

A probe into the Calcutta earthquake of 1737

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Some doubts have been expressed in the recent literature about the occurrence of an earthquake that occurred simultaneously with a cyclonic storm during September/October 1737 near Calcutta. In this article an attempt has been made to probe into the historical documents with a logical analysis. Our study reveals that an earthquake did occur undoubtedly near Calcutta in 1737. However, the death toll reported in the catalogue of significant earthquakes by the US Department of Commerce needs to be corrected. It was also found that the Encyclopedia Britannica has missed to make entry of the earthquake, in addition to making inadvertently a wrong entry of the date of occurrence of the cyclonic storm. This study has led to the conclusion that an earthquake did occur near Calcutta during the passage of a severe cyclonic storm on the Bengal coast on the night of 11 October 1737 as per the Gregorian equivalent calendar, or on 30 September 1737 as per the then-existing Julian calendar. The death toll due to the combined disaster could have been about 3000.

The United States Department of Commerce in their catalogue¹ of significant earthquakes for the period 2000 BC–1979 has made an entry of an earthquake occurrence near Calcutta on 11 October 1737. Recently, some scientific groups^{2,3} have expressed doubts about the occurrence of this event. The suspicion was mainly due to the death toll reported in this document and the mismatch of the dates of occurrence in other sources of literature. Due to the coincidence of the earthquake event with a severe cyclonic storm that crossed the Bengal coast⁴, it is felt necessary to investigate further to make the picture more transparent. In the process, the author has reviewed all the available literature related to the earthquake from the recent to the historical times⁵. An independent approach was adopted and reported briefly earlier⁶. In this article, an attempt has been made to give detailed information on the event. The author was fortunate to get all the necessary literature at the University of East Anglia, UK.

Main reports

The US Department of Commerce in their catalogue¹ of significant earthquakes, published in 1981, have included the occurrence of an earthquake on 11 October 1737 near Calcutta. The location was given as 22.5°N, 88.4°E and the number of deaths reported was 300,000. The damage caused has been rated as 'moderate', corresponding to a property loss of 1–5 million US dollars of 1979.

Encyclopedia Britannica of 1974 (ref. 7) mentioned only the occurrence of a cyclonic storm on 7 October 1737, causing a 12 m storm surge and killing about 300,000 people, and termed it as the most catastrophic cyclone.

Blanford, a meteorologist working in India, in his catalogue⁸ of 1877 has included the occurrence of the cyclone storm on 7 October 1737 and described it as follows: 'This storm is ranked among the worst, if not the worst, tropical cyclone disasters in recorded history.' The death toll given by him was 300,000.

In 1848, Peddington⁹ in his *Hornbook* stated clearly about the simultaneous occurrence of an earthquake and a cyclonic storm on 11 October 1737. He did not make any entry about the casualty figures.

Earlier, in 1837, Martin¹⁰, in his *Medical Topography of Calcutta* writes:

'The earliest notice I can find of a storm and earthquake occurring together is – On the night between 11 and 12 October 1737, there happened a furious hurricane at the mouth of the Ganges which went 60 leagues up the river. There was at the same time a violet earthquake, which threw down a great many houses along the riverside in Golgota (i.e. Calcutta) alone, a port belonging to the English... Dutch ships in the river, three were lost, with their men and Cargoes: 300,000 souls are said to have perished. The water rose 40 feet higher than usual in the Ganges.'

Gentleman's Magazine of June 1738 describes about the damage caused due to a furious hurricane in the Bay of Bengal and a violent earthquake on 30 September 1737. However, no death toll was included (a copy of the report from the magazine is given in Appendix 1).

Bengal Public Consultations, dated 15 October 1737, published in another source in 1906, states as follows:

'The late violent storm laid the whole black towns, quite throughout the

honourable company's (The East India Company) bounds, insomuch that hardly twenty thatched houses were standing the next day, and the inhabitants lost the little they had and were rendered incapable of paying the rents... what still adds to the calamity is that by the violent force of the wind the river overflow so much that a great quantity of rice was quite spoiled... and nearly 3000 inhabitants were killed, and a great number of large cattle besides goats and poultry destroyed.'

Discussion

It is evident from these reports that an earthquake did occur during September–October 1737. However, unfortunately, for reasons not known, reports earlier to 1974 do not provide the sources from where the information on the disaster was collected. If we analyse in the reverse order, i.e. from the historical times, we find that Martin¹⁰ has nowhere indicated that he had collected his data from a journal published in 1738. He had added and exaggerated the information on death toll (from 3000 to 300,000) from an official source, *Bengal Public Consultations*, dated 15 October 1737. A close comparison of these sources clearly reveals that Peddington⁹ reproduced the occurrence of the events from Martin's book¹⁰. In both Martin's and Peddington's reports, the date of occurrence of the storm and the earthquake was given as 11 October or the night between 11 and 12 October 1737. Blanford, without referring to any earlier reports, has reported the occurrence of a cyclonic storm on 7 October 1737, without any explanation regarding the date of the event⁸. Literature study reveals that he has taken the information from Peddington⁹ and altered

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Historical Chronicle, 1738.

J U N E.

In September 30, last happened a furious Hurricane in the Bay of Bengal, attended with a very heavy Rain, which raised 15 Inches of Water in 5 Hours, and a violent Earthquake, which threw down abundance of Houses; and as the Storm reached 60 Leagues up the River Ganges, it is computed that 20,000 Ships, Barks, Sloops, Boats, Canoes, &c. have been cast away. A prodigious Quantity of Cattle of all Sorts, a great many Tygers, and several Rhinoceroses were drowned; even a great many Caymans were killed by the furious Agitation of the Waters, and an innumerable Quantity of Birds was beat down into the River by the Storm. Two English Ships of 500 Tons were thrown into a Village above 200 Fathoms from the Bed of the River Ganges, broke to Pieces, and all the People drowned pell-mell among the Inhabitants and Cattle. Barks of 60 Tons were blown two Leagues up into the Land over the Tops of high Trees. The Water rose in all 40 Foot higher than usual. The English Ships drove ashore, and broke to Pieces, were the *Decker*, *Devonshire*, and *Newcastle*; and the *Pelham* is missing. — A French Ship was drove on Shore, and bulged; after the Wind and Waters abated they opened their Hatches, and took out several Bales of Merchandise, &c. but the Man who was in the Hold to sling the Bales suddenly ceased working; not by calling to him, could they get any Reply; on which they sent down another, but heard nothing of him, which very much added to their Fear; so that for some Time no one would venture down: At length one more hardy than the rest, went down, and became silent and inactive as the two former, to the Astonishment of all: They then agreed by Lights to look down into the Hold, which had a great Quantity of Water in it, and to their great Surprise, they saw a huge Alligator lying as expecting more Prey: It had come

in thro' a Hole in the Ship's Side, and was with Difficulty they killed it; when they found the three Men in the Creature's Belly. *Stedensdag. 7.*

A On the 2d and 7th of this Month happened great Disputes in the Court of Common Council of the City of London, concerning Proposals for performing the Malens Work of the intended Mansion-House for the Lord Mayor; and on the Divisions, one Party appeared in behalf of the Proposal of Messrs. *Townshend, Horsfield, and Taylor*, three of their own Body, to do the said Work for 17200 l. and the other Party for 250 l. cheaper. Some Persons thinking it extraordinary that Gentlemen should be for the highest Price, and also that it might carry a Reflection, as if those proposed to take the lowest, were not able to do the Work so well as the others; inserted in the News Papers the Oath of a Common-Councilman, distinguishing the Clause following in a different Character.

Good and true Counsel ye shall give in all things touching the Commonwealth of this City, after your Wit and Conscience: And that for Favour of any Person, ye shall maintain no singular Profit against the common Profit of this City. A List also was handed about of 7 Aldermen, and 110 Commoners who divided for the highest Price, all, but about 20, of which List are distinguished to be of some of the Committees for administering the City Affairs; and what is pretty remarkable, they are distinguished, who voted on the first Division for the lowest Proposal, *viz.* Sir *John Barnard*, (Lord Mayor) Sir *Robert Gadshill*, *David Lambert*, and *Robert Westley*, Esq; Aldermen. *Dep. Joseph Ayliff*, *Dep. Tho. Sandford*, *Dep. Sam. Tate*, *Mr Robert Heulshaw*, and *Mr Hen. Sisson* Common Councilmen.

The first Division, June 2. was, — For the highest Price 80. — For the lowest 63. *Tt*

some details and reported as independent information. He changed some quantitative information, for example, in the statement '...the storm reached 60 leagues up to the river Ganges...' 60 leagues has been changed to 60 miles (a league is equivalent to about 3 miles).

Logical analysis reveals that *Encyclopedia Britannica*⁷ contains the information given by Blanford, including the date of occurrence and the death toll⁸. Since Blanford's interest is only for the weather-related phenomena, he has excluded the earthquake occurrence. The report of the US Department of Commerce also mentions the death toll as 300,000 due to an earthquake on 11 October 1737. This document quotes several references¹²⁻¹⁷ as sources of information. After a thorough study, the author is inclined to conclude that the source of information for these reports is also the report of Martin¹⁰.

The next question which arises is about the date of occurrence. It is evident that after a century of occurrence, Martin reported¹⁰ the date of the events of cyclone and earthquake as the night of 11 October 1737. It is important to note that he has taken care of the change of the calendar by the Britishers. The Gregorian calendar was not in use in British Empire in 1737 and the date 30 September is according the Julian calendar then in vogue. It matches very well with the date 11 October 1737, which would be its Gregorian equivalent⁴, but not the 7 October as mentioned by Blanford. The present author, while looking at the historical source⁵, *Gentleman's Magazine*, was astonished to see the total absence of any estimate of lives lost in the combined disaster (Appendix 1). This led him to search further and find the official figure of death toll in the combined tragedy as 3000 in another source¹¹. In this, a letter written more than a year after the disaster, on 29 January 1739, describes:

'...the storm which levelled most of the walls in the town, shattered and threw down many of the buildings and blew up the bridges, the tide some days after broke in upon and carried away some of the wharfs, ships and stairs, the places most damnified are the peers on the factory wharf, wharf and ships at Soota Loota. Walls around the burying place and powder magazine and factory points, Church steeple was overthrown.'

The above description enriches the knowledge for supporting the occurrence of an earthquake along with the storm. Further, in an economic study of Bengal, Bhattacharya¹⁸ mentions that only after the great disaster of 1737 was widespread masonry construction considered desirable. These observations give a fairly good qualitative idea that destruction to buildings might have occurred partly due to ground motion. Bilham², while concluding that 'the listing of this event in the catalogues of disastrous earthquakes is indefensible', writes that 'the possibility that an earthquake-induced tsunami caused the flood damage cannot be completely excluded'.

Population estimates range from 10,000 to 12,000 between 1705 and 1720 (ref. 19). It has been documented²⁰ based on the report by Ray²¹ that the population of Calcutta was 120,000 in 1757. It was further mentioned that 'the early nineteenth century may not have held for the 200,000 or so who were living in Calcutta, in an environment largely of British creation'²⁰. From these facts it is clear that the number of people dead in the disaster cannot be 300,000 as reported by the *Encyclopedia Britannica* and by the US Department of Commerce. The author, therefore, feels that the official figure of 3000 might have been exaggerated to 300,000 by Martin¹⁰.

Conclusion

After spending sufficient time in reviewing the literature from the historical past to the present, the author feels confident in stating that an earthquake did occur in the vicinity of Calcutta on the night of 11 October 1737 as per the Gregorian equivalent calendar, or on 30 September 1737 as per the then-existing Julian calendar. Exaggerating the death toll figures is a human psychology, even today, for drawing the attention of the targeted groups. It is also evident that the earthquake occurrence was during the period of landfall of a cyclonic storm on the Bengal coast. The concerned authorities of the *Encyclopedia Britannica* and the US Department of Commerce may consider issuing a modification to their reports, after another independent study, if felt necessary.

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