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# The Great Earthquake of 1897: Causes ,Impact and Historical Significance in Assam

**Surajit Changmai[1], Tina Gogoi[2]**

[1]Assistant Professor, Golaghat Law College, Golaghat, Assam
[2]Assistant Professor, Department of History, Gogamukh College, Dhemaji, Assam

**Abstract**
The Great Earthquake of 1897 was one of the most destructive seismic events in the history of the Indian subcontinent. It took place on 12 June 1897 and affected Assam and adjoining regions, particularly the Shillong Plateau, which was then part of colonial Assam. With an estimated magnitude of about 8.1, the earthquake caused severe damage to settlements, public buildings, roads, bridges, railway lines, and communication networks. This paper examines the earthquake's geological setting, its effects on Assam, and its historical significance, with particular attention to cultural heritage and disaster management. The destruction occurred during the earthquake disrupted transport, administration, agriculture, and trade, while many people experienced loss, displacement, and economic difficulties. The earthquake also damaged heritage structures. Historical records and evidents describe damage in the parts of the Kamakhya temple complex, including the Bhuvaneswari temple, and the destruction of All Saints Church in Shillong. By examining historical records and relevant secondary literature, this paper considers the earthquake's causes and consequences and discusses the lessons it offers for heritage conservation, earthquake-resistant construction, and disaster preparedness.

**Keywords**: Great Earthquake of 1897; Assam; Shillong Plateau; Cultural Heritage; Historical Monuments; Disaster Management

## Introduction

One of the major earthquakes in the history Assam occurred in 1897, June 12. The Shillong plateau, which at the time was an essential part of the Assam Province under British colonial administration, was severely damaged and all connectivity with the rest of the province was cut off. Due to so proximity to the epicentre, the Shillong Plateau suffered the most. Significant damage to roads, bridges, and railroad lines cut off administrative hubs and postponed rescue efforts. Both rural villages and urban settlements damaged significantly, highlighting the infrastructure's susceptibility to seismic risks. Due to the collision of the Indian and Eurasian plates, the area where the 1897 earthquake occurred was characterized by complex geological formations and intensive tectonic activity. Because of its geological location, Assam is among India's most seismically active areas. In addition to the immediate loss of life and property, the catastrophe highlighted the importance of scientific knowledge of earthquakes and preparedness. However, there was little practical preparation and little scientific understanding of earthquake threats in 1897. The disaster therefore had consequences beyond the immediate loss of life and property, it also exposed the need to investigate seismic activity and understand how earthquakes affect settlements, public services, and heritage structures.

This study seeks to examine the causes and long lasted impact of the Great Earthquake of 1897 with special reference to Assam. By situating the event within its historical and geological context, the paper aims to highlight its significance in shaping colonial administrative responses, early seismological studies, and its impact on physical, and socio -economic aspects in Northeast India.

**Methodology**

This study uses a historical and qualitative approach to examine the causes and consequences of the Great Earthquake of 1897 in Assam. It draws on documentary evidence, including contemporary government reports and administrative records, official correspondence, published descriptions, and other available historical materials relating to the earthquake. Secondary sources, including books, scholarly articles, geological publications, and research papers, are used to place the event in its geological and historical context.

**Objectives**

The main objectives of this paper are:

- To analyse the principal causes of the Great Earthquake of 1897.
- To study the earthquake's physical, socio- economic, and administrative impacts on Assam.
- To examine the damage caused to selected historical and religious structures and discuss its significance for cultural heritage.
- To identify lessons from the earthquake for heritage conservation, earthquake-resistant construction, and future disaster preparedness.

**Background and Causes of the Great Assam Earthquake of 1897**

Assam has historically been one of the most seismically active regions of the Indian subcontinent due to its distinctive geological location in Northeast India. The region lies within a zone of complex tectonic activity, influenced by major geological structures and fault systems. Among the many seismic events recorded in the region, the Great Assam Earthquake of 1897 remains the most destructive during the colonial period.

The Shillong Plateau, which formed an integral part of colonial Assam, was central to the occurrence of the 1897 earthquake. Unlike the surrounding alluvial plains of the Brahmaputra Valley, the plateau is composed of ancient crystalline rocks and is intersected by several fault lines. Continuous geological stress accumulated beneath this region over long periods, making it highly susceptible to sudden seismic rupture (Oldham 1899; GSI 2000; Bilham2004). The destructive impact of the earthquake was aggravated by the absence of scientific knowledge and preparedness in the late nineteenth century. Buildings were constructed without any consideration of seismic resistance, and colonial administrative arrangements were inadequate to deal with such a large-scale natural disaster. As a result, both urban centers and rural settlements suffered extensive damage, revealing the vulnerability of colonial Assam to seismic hazards. (Barpujari, 2007)

The Great Assam Earthquake of 1897 was primarily the result of deep-seated geological processes operating beneath the Shillong Plateau. While it was a natural consequence of Assam's tectonic setting, its catastrophic effects were intensified by human unpreparedness and limited contemporary understanding of earthquake risks.

The Shillong Plateau and adjoining districts such as the Khasi Hills, Sylhet, Kamrup, Goalpara, and Nowgong were among the worst affected areas. Communication networks collapsed almost immediately as roads cracked, bridges failed, and railway lines were distorted or rendered unusable. The disruption of transport and telegraph systems isolated the affected areas for several days, delaying relief and administrative response (Barpujari 2007).

The earthquake was also marked by remarkable geological disturbances. Extensive surface fissures appeared in many parts of Assam, while landslides occurred in the surrounding hill regions. River systems, particularly the Brahmaputra and its tributaries, experienced significant changes, including uplift of riverbeds and alteration of channels. These physical effects demonstrate the immense force of the seismic event and its ability to reshape the natural environment over a wide area (Oldham 1899; GSI 2000). Some of the first scientific studies of Indian seismology were prompted by the earthquake, which not only revealed the region's geological instability but also highlighted the necessity of systematic research on earthquakes and their consequences.

**Major Impact of the Earthquake**

Earthquakes have played a significant role in the history of human race. They are not just events that shake the ground; they can also greatly affect people, communities, buildings, and the environment. They often bring social and economic challenges such as loss of lives, destruction of property and decline of trade. At times earthquakes have also influenced political decisions and the rise or fall of cities and civilizations. The Great Assam Earthquake of 1897 had a devastating impact on the region, it caused widespread destruction across Assam and adjoining areas, leaving towns and villages severely damaged. Traditional houses, government buildings, roads, bridges, and communication networks collapsed or became unusable, leading to heavy loss of life and displacement of people. The Earthquake had far-reaching consequences on the physical landscape and human life of the region.

One of the most significant impacts of the earthquake was the large-scale alteration of river systems. The Brahmaputra and its tributaries experienced changes in their riverbeds, with several sections becoming shallower due to the upward movement of sediments. Sand deposition and the formation of new sandbars obstructed river navigation and disrupted trade and transport. In many areas, river channels were blocked or diverted, leading to abnormal flooding in the months following the earthquake, which caused greater damage than the tremors themselves (Oldham,1899; Deka, 2022).

The earthquake also triggered extensive landslides, particularly in the surrounding hill regions such as the Bhutan Hills and nearby uplands. Large quantities of soil, rocks, and debris were displaced, damaging roads and cutting off communication routes. These landslips not only affected mobility but also increased erosion and sediment flow into rivers, further intensifying floods and environmental instability in the plains of Assam.

Another remarkable impact was the occurrence of ground fissures, sand vents, and soil liquefaction in many parts of the region. In several places, sand and muddy water erupted from the ground with great force, filling wells, damaging agricultural land, and weakening foundations of buildings. Railway tracks were bent and distorted due to ground movement, severely affecting transportation and colonial administration.

Socially and economically, the earthquake brought immense hardship to the population. Agricultural production suffered due to damaged fields and repeated flooding, affecting peasants and marginalized communities the most. Trade and transport were interrupted for months, and recovery was slow due to

limited resources and difficult terrain. Although the colonial government-initiated relief and reconstruction measures, the scale of destruction meant that many areas took years to recover.

Overall, the Great Assam Earthquake of 1897 was not just a momentary natural disaster but a transformative event that reshaped Assam's physical landscape, disrupted its economy, and deeply affected society. Its impact highlighted the region's vulnerability to seismic activity and remains a significant reference point in the environmental and historical study of Assam.

**Impact on Historical Monuments**

The earthquake was especially significant because it happened during the colonial era, when Assam was going through significant administrative and economic reforms. The destruction of roads, bridges, public buildings, railway infrastructure, and other facilities hindered communication and administration across the region. Shillong, a significant administrative hub at the time, sustained severe damage. Earthquakes have been a recurring natural phenomenon in the region from the earliest times, frequently causing extensive disruption to human settlements and material life. Their impact, however, has extended beyond the immediate loss of life and property to the destruction of the region's historical and architectural heritage. The scattered remains of temples, broken architectural elements, and other archaeological structures found across different parts of the region may be viewed as significant evidence of the destructive effects of past seismic events. Structures that once formed important centers of religious and cultural life were, in several instances, severely damaged or reduced to ruins. Even among the temples constructed during the medieval period, traces of structural deterioration and earthquake-related damage can still be observed, reflecting the magnitude of seismic disturbances that affected the region at different points in its history.

The Kamakhya temple had escaped with somewhat slight damage in the 1897 earthquake. Its spire with a golden Kalsi (jar) had fallen down. The Natmandir had cracked, the wall around the temple had tumbled down and some of the rooms attached to the temple were damaged. Several other minor temples atop the Nilachal hill were also affected by the 1897 earthquake. The most notable of the minor temples, the Bhubaneswari was completely damaged. (Proceedings of the Chief Commissioner of Assam in the Department Under the Control of the Home Department of the Government of India for the month of March, 1898, State Archives, Assam.) On the basis of textual evidence, a team of geologists studied a section of the Kāmākhyā temple which confirmed the destruction of the temple by the 1897 earthquake. The temple was eventually repaired by a grant of Rs. 1,000 made by Maharaja of Darbhanga (Deka, 2022). The earthquake of 1897 not only damaged and destroyed the temples as well as historical monuments of Assam but also other heritage structures situated presently in other parts of North East India. The All Saint Church, one of the oldest churches in Shillong, was completely destroyed in the earthquake. The church was reconstructed in 1902 at a cost of Rs. 2103. (Report on the Administration of the Province of Assam for the year 1902-1903, Assam Secretariat Printing Office, Shillong, 1903, p. 28.)

**Historical significance of the Earthquake:**

The historical significance of the 1897 earthquake can be understood not only through the destruction it caused but also through the records and memories that it left behind. In Assam and adjoining areas, the catastrophe became part of the collective experience of the population, with contemporary accounts referring to the loss of life, displacement of communities, and extensive damage to settlements and infrastructure. Government documents, newspaper reports, photographs, and personal testimonies further

preserve different aspects of the disaster, allowing historians to examine how communities and administrative institutions responded to a major natural calamity. From a scientific perspective, the event attracted considerable attention from geologists and became an important source of knowledge about the seismic behavior of northeastern India. The extensive ground movements, surface changes, and damage to buildings observed after the earthquake provided researchers with important evidence for examining the geological processes associated with the Shillong Plateau. Consequently, the 1897 earthquake has continued to serve as a significant historical reference in the study of earthquakes in the Himalayan and northeastern Indian regions.

At the same time, these materials demonstrate that the earthquake was not merely a geological phenomenon; it also had lasting consequences for settlement patterns, administrative practices, infrastructure, and public understanding of natural disasters. In this sense, the 1897 earthquake represents an important point of intersection between environmental processes and the social and historical development of the region. Thus, the 1897 earthquake should be viewed not simply as an isolated geological occurrence but as an event that influenced the physical landscape while simultaneously leaving a lasting imprint on society, administration, infrastructure, and historical memory.

**Government Initiatives and Administrative Responses:**

In the aftermath, the government and local authorities launched extensive relief and rehabilitation programs. These included rebuilding critical infrastructure, providing aid to the displaced, and implementing measures to mitigate future seismic risks. Over time, the earthquake's impact shaped the region's approach to disaster preparedness and influenced long-term development policies. Because the earthquake affected an exceptionally large area the investigation had to be divided among different officers. Mr. La Touche was assigned to examine the Assam Valley and was subsequently directed to investigate Shillong, Cherrapunji and Sylhet. The Government of India also instructed local authorities and the Imperial Telegraph Department to provide necessary information and assistance (Oldham,1899)

The colonial government also undertook reconstruction measures aimed at restoring administrative and transport infrastructure. Damaged roads, bridges, railway lines, and government buildings were gradually repaired to re-establish connectivity and economic activity. The earthquake further prompted scientific inquiry, leading to systematic geological investigations under the Geological Survey of India. The detailed study conducted by R. D. Oldham marked a significant step towards understanding seismic activity in India and influenced later administrative awareness regarding earthquake-prone regions.

The inadequacies observed during the 1897 earthquake later shaped governmental responses to subsequent seismic disasters in Assam. This became particularly evident during the Assam Earthquake of 15 August 1950, when the Indian government adopted a more organized and proactive approach. Relief assistance was extended by the central government, and Prime Minister Jawaharlal Nehru personally visited Assam to assess the situation and appeal for national support. The Indian Air Force, Assam Rifles, and voluntary organizations were mobilized for rescue, relief, and rehabilitation activities. These efforts reflected a growing recognition of the need for coordinated disaster response mechanisms.

In the long term, both the 1897 and 1950 earthquakes highlighted Assam's vulnerability to natural disasters and underscored the necessity for disaster preparedness, flood management, and earthquake-resistant construction. While the colonial response in 1897 remained limited, later initiatives demonstrated a gradual evolution in governmental responsibility toward disaster relief and mitigation. The experiences

gained from these earthquakes contributed to shaping modern approaches to disaster management and infrastructural planning in Assam.

**Conclusion:**

The Great Assam Earthquake of 1897 was not merely a natural disaster but a major historical event that had far-reaching consequences for Assam and the wider Northeast India. The earthquake, which occurred on 12 June 1897, was the result of intense tectonic activity associated with the geological structure of the Shillong Plateau. Its extraordinary intensity caused widespread destruction of houses, government buildings, roads, bridges, railway lines, and communication networks. The physical landscape was also significantly altered through ground fissures, landslides, changes in river channels, sand deposition, and flooding. Thus, the Great Assam Earthquake of 1897 should be understood as an important turning point in the environmental, social, economic, administrative, and scientific history of Assam. Its effects continued to influence infrastructure, disaster awareness, and historical memory long after the earthquake itself. The event remains an important reminder of Assam's vulnerability to seismic hazards and the need for scientific study, earthquake-resistant construction, effective disaster preparedness, and coordinated relief measures. In this sense, the 1897 earthquake represents a significant intersection of natural forces with the social and historical development of Assam.

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