitals."(26).

This detailed description of Surat domestic architecture occurs because Surat was an important area of British administration and it provides a wealth of information which will be of use to us in the analysis of events elsewhere. To begin with, there is the passage about Hindus not constructing rich houses for fear of 'exaction'. This refers to the fact that if a Hindu revealed his wealth by a display of architecture, he was liable to attract the attention of the Muslim rulers who would draw the conclusion that he could well bear further taxation. Now, this is not a biased view. M.Mujeeb, in his great work on the Indian Muslims, confirms this.

He writes, "The social obligations of the Muslim merchant would bring his wealth into prominence; the caste restrictions of the Hindu capitalist kept his possessions concealed." The author agrees that Hindus deliberately did not display their wealth, but assigns this to 'caste restrictions'. What these restrictions were, he does not specify. The fact that British security prompted Hindus to invest in pretentious domestic architecture does not bear out his reasoning. He repeats his observation further on, but in a different context, "... the conditions of insecurity created by political conflicts or the attitude of administrators, had not forced them (the Muslims) to conceal themselves socially. The ruling class was reckless in its ostentation; the middle class (Hindu) practised self-effacement." (27). Here it is the 'attitude of the administrator' which is cited, and this is in harmony with the Gazetteer, Except for certain Hindu ruling houses,
the average Hindu citizen was not likely to display his wealth in view of the general conditions of insecurity. This was, of course, not a religious conflict, but a political one. The rulers happened to be Muslims, the rich merchants Hindus. It was the feudalistic relationship between the two which created the sense of insecurity.

This general insecurity finds confirmation from another more contemporary account, namely that of Abdul Halim Shsrar who lived from 1860 to 1926 and saw much of old Lucknow. His observation was, "In Delhi and Lucknow it was traditional to restrict outward pomp and ostentation to royal palaces and government buildings. The residences of wealthy men and merchants, however grand and spacious inside, had the outward appearance of ordinary houses. This was sound policy, for a house that was outwardly magnificent sometimes found favour with the King and its builder rarely got the chance to live in it. In addition, for a subject to build such a house was to show regal aspirations which were ascribed to insolence and rebellion and made it difficult for him to live in safety."

"For this reason, except for tombs, you will see no elegant buildings of ancient times in Delhi that were built by nobles or rich merchants. It was the same in Lucknow ...(28).

The above description makes it clear that it was not merely the Hindu who had to fear exaction, but equally so the Muslim, and that while the accumulation of wealth was permitted, its display as architecture was likely to draw the wrong kind of attention.

If this reasoning is justified, it would mean that in both Surat and elsewhere, it was the general conditions of insecurity which prevented any significant domestic architecture from arising. In our own context, it would simply mean that wood would continue to be used, but minus the richness in its treatment. We shall see later (page 48ff) that this conclusion is borne out by other observations. We shall also see how the rich Muslim merchant faced the same situation but under the social compulsion of having to display his wealth.
Once security had improved under British administration from 1759, the rich citizens (and not only the Hindus) would begin to invest in a richer architecture, and this may therefore be taken as a datum line for Surat. The other datum line is the fire of 1857. Between these two dates we may assume that wooden architecture in this sub-division had opportunities to flourish both quantitatively and qualitatively. After 1837 we get quantity but no quality. The intrusion of the 'Bombay Style' also dates from this time, and if we may assume that Surat, because of its relative proximity to Bombay, was the first important urban area in Gujarat to come under that influence, then we may date all the other similar intrusions as being subsequent to 1837.

Regarding Broach, the details given are meagre, but we get a reference to the residence of the famous Lallubhai having the finest wooden frontage between Surat and Ahmedabad (this building is discussed in detail later). This observation, and the one about Surat having some houses costing Pound 10,000, both clearly indicate that up to this time it was wood which was utilized as the preferred material to display architectural grandeur. This attitude towards wood is very important for an understanding of the architecture of Gujarat.

The Ahmedabad Gazetteer (1879) speaks of a sandal-wood plantation of 1787 near Dholka, and another of blackwood or kalejhad near Ahmedabad. (29). The latter wood used to be soaked in a swamp to make it black, and then despatched to Surat and elsewhere. This tree is thought by the Gazetteer to be probably Timru (Diospyros montana), but it does not state why blackwood should have been preferred. There is some confusion here because what is technically called blackwood is Dalbergia latifolia or Rosewood which occurs in South India. The tree is related to Dalbergia sisoo which is the well-known Shisham of north India. The Ahmedabad plantation could only have been a spurious one to produce an artificial blackness in order to market the wood as a superior Rosewood.
The Gazetteer continues, "Next to the city carvers ..., and in some respects with an even higher local name, are the Dholere carpenters. This, before the days of railway, was the chief timber mart in the district. Here Luvana and Venia merchants bringing logs of teak from Thana, and of blackwood and sandalwood from the Malabar coast, sell them to the district carpenters."(50) Dholera is not a port and at first glance it is not clear why it should have become a timber mart of such importance. But when its geographical location is examined, then it is seen to lie midway between the port of Ghogha and Ahmedabad, and at the same time conveniently situated for despatch of goods to much of Saurashtra. Dholera must then have become an entrepot for the timber trade by sea for much of northern and western Gujarat.

The same source says that, "Compared with Surat, timber is dear and scarce, and there is much less rich wood carving."(51). The relative dearth of wood as compared to Surat can only mean that Surat was closer to the sources of supply; and this in turn would mean that the source for Ahmedabad was not the teak found in the eastern fringes of North Gujarat, and that if Panch Mahal was a source, then its wood was costlier to transport to Ahmedabad than to bring it from Malabar! This is a very surprising situation for the year 1879, and it can only be explained by referring to the report given earlier (page ) that teak had begun to be scarce in Panch Mahal from about 1860).

The comment about Surat having more wood carving than Ahmedabad is certainly wrong and is an example of what we had mentioned above, namely that the closed enclaves of Ahmedabad were not readily visible to outsiders. Surat, in contrast, has few such enclaves and being an open city discloses its character at first glance. The Gazetteer itself provides proof of this when it states, "Some of them (i.e. houses in the city ward known as Khadiys), especially those about fifty years old, are ornamented with much rich and finely cut wood work. From their fondness for this part of the town and the want of open sites, the families as they grew larger, added story on story to the old houses, the
upper stories often jutting out so far that, when two opposite houses were enlarged, their caves almost met across the roadway." (32). The mention of 'fifty years' would put these houses in about 1830 and it confirms our conclusion that this was a flourishing period for woodwork. Another house, that of the Ahmedabad Nagarseth, is specifically mentioned as, "It is a building of great size enriched with some of the best Ahmedabad wood carving" (33). This building is no more. But another one, equally famous, that of the Hutheesing family built about the year 1848 still stands with all of its magnificent carvings intact.

The Baroda Gazetteer (1883) has already been quoted as noting that "... the best wood-carving is found in Pattan, Sidhpur and Vadnagar." It mentions Dabhoi passingly, "There are a couple of streets in which are good houses decorated with tasteful woodwork. (34). And Kapadvanj is praised, "The Bohora's quarter has some fine buildings ... and many old dwellings very lofty and rich in wood carving." (35).

All the above remarks from the series of Gazetteers add up to a picture in which, although timber was in many parts scarce, wood nevertheless was used in domestic architecture to 'put up a show'. This wide-spread emphasis on wood, rather than on brick or stone, is significant and tells us that we are dealing with a strong tradition. Whether its origin was structural or decorative will be examined later.

Among the reports prior to the Gazetteers, there is an account by Louis Rousselet who visited India as a traveller in 1864 and wrote a fair amount on the architecture. He consistently describes Western India as having an architecture in wood, and speaking of the 'native' areas of Bomansay wrote, "The houses which skirt the bazaars are generally laid out in several storeys, and constructed of wood and bricks. Their fronts, adorned with verandahs, the pillars of which are delicately carved and painted in lively colours, afford a peculiarity of appearance altogether unknown in exclusively Mussulman countries." (36). He is making
a comparison with West Asia which he had earlier visited. This native style of Bombay had its origin in Gujarat, for many of the families who settled there were from this region. Thus, while the 'Bombay' style was invading Gujarat, the reverse was also taking place.

At Poona, Rousselet saw, "The houses of the wealthy, whose basements are of brick and the upper storeys of wood and plaster, and remarkable for their carved beams, and their panels covered with paintings of gods, elephants, and tigers, executed in very lively colours." (37). In Surat he saw in 1865 vestiges of the devastation caused by the fire of 1827, "The streets were still filled with blackened ruins, and here and there stood a few gloomy houses, with their brick walls, their carved balconies, and their wooden columns, the sole remains of the once-famous bazaars." (38).

At Beroda what struck him was, "... and the houses are nearly all of wood, and of that picturesque style peculiar to the territory of Goojerat." (39). He made a similar observation about Ahmedabad, and this comparative statement coming from one who had traversed both West Asia and Western India is invaluable because it confirms the fact that there was indeed a 'style' of woodwork peculiar to Gujarat.

Regarding Kaira, "This is the most perfect type of a Gujarat town. The streets, narrow and tortuous, are clean and well-kept; the houses, built of brick, are profusely adorned with wood-carvings of very original designs. In the centre of the town stands a large Jain temple, in which may be seen some beautiful specimens of carved wood ... " (40).

Finally on Ahmedabad, "The houses of the rich inhabitants are built of brick and wood and all display that aspect of originality which a profusion of balconies and small sculptured columns gives to the Gujarat houses. It is peculiar to Ahmedabad that these houses are never painted ..." (41). (This tradition survives to this day !).
Rousselet confirms in full the fact that wooden architecture was flourishing in Gujarat about the year 1864.

Among the vernacular sources for Gujarat, and probably the best, is the description of Ahmedabad given in 1851 by Meghnlal Vakhstehchand, written in Gujarati. Vakhstehchand was a resident of Ahmedabad and had seen and heard something of Maratha administration, and at this time he could make an instructive comparison with that of the British. Ahmedabad was under the British from 1817, and to Vakhstehchand the change for the better was so enormous that he could only describe it as a 'Ramarajya'. The decline of the city under Maratha rule, the general sense of insecurity, these are graphically described. He says that the decline had already commenced from the time of Jahanir, and a succession of bad administrators led to, "... ruin of all the Puras (suburbs) and of the city ..." (42).

Regarding the Marathas, "All the places which had come under Maratha rule ... were subjected to rapine ... because each (district) was given to the highest bidder for revenue..." (43). This led to large scale depopulation and ruin, but after British rule these very people began to return and make fresh settlements. (The translation is by me).

The decline of Ahmedabad because of a ruinous administration has been noted by many scholars, and in a recent study Kenneth L. Gillon has written, "From the second quarter of the seventeenth century, Ahmedabad fell into decline from which it was rescued by British rule and modern industry." (44). This has to be accepted as fact, and it would give us an indication of the state of domestic architecture in the years prior to 1817. It is interesting to find here a similar situation to Surat where it was Muslim administration which was being depicted as the source of architectural mediocrity. As already stated, it was not a matter of 'Muslim' or 'Marathas', but of a general break-down of administration of a feudalistic nature.
Vakhatchand pointedly describes the architectural situation after British rule, "As compared to the previous administration, where the majority of houses had been of two storeys, now houses of two storeys began to made into three storeys." (45). It is a great pity that he says nothing about woodwork, and the probable reason is that the wooden house was to him a matter of everyday life and not worth extra comment. It was only the foreigner who marvelled at the wooden carvings. Vakhatchand mentions the indigenous timbers used in house-building (for example Mango, Neem, Rayen) in the surrounding parts of the district, but does not mention the "expensive" timbers so as not to make his account too lengthy! (46).

A contemporary of Vakhatchand was H.C. Briggs who wrote on the cities of Gujarat in 1849. His mention of woodwork is very brief. On ship-building at Surat he wrote, "The great detriment at the present time towards availing of Surat for building large craft, is the enormous charge for timber: however, the forests of Bansa and Dheramgam (modern Dharapur) can still afford liberal supplies of teak. The monopoly once acquired by Daman has long since been destroyed ..."(47). If teak was expensive at Surat what must the cost have been at Ahmedabad? The mention of the Daman monopoly only confirms the fact that it was sea carriage which had originally command of the teak trade.

At Cambay he saw a Jain temple of the Hutheesing family of Ahmedabad being repaired, "The wooden pillars were curiously wrought, and the wooden ceiling exhibited an attempt at fret-work." (48).

It is curious to find Briggs saying little about the ruins of the fire of 1837 during his visit to Surat, while Rousselet who came 15 years later mentions it dramatically.

A traveller coming from the opposite side of India, from the east, was Bishop Heber, 1824-25, and after reaching the borders of Gujarat he saw in great detail the Bhil houses. Upon his entry
into Baroda he noticed, "... (the city) which is large and populous, with tolerably wide streets and very high houses, at least for India, chiefly built of wood, which I had not seen for a long time, with tiled sloping roofs ... The palace, which is a large shabby building, close to the street, four stories high, with wooden galleries projecting over each other, is quite a specimen of this kind." (49).

The observation of the author that he had not seen wooden buildings for quite some time can only mean that he had seen none in eastern or northern India. This confirms our own observation that the appearance of wooden architecture in Gujarat was indeed unique and the only comparative distribution was in the western Deccan. The height of the Baroda houses, as compared to those of Ahmedabad reported by Vaketchand, would indicate that Baroda had not experienced the kind of decline which had affected Ahmedabad. The permanent nature of the Gaekwad settlement in Baroda saved that city from the exploitation of a mere revenue-collector.

Kaira impressed him with its carvings, "... and the houses solid and lofty, with sloping tiled roofs, and a good deal of carving exhibited on the wood-work of their gable-ends and verandahs." (50) He also mentioned the wood carvings of a Jain temple.

Surat he found, "... a very large and ugly city, with narrow winding streets, and high houses of timber-frames filled up with bricks, the upper stories projecting over each other." (51).

With these references we begin to approach the turn of the year 1800, and it becomes clear that wooden architecture was dominant unto that time. Regarding the supply of timber, a report of Francis Buchanan about 1800 for South India is very revealing, "Timber, for building and furniture, may be had at Seringapatam of excellent quality; but it is dear; as it is brought from a great distance by land carriage. The principal supply comes from the neighbourhood of the Western Ghats." (52).
Once again it is the Western Ghats which is identified as the main source of structural timber, both for the Deccan as well as for Gujarat, and this cannot be without significance. How such stands of teak were left intact as late as 1800, when all over the rest of India forests were being depleted, is intriguing, and the answer to this problem would perhaps reveal how wooden architecture could suddenly flourish in Gujarat at solate a period.

We begin now with reports which go beyond 1800, and the first is Walter Hamilton who visited Gujarat and wrote, "In 1780, the villages round Ahmedabad were large, and built of brick in timber frames." (53).

Gersten Neibuhr was in India in 1763 and about Surat he particularly noticed, "... but they have in great plenty, and at a low price, that excellent wood called Teak (sic), which is not liable to be attacked by worms, and is so lasting ... "(54). He does not speak of wooden buildings.

James Forbes spent a long time in India and served in Gujarat, being posted at Dabhoi, and wrote extensively on many aspects. Yet, he rarely mentions woodwork. He was well acquainted with the famous Lallubhai of Broach and must have seen his residence which still stands and is of wood, but he does not remark upon it. Instead, his account is full of the dissolution of once flourishing cities in Gujarat. Some of these give a very melancholy picture of Gujarat in the middle of the 18th century.

Of Surat in 1772 he writes, "The public buildings at Surat are few and mean: the durbar or nabob's palace, though extensive and convenient, makes but a shabby appearance ... and the serais, or caravansaries, much out of repair."(55). When he visited it again in 1783 he found, "A great change had taken place at Surat during the last ten years. The splendour formerly kept up in the nabob's durbar, and the style of Mogul magnificence in which the principal Mohomedans lived on my first visit, seemed almost annihilated." (56).
Forbes was in Cambay in 1775, "Cambay ... is now entirely changed, and its grandeur mingled with poverty and desolation; uninhabited streets, falling mosques, and mouldering palaces ... formerly every street was fortified, and defended by gates; a few in the principal streets remain, but the great part have shared the common fate of the city." (57). Elsewhere he blames this on the collapse of Mughal administration and the oppressive rule of the local nawab (58).

On approaching Ahmedabad, "The villages are large and populous, and the houses built of bricks in frames of timber."(59). While the city itself he found, "Ahmedabad ... seems hastening to its dissolution; from covering an extent of thirty miles, it had dwindled to less than six; much of that space, even within the walls, was covered with ruins ..." (60).

As Collector of Dabhoi from 1780 he reported to the East India Company, "The purganna of Dhuboy contains eighty-four villages, exclusive of the capital. Four of these villages, in consequence of the late troubles, are entirely deserted, and a few of the remainder very thinly populated ... during ... (the) campaign ... more than half the villages were burnt to the ground ..." (61).

The above descriptions show us a Gujarat in decline, and in particular those towns which had harboured large Muslim populations ruled by various local nawabs or governors. The decline in prosperity of this group had already commenced with the break-down of Mughal administration and it was hastened with the coming of the Marathas. Ahmedabad, once said to have a majority of Muslims, had by the time of the British become a predominantly Hindu city. Maganlal Vakhatchand pointedly wrote, "As the ruined plots of land began to be sold bit by bit by the Muslims, they were bought up by the people (meaning Hindus) who constructed houses upon them for renting out." (62).
The decline of the Muslims arose, not from any deliberate policy, but because their sources of maintenance and income were now usurped by other communities. Administration, military service, revenue collection, these sources now went to a new class of entrees, mainly Hindus, and in a way we may speak of a transformation in the social situation. It was this new class which benefited by British rule and which, gaining wealth, began to construct better houses. This is markedly noticeable in our field survey. Despite our best efforts, we were unable to find many surviving examples of significant Muslim residences, apart from those of some nawabs, in most of the towns.

The only Muslim houses which had survived were of the merchants, particularly of the Voras, and of some families which had taken service with the new rulers. By and large, it is the merchant class which shows a growing prosperity about this time and whose houses later survive in great opulence. Thus, when Forbes speaks of dissolution, he seems to mean only the urban areas and within these, those who had up to then wielded political power. The coming of the Marathas completely disrupted the traditional social pattern existing till then, and while it caused the decline of the previous holders of power, it did not at once replace this with a new and settled social system. The Marathas had not come to conquer territory but only to gather revenue; their presence did not stimulate a settled way of life, and architecture and civic life never flourish under such turbulent circumstances. This is one very important reason why Forbes could see so much of decline in Gujarat in the late 18th century.

He too makes the same observation about oppressive rule and poor architecture which others have noticed, "The despotism and avarice of the Indian sovereigns generally prevent their subjects from making that display of fortune, which wealth and situation authorize in other countries; consequently within decayed palaces, ruinous courts, and closed gates ... it is not uncommon to find a house and garden fitted up in good style ..." (63). In other
words, wealth was to be concealed. He could not find words severe enough to describe Maratha rule, "I shall not attempt a detail of the cruel oppression and mean advantages of the Marhatta pundits and governors ... Their severe exactions have already rendered the district of Ahmedabad... almost a desert; and thousands of industrious subjects are annually leaving it, to seek protection under milder governments." (64). These are hard words and may perhaps be exaggerated, but there is no doubt that the Maratha system of competitive revenue-farming was ruinous to the province for it put the people at the mercy of the highest bidder. The traditional links between revenue-collector and the people were broken and replaced by purely mercenary considerations.

The decline of Gujarat finds confirmation from another source, namely that of the Mārd-i-Ahmadi which gives a contemporary account about 1746 and describes the devastation caused by Maratha attacks. Thus, "Vadnagar was an ancient prosperous town. They (Marathas) got large sums of money from house-hold materials and by digging buried treasures. They were not content with that. They set fire to the town. The town got burnt with all its excellent houses beautifully painted in an artistic fashion." (65).

Ahmedabad suffered heavily, particularly the outlying suburbs or 'Puras' which had once been flourishing. Resulabad, the site of "... the residence of royal Syeds, sons and grandsons of His Holiness Shah 'Alem..." had become desolate. (66).

The author has some information about woodwork, "Walls of houses are built of baked bricks. The roof is covered with teak-wood and clay tiles. Stone is used in Saurath (Saurashtra) in place of bricks." And further on, "Teak wood is used for roofs, pillars, etc. of buildings, (and) ship-building. Sisem is very much like and similar to ebony wood. It is utilized for making raths, etc." (67).
On Cambay, "His Majesty learnt through a report of a courier from Khambhayat Port that Syed Ahsanullah Khan, the Port Officer constructed a big diwankhana attached to a palace in the city. He bought sag timber (teak-wood) worth seven thousand rupees ... from timber merchants." (68).

We now come to those references which take us past the year 1700. The closest in time is Cereri who visited Surat in 1695 and saw only small houses built of mud and brush-wood, and, "... there are not above a dozen good ones (houses) belonging to French, English, Dutch and Mohomtan Merchants." (69). This poor description of Surat is echoed by Ovington (1689), "The Houses are many of them fair and stately, the 'unproportional to the wealth of the Inhabitants, who are always concern'd to conceal their Riches, and therefore never exceed in any Luxurious Furniture, lest it should prove too powerful a Temptation to the sverice of the Mogul'..."(70). This opinion of Surat, of being till then not a very developed town, is in conformity with other accounts, as will be seen. The description of the 'European' houses being superior actually refers to the fact that some of them were indigenous houses given on rent to the foreigners. John Fryer (1672) writes of the English, "The House the English live in at Surat, is partly the King's Gift, partly hired, Built of Stone and excellent Timber, with good carving, without Representations ..."(71). And then, "The Town has very many noble Houses, of the Moor-Merchants,... They (the Banians or Hindus), for the most part, affect not stately buildings, living in humble Cells or Sheds."(72). Here we come across two recurring points. The wooden houses exist and have carvings, but are now few and of non-Hindus. The Hindu population is again and again described as avoiding any display of wealth in its architecture. So many references which reinforce each other compel us to accept this as a plain fact. Thus, while the Hindu houses may also have been of wood, they were obviously too plain to merit any particular praise.
Thevenot has already been quoted for the fact that in the houses, "... a great deal of timber is employ'd..."(fpage).

Francis Bernier (1661) finds the same oppressive rule prevalent, and is incensed by it, "The persons thus put in possession of the land (meaning the governors and those in authority) have an authority almost absolute over the peasants, and nearly as much over the artisan and merchants of the towns and villages... and nothing can be imagined more cruel and oppressive than the manner in which it is exercised."

"This debaseing state of slavery obstructs the progress of trade... When wealth is acquired... the possessor, so far from living with increased comfort and assuming an air of independence, studies the means by which he may appear indigent: his dress, lodging, and furniture, continue to be mean..."(73).

"The houses, too, are left in a dilapidated condition, there being few people who will either build new ones, or repair those which are tumbling down."

"It is owing to this miserable system of government that most towns in Hindostan are made of earth, mud, and other wretched materials; and there is no city or town which, if it be not already ruined and deserted, does not bear evident marks of approaching decay."(74). This general description of India finds confirmation with regard to Surat by an account of Tavernier (1640-1665).

"... and the houses of private persons are like barns, being constructed of nothing but reeds, covered with cow-dung mixed with clay... In the whole of Surat there are only nine or ten well built houses, and the Sheshbender or chief of the merchants, owns two or three of them. The others belong to the Muslim merchants, and those of the English and Dutch are not the least fine... These dwellings (of the foreigners) are, nevertheless, only hired houses, as the King does not permit any Frank to possess a house of his own..."(75).
Elsewhere he writes, "... and that they (the peasants) are reduced to great poverty, because if the Governors become aware that they possess any property they seize it straight away by right or force. You may see in India whole provinces like deserts, from whence the peasants have fled on account of the oppression of the Governors." (76).

Even if one disagrees with the causes of poverty and insecurity of the kind described above by various observers, the fact of general decline seems indisputable. To discover the causes may be open to interpretation and controversy; the visible signs of decline are too obvious to be so questioned. Sir Thomas Roe has the same to report, "In general, all the old cities are beaten downe, by what policie I understand not; but the Kind seeketh the ruine of any thing not begunne by his ancestors, so that all the lané hath not an house fit for a cottager, but in such cities as he favoureth. Surat is best builded of any ..." (77).

W.H. Moreland, who studied the agrarian system of Muslim India, may be quoted here to underline the above situation, "... and the (economic) system in fact broke down; but during the longer periods when the system worked, its worst incidents were the repression of individual energy, and the concentration on a barren struggle to divide, rather than a concerted effort to increase, the annual produce of the country." (78). Our point in all these quotations, which do not bear on woodwork, is to show that as we progress backwards in our account we find an environment in which domestic architecture could not in general flourish. What flourished was perhaps the palace and the aristocratic residence, but the dwelling of the average citizen was conspicuous by its mediocrity. And this must have reflected on the quality of the materials used and in the manner in which it was displayed. The numerous accounts of carved wood become more and more infrequent, and this is for us an indicator of decline in so far as Gujarat is concerned. If we compare the wealth of wood-carving described in, for example, the 1961 Census with the meagre descriptions seen in the 17th century, the clear impression which arises is of a domestic architecture which moves from richness to plainness. In the 19th and 18th century we
find many citizens, not just the ruling aristocracy, investing in a rich architecture which survives to this day. In the period before that we find the citizens faced with a sense of insecurity which made them 'conceal their wealth'. The contrast is striking.

References to woodwork are, however, not completely absent, and we continue with these. Thomas Herbert (1628) on Surat, "The houses are indifferent beautiful; some (as to the outside) are of carved wood ..."(79). After so many descriptions of Surat, it is a relief to turn to Ahmedabad and find no less than Jahangir making the observation, "The city of Ahmedabad did not seem to me so worthy of praise as I had heard ... Its buildings are all of wood and the pillars of the shops slender and mean ..."(80). This was in about 1618. Jahangir possibly never entered one of the Ahmedabadi enclaves and saw only the bazaars, hence his poor impression of the city. But here we have positive evidence of the dominant use of wood in domestic architecture in both North and South Gujarat as far back as early 17th century. The appearance of a wooden architecture is so striking and novel that it never fails to provoke a comment.

Coming now to the period prior to 1600 A.D., we find descriptions of a general nature but little on woodwork. The paucity of references to wood in the Ain-i-Akbari (1596) is both intriguing and significant. Among the timbers mentioned in Ain 86 is Shisham and some which are either inferior such as Babul, or not identifiable, but there is no mention of our two most important structural timbers: Sal and Teak. Ain 90 gives the weights of 72 kinds of timber and mentions Sal (written as Sâl by the translator) and Sagesh (not identified by the translator). The latter is with certainty teak-wood (Hindi: Sàg or Sàgwén). Under the estimates of rates for House-building in Ain 88 there is nothing for wood-carving or woodwork, although the rates of carpenters under the head of Labourers appears in Ain 87. The
picture which emerges is clearly of wood as a very insignificant item in the matter of construction, and this tallies with the extent remains of Mughal architecture. There we find the pride of place being taken by stone. The use of stone by the Mughals, and by the princes of Rajputana, made it into a model for those who wished to imitate royalty. Thus, very many of the palaces even of Gujarat used stone rather than wood, because that was the 'royal' material.

The account of Father Monserrate (1580-90) on Indian towns is of a general nature but since it confirms much of what has been quoted above, it is reproduced, "Moreover the houses are purposely built without windows on account of the filth of the Streets (this reasoning is wrong). None the less the rich adorn the roofs and arched ceilings of their houses with carvings and paintings: plant ornamental gardens in their courtyards ... Yet such houses will show nothing in their facades or entrances by which the eye of the passer-by might be attracted ... (these were Muslim Houses) ... The Brahmanes (meaning Hindus) have another style of architecture; but they also beautify their houses with cleverly executed statues and sculptures either in wood or stone ... "(81). The real reason why the Muslim house exteriors are so plain will be discussed later.

With the above we come to the end of a set of descriptions which go back to the late 16th century, and since the state of the architecture mentioned therein must have been in existence at least for 20 to 30 years prior to the observations made, we may conclude that the architecture about the year 1550 was essentially the same. When Ahmedabad is described in 1613 as being of wood, that tradition must have had its origins in the preceding years, and it seems to us that so novel a tradition must have taken at least a few generations in order to develop and that we may safely posit its existence even in 1500 A.D. The other interesting point which emerges is that this wooden tradition did not exist in north India about the year 1600, otherwise it would not have
struck Jahangir so forcibly. At the other end of the time-scale, we find Bishop Heber echoing the same sentiments in 1820, namely that he had not seen a wooden architecture such as Gujarat had for quite some time in his travels in north India. And so we can state with emphasis that if this wooden tradition at all came from elsewhere, it was not from north India as it then existed about 1600. The only region having a comparative tradition was western India, and we shall see later that this is not without significance.

At this point in our account we must continue the search for references to woodwork in even earlier periods, and include sources which are not entirely historical. The reason is that the continuity in the references is broken, actual eye-witness accounts become scarce, and semi-mythical accounts are found. The closest in time is Srikumārapāla Prabandha of Jinamandana who wrote about 1435 and described events in Gujarat of the 12th century. The account is here say, and yet it contains memories of a living tradition. The material in this account is however so obviously borrowed from an earlier work that instead of quoting from Jinamandana we quote directly from the original source. And this is the famous work Prabandhacintāmāni of Merutunga written about 1304. The events described are still earlier in time, but not so remote as to have become complete legends. Given below are a series of references from this work:

"He (Sajjana, a police magistrate), without informing the king, devoted the proceeds of the taxes for three years, to building on the holy mountain Ujjayanta a new stone temple to Neminath in place of the wooden one which he took away."(82).

"Can the diffusion of my fame be made to last till the end of the Kalpa by any contrivance? (Kumrapāla of the Chaulukya dynasty puts this question). When Hemachandra heard this speech of the King's, he answered, "By relieving the whole from debt as Vikramaditya did; or restore the wooden temple of Somesvara, which is almost destroyed by the neighbouring sea, owing to the showers of ocean spray that fall over it..."(83).
The temple referred to is the Somsnatha of Saurashtra later pillared by Mahmud of Ghazna, and the meaning is that the King should replace the wooden structure with one in stone.

"When he (Kumarspala) went to adore, in accordance with prescribed ritual, the *cāitya* (Śatrunjaya and elsewhere), a mouse seized a taper, ... , when it was all blazing, and ran into a hole in the wooden temple ... the minister ... conceived a desire to restore the dilapidated (wooden) temple ..." (84).

These three references are quite decisive in their content and implication, namely that there were wooden temples in existence in Gujarat whose condition had become precarious, and that it was an act of great piety to re-build them in stone. There is no exaggeration here, no poetical excess, but a clear statement of fact. Commissariat refers to this position as follows, "In the opinion of Dr. Bhagvanlal Indraji, the first dynasty to erect stone buildings in Gujarat was that of the Chaulukyas, the temples and buildings before them being of wood and brick." (85). Our account of the wooden tradition of Gujarat, as seen hitherto, overwhelmingly supports this opinion. The clear predominance of wood in the domestic architecture of a whole province, stretching back for 400 years up to 1500 A.D., and then finding startling corroboration with an account going back to the 12th century, renders that early account into objective fact.

Confirmation of this use of teak in the temple of Somanatha comes from other sources. The *Kamil-ut Tawārikh* of Ibn Asir (circa 1230 A.D.) describes Mahmud's campaign and writes, "This temple of Somnath was built upon fifty-six pillars of teak wood covered with lead ..." (86). M. Nazim in his "The life and Times of Sultan Mahmud of Ghazna" quotes from Ibn Zafir to the same effect and adds that the teak was imported from Africa and that "The floor was made of planks of teak, and the interstices were filled with lead." (87). So many correspondences between different reports having differing validity nevertheless can only add up to
one conclusion: Gujarat had wooden temples in the 11th century. And if temples were of wood, then we can assume that this was because houses were also of wood; in other words, the tradition of a wooden architecture was alive. The fact that Merutunga could speak of wooden temples at that time when he wrote (14th century), was thus nothing extraordinary.

A writer who was almost a contemporary of Merutunga was Ibn Battuta (1333) and about Cambay he wrote, "Cambay is one of the most beautiful cities as regards the artistic architecture of its houses ... Among the grand buildings of the city is the house of Sharif as-Samiri ... I have never seen stronger pieces of timber than those used in this house."(88). Ibn Battuta does not directly speak of wooden houses, but the fact that its structural woodwork struck him as being remarkable is an indication that what was here different was the timber. As will be seen hereafter, it is precisely this massiveness of the woodwork that characterizes Gujarati architecture.

We now have to leave out many centuries because no evidence on towns or materials of houses in our chosen region is available. The next reference comes from Yuan Chweng (Hiuen Tsiang, 630-644 A.D.) and it is of a general nature, but the fact that he visited Gujarat renders it to some extent relevant. He wrote, "As to the construction of houses and enclosing walls, the country being low and moist, most of the city-walls are built of bricks, while walls of houses and inclosures are wattled bamboo or wood. Their halls and belvederes have wooden flat-roofed rooms, and are coated with chunam, and covered with tiles burnt or unburnt. ... But the Buddhist monastries are of most remarkable architecture. ... The rafters and roof beams are carved with strange figures, and the doors, windows, and walls are painted in various colours."(89).

The above description would indicate that houses in India as a whole were of wood, and that the architecture of Gujarat did not distinguish itself on this score from the rest of the country. If this evidence is accepted, despite its briefness and
generalization, then we would have to conclude that the woodwork seen in Gujarat is merely a survival of a much larger wooden tradition. And this woodwork survived, not because of any specific Gujarati preference for wood, but because the supplies of wood were in this region still available whereas they had become virtually extinct in the northern parts of India. We may leave this conclusion untouched for the moment; it will be shown later that it is not accurate.

The remaining references to woodwork, even when available, do not assist us in understanding the situation in Gujarat for they do not specifically refer to this region. One final quotation is, however, given from Greek sources because it particularly mentions towns situated on the sea-coast, and this may have a strong relevance to our area. It is from Arrian, “But of their cities it is said ... that such cities as are situated on the banks of rivers or on the sea-coast are built of wood instead of brick, being meant to last only for a time ... while those cities which stand on commanding situations and lofty eminences are built of brick and mud” (90).

This description reinforces the whole trend of the earlier quotations, namely that in coastal areas, to which we must include Gujarat, woodwork was predominantly used. There is particular harmony between this description and those which disclose western India and the Deccan as the home of woodwork and of teak-wood. A very interesting proof of the trade in wood comes from the Periplus of the Erythrean Sea translated by McCrindle, where he lists the articles forming items of trade and among them is, “Beams of wood. Exported from Barugaza to the marts of Oman and Apologos” and again, “Logs of ebony (Diospyros melanoxylon). Exported from Barugaza ...”. (91). Both these Greek sources make it very clear that wood was a significant material with reference to Western India, and while teak is not specifically mentioned, the fact that “Beams” were exported makes it very probable that it was indeed teakwood. That teak-wood certainly did feature as an item of trade is found in Richard Burton's account of Mecca and Medina. He quotes Arab sources
as reporting that, "The Second Masjid was erected A.H.29, by the third Caliph, Osman ... He made the roof of Indian teak ..." and further that in the ceiling even of the Ka'bah teak planks were used, while Ibn Jubayr is quoted for teak columns being used inside. (92). This makes it certain that teak was an item of export from India from about 160 A.D., the date of the Periplus, and continued up to at least the 7th century A.D. It adds up to a total picture in which wood was both plentiful and being transported by sea, and it harmonizes in a remarkable manner with the practice shown existing in the 19th century A.D. That Gujarat and Gujaratis were involved in this trade of wood is very probable.

Turning to the still earlier period, we now come to what is called the Buddhist period, and here the use of wood is easily documented because all the surviving stone reliefs show palaces and dwellings in wood and bamboo. The nature of the domestic architecture being wooden is so obvious and has been noted by so many scholars, that a few quotations will suffice to illustrate the situation. A.K. Coomaraswamy noted, "Materials: It is shown beyond doubt by the references and the reliefs that the material chiefly employed in the construction of many-storeyed pasadas was in the first place timber ... " (93).

Henry Cousens, "A close examination of these rock-temples shows that they follow wooden prototypes, and this may be seen in the Nasik caves, where not only are the beams and joists faithfully copied, but the wooden pins in the ends are not even omitted. In the earliest chaityas, which are vaulted chapels, wooden ribs exist to the present day ... " (94). (It should be here added that the woodwork of Karle was identified as being teakwood by George Watt, "As manifesting its durability, mention may be made of the fact that the great umbrella over the Htee in the Kerli cave is still in existence, though it is most probably at least two thousand years old." (95).
James Pergusson, "When we first meet the Buddhist style it is in its infancy - a wooden style painfully struggling into..." (96)

None of the Buddhist reliefs gives us an indication of the architecture then existing in Gujarat, the nearest in physical proximity is that of Nasik. When later a comparison of this proto-wooden style is made with that of Gujarat, we shall see how far the two are related.

The very last source which has to be examined in the search for woodwork in our region is the architecture of the Indus Valley Civilization. This civilization becomes particularly important for Gujarat since its remains have been discovered here. At the very outset it must be made clear that none of the house-plans illustrated or described shows any kind of half-timbering in the normal sense of the word. Although ceilings were made of timber joists and beams, the load was taken directly on the walls and not on wooden columns inserted within walls. Columns were conspicuously absent, "A possible reason for the rarity of the column at Mohenjo-daro, whether square or rectangular, was the ample supply of tall timber which permitted considerable spans to be covered without extra supports."(97). The timber so far identified was Deodar and Shisham, not Teak. But on the other hand, something was discovered which is of great significance for our purpose, namely the use of bonding-timbers:

At Mohenjo-daro, "This tower is raised on burnt-brick foundations reinforced by horizontal timbers... The granery which is contemporary with the platforms and early towers is also laced with timber." And again, "The horizontal beams of timber lacing the podium (of the granery) had decayed and resulted in the collapse of brick work at places."(98).

If now a reference is made to our three categories of wooden structure given earlier (page 35), it will be seen that category c exactly corresponds to the lacing timber described for Mohenjodaro. Here, then, we find a technique of wooden
construction going back some 3000 years and prevalent in an area which included present day Gujarat in its spread, and which is in existence in houses constructed barely 150 years ago within this same area. The continuity of this technique of construction seems thus to be demonstrated for the whole of the known period. And when it is considered that this technique (corresponding to c) is more dominant in Saurashtra and parts of North Gujarat, i.e. in an area adjoining to the centres of the Indus Valley Civilization in Sind, then we may conclude that here is an example, not of similarity, but of identity. The origin of category c is clearly established.

With this we come to the end of our historical survey of woodwork in Gujarat. Those many authors who have not been quoted have been left out because either they had nothing on woodwork, or else their descriptions were repetitions of others already given in the text. The references from the ancient literature in Sanskrit have also been left out here because they do not have any known relevance to Gujarat. They cannot be used to either prove or disprove Gujarati woodwork. They will, however, be quoted whenever any kind of similarity in practice is observed.

In conclusion it may now be seen that our method of presenting the historical survey in reverse, so to speak, has proved useful because we have been able to move from one known and established position to the next less clear, and the knowledge gained in the former could be utilized to ascertain the latter. Let us take an example. The references in the Prabandhacintāmani to wooden temples would remain mythical and speculative if seen in isolation, but seen against the background of an overwhelming wooden tradition stretching to recent times the same information gains in credibility and becomes historical fact. The teak columns of Somanath cease to be poetry and become structural necessity. Such a process of establishing fact could not have occurred if we had begun the account with Somanath.