Chapter 8

CONCLUSION
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As has been seen in the preceding pages, that the north eastern region is capable of generating earthquake of any dimension – from the smallest to the biggest. Though no definite pattern of occurrence of earthquakes in the region could be traced but the study revealed that there is no doubt that even major earthquakes are quite frequent in the region. The region has a distinct geological set up to corroborate the extra-ordinary seismic phenomena of the region. Theory of Plate Tectonics, the most accepted theoretical model to explain the global seismicity could most successfully explain the seismic behaviour of the region. Epicentral locations of such a great period (1228-1960) even with lots of gaps in between prior to instrumental era along with its very outwardly manifested geological features not only justify the strength of the plate tectonic theory but
also further subdivide the region in various order of seismicity. Plain areas of the region appears to be least seismic while the increasing trend in order is found in Shillong plateau zone, Northern Himalayan Boundary and lastly the most active eastern Myanmar border continuing down the hill tracts of Arakan Yoma bordering the southern most state of Mizoram. The tremors occurred during the early phase of the Ahom period till eighteenth century (1762) though are yet to be specifically located so far as their epicentres are concerned but if the impact of those are now analysed vis-à-vis the relative seismic behaviour of the different parts of the region, it is most likely that they all belong to Indo-Myanmar hill tracts.

After the commencement of the instrumental recording with the Great Shillong Earthquake of 1897 till the end of this study period (1960), the region recorded 5 great earthquakes inclusive of those two of 1897 and 1950 (whose magnitudes are 8 and above on the Richter scale) and then there were about 20 major earthquakes whose magnitude on Richter scale lie in between 7 to 7.9. A region, with 5 great and 20 major earthquakes within a span of 63 years (1897-1960) can safely claim a place among the severest most earthquake prone zones of the world.

For the period prior to 1897 - the era earlier to instrumental recording, there is no dearth of records mentioning occurrences of earthquakes and their impact. The royal Ahom chronicles and the colonial records available in the form of reports, specially T Oldham's
report, officials' reports and correspondences have left a substantial account of earthquake and their overall impact to further justify the findings reached through the data available during colonial and post colonial period. However, earthquakes of the measures of 1897 and 1950, whose magnitudes are often claimed to be greater than even 8.5 in the Richter scale appear to be too great to be frequent in the region. At least this may be true that those two earthquakes were at least the first of their kind in the living memory and occurring so closer to the populous or developing areas of the region. Devastation of 1897 to both the urban areas and the agrarian fields and that of 1950 to landslips would continue to haunt the psychic set up of the people in the region for centuries.

Enough information could be unearthed and observation made on the impact of seismic shocks on the geographical formations, i.e., on topography, river network, landslides and on the ecology of the region. Sinking of ground, landslides, ejection of sand through sand springs - thereby upheaval of river beds, collapse of river banks had occurred which had affected the human beings at large. Substantial fissures on the ground, particularly on alluvial land closer to river banks, shift of river course and filling up of other water bodies by sand were some of the regular features visible in the region after the great shocks and a few of the impacts were there even after major shocks.

Ecology of the region was the prime victim after those great shocks. North East India is a peak monsoon area and both the great
shocks took place during heavy monsoon period – one in June and the other in August. Shillong plateau was the seat of 1897 earthquake which caused heavy landslides in the Cherra area. The shock was accompanied by a very heavy rainfall did compel the Cherra area to lose its top soil. Since, about few thousand aftershocks followed the main shock for about next five years, the loss of top soil in the Cherra area in particular was of very great dimension. Shocks made the top soil loose and the subsequent rainfall took them down below the plateau – was the simple mechanism by which Cherapunji gradually became free of top soil. Absence of top soil reduced greenery, which in turn had the cumulative affect of further loosening the grip over top soil and in all probability the system thus started with the great earthquake of 1897 which ultimately proved to be sufficient in converting the Cherra area to a wet desert, thereby bringing in a great change in the overall ecology of a particular part of the Shillong plateau. 1950 earthquake did the same mischief in the extreme north east corner of the region. An account of the amount of fauna destroyed directly by that shock has been discussed in the relevant chapter. But what would be the measure of loss resulted out of a landslip of the order of 60,000 million cubic yard volume in a densely forest area is anybody’s guess. Here also, during the subsequent rainy season the rate of loss of top soil was further compounded. The surface area which suffered extensive landslip was about 6000 sq miles inclusive of slope area. Here also mutilated hills in absence of
trees would further fail to hold the top soil and the possibility for the recurrence of Cherrapunji like situation cannot be ruled out in the near future unless taken care of.

The volume of soil and other debris would ultimately be dragged down to Brahmaputra that was the opinion of the expert. Because of these settlement, river bed would obviously be raised and so this would enhance the flooding of Brahmaputra to a great degree. The expert further opined that in the long run down stream would be more affected by flood. Since the flood that took place just a year ahead in 1951 was by far highest till that time had certainly left some hints towards the enhancement of flood in the Brahmaputra Valley and more so in the down stream. Enhancement of flood in Brahmaputra after the 1950 earthquake happens to be an observed fact which might owe its primary cause to that very earthquake only.

As was expected a calamity of this dimension and that of recurring nature would have its impact and so its manifestation in the cultural life and even belief system. Rightly enough a region being mostly in a stage of tribal formation would have their own unique way of facing the tragedy. In case of earthquake there being no hint of the impending devastation and that too its causality being absolutely abstract a mystery obviously shrouded the event. Display of immense capacity to destroy still further impinges the element of fear in the people's mind. However, mysterious may it be, human mind has always first tried to fight the nature at the psychological level and in
the way of resolving the causality, stories are being framed and most of the folklores as it seems are primarily nothing but a result of the mock fight. May be because of its immense potential to destroy human being almost in no time, most of the folklores of the region has treated this force as part of the divine and not evil and are nothing but a form of expression of God's anger, who is to be pleased to save us from his rage. Only in the case of K&J Hills this has been identified with devil.

The fear it can instil in the human mind and how this in turn makes this a part of the religious belief system may be amply displayed through an example from what has happened in Assam. Initial refusal to call one Brahmin priest from outsides the region by Ahom got reversed immediately following an earthquake of seventeenth century. This change of mind of the royal hierarchy to call a Brahmin from Nadia Santipur, Bengal had a great role in establishing the Hindu order in royal palace which ultimately had gone a long way in enhancing the religious transformation of the Ahom kingdom to Brahminical cult in a very great way. The role of fear in the origin and development of religion has been further vindicated in the region as late as in the seventeenth century. The earthquake of 1897 at Shillong also played a great role in the progress of Christianity in K&J hills. Here also as is believed fear played the pivotal role and the assurance that the new religious order would save
them from the extreme fury of nature like this was the prime force behind the large scale adoption of Christian belief in the K&J hills.

Loss of lives, property, communication, health care, and agriculture due to earthquakes in the region were proportionally enormous. The available details referred in the Chapter IV of this study would be suffice to establish the contention. But when these loss to the society under different head is analysed with care they reveal certain patterns.

Lives lost due to this calamity in the region were primarily for two reasons – either owing to the failure of structures (as is seen everywhere) or due to landslips. Around 600 people were killed under the dragged soil and debris in the southern part of Shillong plateau during 1897 great tremor. So was the result in Abor and Mishmi hills due to the shattering blow of 1950. Increase in the recorded number of deaths due to failure of stone structures began with their development mainly after the arrival of colonial rule. Loss in property due to seismic events were nothing other than the failure of the raised buildings. All the stone buildings since Ahom rule – be it royal palace or temple – till the colonial period up to 1897 suffered the same fate of utter destruction in an around epicentral zone extending over a large area. Frank admission of the colonial ruler about the impact of 1897 earthquake in this respect was conclusive:

In every affected districts within the area mentioned above the general failure of stone structures such as, cutcherry, treasury, jail as
well as the Deputy Commissioner's residence and the church building
drew the attention of the colonial rulers and the contemporary
Commissioner of the Assam Valley districts who had recorded this
failure of colonial structure with all seriousness.

This observation was very seriously considered and the
construction pattern in the region received a jolt. The Assam type
houses of the region were the product of this consideration.
Reconstruction of state structures (followed by others in general) at
Shillong with lighter materials, i.e., ikra and plaster under wooden
framework with tin over head as roofing material gave altogether a
new look to the reconstructed capital station. Such change in
construction pattern is further borne out from the Report of the
Geological Survey of India on 1930 Dhubri earthquake. Since the
great disaster of 1897, majority of the houses in Shillong were built of
light materials like wood, ikra and bamboo with plaster. The houses
were built on 'earthquake proof' lines and that is why despite their
location on steeply sloping hillside, they escaped damage in many
cases in subsequent earthquakes.

The earthquake of 1897 thus brought in a great change in the
construction of overall boarding structures in the region. It may
further be mentioned that the traditional house of this region may it
belong to any community of the region from the plains to the hills has
always been made out of light materials - either bamboo or wood -
and that too in a raised platform (in a number of cases) quite resistant
to this very habitual natural calamity. Thus, the Assam type construction of the region resulted out of 1897 shock seems to be the most viable synthesis of the traditional type of structure with that of European type.

The great earthquake of 1897 had uprooted a great number of ancient monoliths in the K&J hills and destroyed one Silsako, i.e., stone bridge of Manuri village in Patidarrang tahsil of the Kamrup district which was said to have been constructed by the Mohomedan invader Bakhtiyar Khilji in 1203 AD signifying something very concrete. It compels one to accept the fact that no second earthquake of the same dimension could have occurred in and around Shillong plateau later than 1203AD, i.e., the calamity of 12th June, 1897 may be treated as the first of its kind in the region since historical time further vindicating the observation of E A Gait – "There can be no doubt that this is the most severe and disastrous earthquake of which there is any record in Assam".

The Ahom royal chronicles have left records of a number of major earthquakes those have taken place in the region during Ahom rule. And in absence of any other records or till any other records on earthquakes of the region be traced prior to Ahom Buranjis, then Ahom chronicles would enjoy the credit of being the earliest creator of data base on the earthquakes of the region. No other role of the Ahom state in that respect is visible. Further, Ahom housing
complexes being made up of bamboos with least scope for secondary devastation did not appear to call for any state support.

Colonial state though had started the creation of real detail data base here in the region had in no way sacrificed their colonial interest in saving their subjects during those hours of perils at the cost of their wealth and measure regarding creation of data was started from Cachar earthquake of 1869 which continued till 1930 Dhubri earthquake. Within the colonial period there occurred four major devastating earthquakes in the region inclusive of that all time great of 1897. But not to speak of any general relief to the masses even the first seismic observatory of the region was established in the region six years after the departure of colonial rulers in 1953 at Shillong.

It was after independence, i.e., during the post colonial period by 1960s a number of activities in the field of seismology started in India with the establishment of Central Seismological Observatory at Shillong. Department of Earthquake Engineering became a part of academia in Roorke University by 1958. By 1965, seismic zoning map of the country could be drawn with N.E. India being in the zone – V, i.e., in the severe most seismic zone of the country. Observatory network also got expanded and by 1963, Shillong observatory became a part of World Wide Standard Seismic Network (WWSSN).

Development of Human Societies has been through a process of constant interaction of nature. Since calamities are part of nature, human beings could not escape it. Therefore, human societies have
often been subjected to the destructive potentials of such calamities. As a result, each human group have developed its own internal mechanism to fight the cruelties of nature; it may be through migration or building earthquake proof houses or constructing deities or enforcing their belief in the power of the priest craft. All these – either destruction of nature or the creative power of the human being to counter such destruction give definite shapes to human societies. Indeed

Men make their own history but they do not make it as they please; they do not make it under circumstances chosen by themselves but under circumstances directly encountered...¹