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Revisiting the 1922 Flood in Rajshahi Division of Northern Bengal and Meghnad Saha's Vision for Flood Control: A Historical Study

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Abstract

In 1922, the Rajshahi Division of Northern Bengal in undivided India experienced a widespread flood that severely affected the lives and livelihoods of the local population. Although the flood of 1922 was similar to, or even less intense than, the earlier major flood of 1871 in the region, it caused far greater destruction. The eminent scientist and social thinker Meghnad Saha played a crucial role in analysing the reasons behind this paradox. In his article "The Great Flood in Northern Bengal", Saha examined the causes and consequences of the disaster and highlighted how infrastructure developments, such as railway embankments and other human interventions, altered the natural drainage system, thereby intensifying flood damage. Beyond documenting the flood, Saha actively participated in relief activities and helped draw expert attention to the structural causes of the disaster. During the crisis, several prominent figures were involved in relief work, including Prafulla Chandra Ray, Subhas Chandra Bose, and Saha himself. The then Minister of Local Self-Government, Surendranath Banerjee, also made observations that provide additional insights into the flood's impact. Saha further proposed a scientific and systematic approach to flood control, emphasising the need for coordinated river management and long-term planning. This article analyses the causes and effects of the 1922 flood and examines the efforts and vision of Meghnad Saha in proposing flood control measures. His work remains an important reference for understanding the relationship between environmental change, infrastructure development, and flood vulnerability in Northern Bengal as well as in India.

Keywords: Atrai River, Flood, Meghnad Saha, Naogaon, North Bengal, Rajshahi, Railway, Science, Scientist.

A common observation is that scientists often devote limited attention to solving social problems, as these issues are highly complex and involve numerous variables. With the scientific tools available, addressing social problems is usually quite difficult. Therefore, scientists should generally focus more on academic or industrial research and teaching. Nobel Laureate Richard Feynman also articulated this point clearly in his writing titled 'The Value of Science'. 'The Value of Science' was a kind of report that Feynman gave that 'report' as a public address to a 1955 meeting of the National Academy of Sciences, where he stated that

> "From time to time, people suggest to me that scientists ought to give more consideration to social problems - especially that they should be more

> responsible in considering the impact of science on society. It seems to be generally believed that if the scientists would only look at these very difficult social problems and not spend so much time fooling with less vital scientific ones, great success would come of it. It seems to me that we do think about these problems from time to time, but we don't put a full-time effort into them -the reasons being that we know we don't have any magic formula for solving social problems, that social problems are very much harder than scientific ones, and that we usually don't get anywhere when we do think about them. I believe that a scientist looking at non-scientific problems is just as dumb as the next guy - and when he talks about a non-scientific matter, he sounds as naive as anyone untrained in the matter" (Feynman, 1955, p. 13).

The great scientist and social activist Meghnad Saha proved this preconceived notion wrong through his active involvement in various social issues. As a dedicated student of science, he consistently attempted to apply scientific knowledge for the betterment of society, especially in mitigating natural disasters such as floods. He not only contributed valuable scientific insights but also directly participated in relief and rehabilitation activities, reflecting his deep sense of social responsibility and humanitarian commitment.

India can perhaps claim to have one of the largest pools of trained scientists among developing countries. Yet it remains a striking paradox that for many, science is viewed primarily as a career rather than as a method of rational inquiry and a way of life. It is not uncommon to find accomplished researchers distinguished in their respective fields who nonetheless display unscientific attitudes or uncritical beliefs in matters beyond their laboratories. While they practice rigorous methodology in research, they may fail to apply the same logical and analytical temper to social, cultural, and public issues.

Another frequently observed tendency is a certain detachment from contemporary social realities. Many scientists prefer to remain aloof from pressing public concerns, considering them outside the domain of scientific responsibility. The fear of association with socio-political movements often reinforces this distance, leading to the assumption that scientific engagement must remain confined within institutional or laboratory boundaries. However, this perception was decisively challenged by Meghnad Saha, one of India's foremost scientists and a student of Acharya Prafulla Chandra Ray. Ray, remembered for his deep social commitment, was honoured by Mahatma Gandhi as the "doctor of floods" for his humanitarian initiatives (Saha, 1932). Through both his work and teaching, Ray inspired in his students a strong sense of civic responsibility alongside scientific excellence. Saha carried this legacy forward and challenged the prevailing belief that scientists must remain detached from public life.

Far from limiting himself to theoretical astrophysics, Saha actively intervened in issues of national reconstruction and disaster management. His involvement during the Great Flood in North Bengal in 1922 exemplifies the application of scientific reasoning to urgent social problems. He not only participated in relief efforts but also advocated systematic planning, river management, and state-led initiatives to mitigate recurring flood disasters. For Saha, science was not merely an academic pursuit; it was an instrument for societal transformation.

This article examines the contributions and public engagement of Meghnad Saha, along with other contemporary luminaries, in the context of the Great Flood of North Bengal in 1922. By situating their interventions within the broader intellectual and political milieu of the time, it aims to highlight how scientific rationality, when integrated with social responsibility, can play a transformative role in addressing natural calamities and public crises.

Before discussing the 1922 flood in detail, it is important to examine the course of the river and its geographical setting in order to identify the river basins that were affected by the flood. The Atrai is an ancient and well-known river of North Bengal. It originates from the Trisrota (Teesta) at a place called Shivok, located on the border of the Darjeeling and Jalpaiguri districts. Flowing through Dinajpur, it passes through Balurghat and enters Rajshahi near Chaughat Mouza (Hunter, 1876, p. 23). From there, it flows through the subdivisions of Naogaon and Natore and then enters the district of Pabna, flowing along the western side of Chalan Beel near Kachikata port, where it takes the name Gumani. From there, it emerges and eventually joins the current of the Jamuna, the new channel of the Brahmaputra. In the district of Pabna, since the nineteenth century, the Atrai River has been known by the names Gumani and Baral. Its original channel in some places is known as Mora Atrai (Dead Atrai) or Buri Atrai (Old Atrai).

There is no clear evidence as to whether the name Atrai changed during the medieval period in the central region of Rajshahi. However, as the land in the central part of Rajshahi is flat, the river has changed its course many times (Micher, 1965, p. 193). Over time, these abandoned channels have turned into different bils (wetlands), preserving the memory of the Atrai and Purnabhaba rivers. Contemporary historical records also mention this. The northern part of the Baral is called Nandakujha, which joins the Atrai River and again flows into the Baral under the name Gumani.

One of the most devastating floods struck the Atrai Basin in Rajshahi Division of Northern Bengal in 1922. In the report Rainfall and Floods in North Bengal (1870–1922), by Prasanta Chandra Mahalanobis attributed the disaster to exceptionally heavy rainfall across North Bengal. The intense precipitation was triggered by a strong depression that developed over the Bay of Bengal on 21 September (Mahalanobis, 1927, p. 82). The great flood was caused by very heavy rainfall in the Atrai basin, a tributary of the Brahmaputra River, during the period between 22 and 29 September (Ray,1996, p. 238). A weather disturbance formed in the Bay of Bengal and moved almost straight north, passing over Calcutta and bringing heavy rain along its path. It then covered the districts of Dinajpur, Maldah, Rajshahi, and Bogra (Saha, 1922, p. 606). It did not move further north or east into the Brahmaputra valley. Instead, it released most of its moisture over the Atrai basin.

At Naogaon, which lies at the centre of the basin, the rainfall was recorded as follows (Saha, 1922 p. 606)

22 September – 1.90 inches
23 September – 0.12 inches
24 September – 9.96 inches
25 September – 3.85 inches
26 September – 10.60 inches
27 September – 5.82 inches

The average yearly rainfall at Naogaon is about 70 inches, and around 14 inches usually fall in September. Although this rainfall was very heavy, it was not completely unusual. Similar heavy rain fell across Dinajpur district at the same time.

By 24 September, the rivers in Dinajpur began to rise and overflow their banks. The rainwater collected in southern Dinajpur then started flowing southward through the Atrai basin, along the Tangan and the Punarbhaba rivers (Saha, 1922 p. 606). The role of railway embankments in slowing down the natural drainage of water should also be taken into account. The main line of the Eastern Bengal Railway runs north to south across the district, while the natural flow of drainage moves from west to east (Nelson, 1923, p. 8). Because of this difference in direction, the railway line interrupts the normal movement of water. A recently opened railway route also crosses several waterways that normally carry excess water out of the district. Reports indicate that after the construction of the broad-gauge line, the number of bridge openings on the railway was reduced. For example, between Atrai (mile 160) and Santahar (mile 178), the total width available for water flow decreased to about 440 feet, whereas it had been about 967 feet when the railway was originally built (Nelson, 1923, p. 8-9).

Contemporary local narratives pointed out that the double railway line stretching from Sara to Santahar obstructed the natural flow of floodwaters. As a result, water accumulated heavily and remained stagnant for more than two weeks, leading to severe devastation. It was also noted that in Rajshahi, on both the eastern and western sides of the railway line, floodwaters persisted long after the rainfall had almost completely stopped (Prasad, 2015 p. 130). Although the original metre-gauge railway line from Sara to Santahar had been built with adequate flood openings to allow the passage of excess water, these outlets were either blocked or significantly narrowed during the construction of the new broad-gauge line. As a consequence, the floodwaters could not recede naturally. Trapped and undrained, the water spread out like a vast, turbulent expanse, rising eight to nine feet above the usual annual flood level. (Prasad, 2015 p-130) The variation in water levels between the western and eastern sides of the railway embankment ranged from four to five feet, clearly suggesting that the line obstructed the natural flow of floodwaters. This conclusion gained further support from local elders, who recalled experiencing similarly intense rainfall in the past but had no memory of floods of such magnitude (Prasad, 2015 p-130).

The article

> "The Great Flood in Northern Bengal' by Meghnad Saha quotes Satish Chandra Pramanik, where he stated that "It is the opinion of the elderly people of the locality, who have experiences of such heavy rains, but not of such heavy floods lasting for nearly a month, that the flood would not have proved so disastrous to the crops and also to the homesteads to a certain extent, if there had been no railway embankments to retard the downward progress of rainwater, or if the bridges were numerous and sufficiently large. Even if the bridges previously existing with the metre gauge line had been left as they were and not reduced to 1/2 to 1/3 of their previous sizes during the construction of the broad-gauge line, both the sufferings of the people and the loss of their food would have been enormously reduced. At the early stages of the flood the difference in water level on the two sides of

> the line varied from 3 to 4 feet according to locality between Madhanagar and Raghurampur Railway stations" (Saha, 1922, p. 607-08).

Rainwater flowing down from the Balurghat subdivision spread over the Balurghat Hill District Board Road and then touched the railway track. As it moved upward toward Santahar, the large mass of water divided into two parts. On the night of 25 September, one part forced its way through the upper section of the railway line between Jamalganj and Akkelpur, breaking the track at several points. The floodwater then struck the Bogra Santahar railway line directly, almost at a right angle, and damaged it in many places on both the eastern and western sides of Adamdighi. The water could drain out only through the channel of the Atrai River and a few small nearby streams. However, these waterways did not have enough culverts to carry such a heavy flow. In many places, the metre-gauge railway line had culverts, but the parallel broad-gauge line did not have matching openings, which made the drainage even more difficult. (Saha, 1922, p. 607).

It was also noticed that when the new broad-gauge railway line was rebuilt, several openings that had existed in the old line were either completely blocked or made much narrower. Because of this, floodwater was unable to flow freely beneath the railway track (Amrita Bazar Patrika, 6 November,1922). The flood in eastern Rajshahi, especially in the Panchupore–Singra area, happened because floodwater came down from Bogra along the Raktadaha–Chalanbil route. The water remained in the flooded area for a long time and went down very slowly.

One main reason was the broad-gauge railway line running from Sara to Serajganj, which blocked the natural flow of water. It was believed that if the Sara–Santahar railway line had not been built, the floodwater lying to the west of the line would have spread into this area and then moved further through Pabna into the Jamuna River. This would have reduced the pressure of water on the western side of the railway line. (Saha, 1922, p. 606)

The role of the embankment in the damage caused by the 1922 flood was understood by comparing it with the flood of 1871, which was considered one of the highest floods recorded in Rajshahi. In 1871, many problems occurred. Cattle suffered because there was little fodder. People had to move to higher places for safety. After the water went down, cholera spread widely (Prasad, 2015, p. 131). However, at that time there were no railway embankments blocking the flow of water. The floodwater rose slowly and drained away quickly. As a result, in most areas the crops were not seriously damaged and remained above the water.

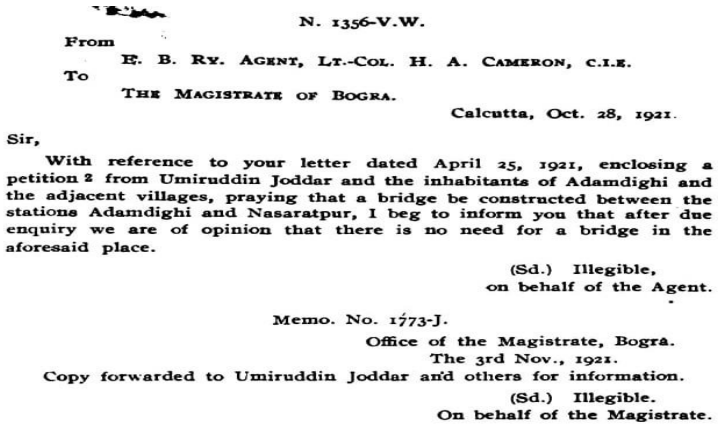
The flood of 1892 in Dinajpur, caused by the river Atrai, was an important event that should have served as a warning for the future. However, its lessons were largely ignored. During that flood, the railway line, which passed through the town from east to west, suffered serious damage. The line was breached on both sides of the town. On the eastern side, mail had to be transported for some distance by boat. On the western side, where the breach was smaller, mail was carried across with the help of an elephant borrowed from the local Maharaja (Strong, 1912, p. 64). An official enquiry was conducted to investigate the causes of this disastrous flood. The enquiry concluded that the railway embankment was largely responsible for the destruction. Since the railway line cut across the district from east to west, it obstructed the natural flow of floodwater coming from the north. As a result, water accumulated and caused extensive damage to property and crops. To prevent such disasters in the future, the waterway openings under the railway line were

significantly increased. After these improvements, no major flood of similar scale occurred for many years (Strong, 1912, p. 64).

However, in 1922, another serious flood took place. One of the major causes was believed to be the newly constructed and unplanned broad-gauge railway line. This construction again interfered with the natural drainage system of the region. During the investigation conducted on behalf of the North Bengal Relief Committee, several experienced officials were interviewed. Among them were Dr. Bentley, Director of Public Health; Khan Bahadur Emdaduddin Ahmed, Chairman of the Rajshahi District Board; and Mr Sailendra Mohan Ghose, Overseer of District Board Roads (Ray, 1996, p. 236-42). These officials clearly stated that the railway embankments were responsible not only for the flood but also for its after-effects. They explained that the embankments trapped floodwater and caused prolonged waterlogging. This stagnant water contributed to the spread of diseases such as cholera and malaria, worsening the suffering of the people.

Regarding the North Bengal Flood of 1922, it is clear that the disaster could have been avoided, or at least reduced, if the villagers' petitions had been taken seriously by the Eastern Bengal Railway Authority. In India, such prayers or appeals were often ignored or given less attention. It should also be noted that the villagers had submitted a petition about the railway embankment a full year before the flood of October 1922. Though they were simple village people, they understood that unless the narrow culverts were replaced with long-span bridges, floods would continue to occur. This is exactly what happened. There are recorded facts that the railway line caused great suffering to the people of North Bengal. The people living around Adamdighi and Nasaratpur, two railway stations north of Santahar, sent a petition to the Eastern Bengal Railway authorities through the Magistrate of Bogra (Ray, 1996, p. 236-42). In their petition, they requested that a proper bridge be built between these two stations instead of a narrow culvert. They explained that after heavy monsoon rains, a huge amount of water flowed down from the uplands, and the narrow culvert was not enough to let the water pass.

Umaruddin Joddar and the residents of Adamdighi and nearby villages sent a petition to the Eastern Bengal Railway through the Magistrate. In their petition, they requested the construction of a bridge between Adamdighi and Nasaratpur railway stations (The Ananda Bazar, 21st November, 1922). On April 25, 1921, the Magistrate forwarded the petition to the railway authorities for consideration. In reply, the Eastern Bengal Railway informed the Magistrate that they had conducted an enquiry. After the enquiry, they stated that they believed there was no need to construct a bridge at that place. Why did the railway authorities give such an unwelcome response even after receiving a petition from the residents of that area? Why did they take no action despite knowing the possible consequences? One of the main reasons could be that the railway lines were built primarily in the interest of foreign shareholders (Chapman and Rudra, 2007, p. 26). Lower construction costs meant higher dividends. As a result, many natural waterways were blocked or reduced, and narrow culverts were used instead of proper bridges, which ultimately led to disaster.



N. 1356-V.W.

From

E. B. Ry. Agent, Lt.-Col. H. A. Cameron, C.I.E.

To

The Magistrate of Bogra.

Calcutta, Oct. 28, 1921.

Sir,

With reference to your letter dated April 25, 1921, enclosing a petition 2 from Umiruddin Joddar and the inhabitants of Adamdighi and the adjacent villages, praying that a bridge be constructed between the stations Adamdighi and Nasaratpur, I beg to inform you that after due enquiry we are of opinion that there is no need for a bridge in the aforesaid place.

(Sd.) Illegible,
on behalf of the Agent.

Memo. No. 1773-J.

Office of the Magistrate, Bogra.
The 3rd Nov., 1921.

Copy forwarded to Umiruddin Joddar and others for information.

(Sd.) Illegible.
On behalf of the Magistrate.

Figure: Letter from H. A. Cameron, Agent of the E. B. Railway, to the Magistrate of Bogra regarding the proposed bridge between Adamdighi and Nasaratpur, 28 October 1921.
Source: Proceedings of the Magistrate of Bogra, 1921, File No. 1356-V.W., West Bengal State Archives, Kolkata; reproduced in Prafulla Chandra Ray, Life and Experiences of a Bengali Chemist.

Despite the evidence of the real reason for the flood destruction, namely, the newly constructed broad-gauge line built without providing sufficient water passages, the official explanation placed the entire blame on heavy rainfall. No proper attention was given to the role of the railway embankments in obstructing the natural flow of water. The prolonged accumulation of water and its serious consequences were conveniently ignored in the final assessment.

The news of this devastating flood reached Calcutta in an unusual manner. A mail train left Darjeeling on the 25th and arrived at Parbatipur the following morning. However, it could not proceed further, as the railway tracks south of Parbatipur were submerged under water. Railway officials also received information about a breach at Akkelpur. As a result, the passengers remained stranded at Parbatipur for four days. They were later sent to Calcutta by a longer and indirect route. Among the passengers was an editor of The Statesman, who, upon returning to Calcutta, became the first journalist to report the shocking news of the disaster (Ray, 1996, p-238). He wrote a detailed article and published photographs showing the broken railway line and the vast area that had quickly turned into a huge sheet of water. Meanwhile, after receiving private messages about the disaster, Subhas Chandra Bose went to the affected region to see the situation himself. From there, he sent telegrams to Prafulla Chandra Ray, the Congress, and the Bengal Young Men's Association. An appeal was published in the newspapers asking the people of Calcutta to attend a meeting at the Indian Association Hall. The purpose of the meeting was to form a relief committee and decide what steps should be taken. Many people attended the meeting, including both Europeans and Indians, and the gathering showed great enthusiasm. Prafulla Chandra Ray was chosen as the President of the newly formed Bengal Relief Committee. At first, he did not want to accept the responsibility because he had

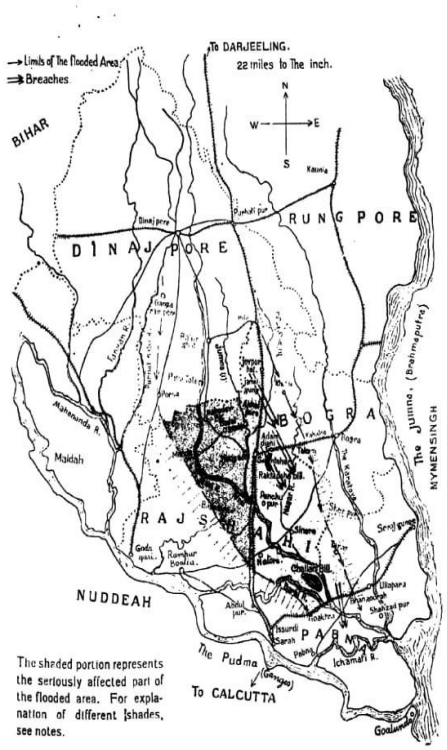
recently worked hard to raise funds during the Khulna Famine. However, people insisted, and he finally agreed to take up the duty, though he did so with hesitation. A correspondent for Manchester Guardian wrote:

> "In these circumstances, a professor of Chemistry, Sir P.C. Ray, stepped forward and called upon his countrymen to make good the Government's omission. His call was answered with enthusiasm. The public of Bengal, in one month gave three lakhs of rupees." (Banerjee, 2011, p. 21)

In October 1922, Surendranath Banerjee was in Darjeeling as a member of the government. He had gone there because meetings of the Select Committee on the Calcutta Municipal Bill were scheduled in Darjeeling. After hearing from friends about the severe destruction caused by the flood in North Bengal, he sought permission from the Governor to visit the affected areas. Banerjee travelled to the flooded region and observed widespread devastation. While moving about twenty miles along the railway line under intense heat, he saw large areas submerged in water and the carcasses of dead animals floating on the floodwaters. The situation appeared unhealthy and distressing. The local magistrate, Mr Reid, accompanied him and provided information about the extent of the damage (Banerjee, 1925, p. 376-377).

The damage caused by the 1922 flood was huge. It was recorded that the rice crop in Rajshahi and the ganja crop in Naogaon could have been saved to a large extent. Some argued that this would have been possible if the railway embankment had enough openings for water to pass through, or if it had been cut to allow free flow of water (Prasad, 2015, p. 131). At the same time, other provinces were also facing repeated and severe flood damage. This created a demand for forming a committee of experts to investigate the causes of recurring floods across India. However, the central government stated that flood control was mainly the responsibility of provincial governments because local conditions were different in each region. The North Bengal Flood Committee was appointed by the Government of Bengal in February 1923 to investigate the causes and extent of recurring floods in North Bengal. (Mahalanobis, 1927, p. 8) The main objective of the Committee was to examine the nature of flood occurrence and to suggest possible measures for prevention and control.

In order to carry out a scientific assessment, the Committee requested Prasanta Chandra Mahalanobis to provide detailed rainfall data and relevant maps. These materials were considered essential for understanding the pattern, intensity, and geographical distribution of rainfall, which had a direct connection with the occurrence of floods in the region. After examining the collected data, reports, and field information, the Committee submitted its findings to the Government. In its report, the Committee highlighted the serious impact of 1922 flood in Rajshahi Division of Northern Bengal on agriculture, infrastructure, and the livelihood of the people. It had been estimated that the financial loss caused by the floods was approximately six crores of rupees, which was a huge amount at that time (Mahalanobis, 1927, p. 10). The report emphasised the urgent need for systematic flood control measures and better administrative planning to reduce future damage in North Bengal.



Source: Derived from Meghnad Saha's article "The Great Flood in Northern Bengal." The shaded region indicates the area's most seriously affected by the flood.

Meghnad Saha was very worried about the frequent floods in Indian rivers. After the terrible floods in North Bengal in 1922, under the leadership of prof, Prafulla Chandra Ray, the North Bengal Relief Committee was formed to help the victims. Saha worked in the relief operations along with Subhas Chandra Bose and others. During this time, Saha saw the destruction caused by floods and began writing about it (Mahanti, 2002 p. 27-28). Meghnad Saha knew about floods from a very young age. He was born in a village in the Brahmaputra delta, where floods happened almost every year. In that region, people often said that children learned to swim before they learned to walk because water was such a common part of life. In 1913, when he was an M.Sc. student, there was a severe flood in the Damodar Valley. Saha joined a volunteer team to help the affected people. Again, during the 1923 flood, he actively took part in relief work (Pathak, 2019, p. 88). Seeing the damage and suffering caused by floods left a deep impact on him. These early experiences likely influenced his later interest in studying rivers and their behaviour.

By the early 1920s, Meghnad Saha had already begun to show a keen interest in finding scientific solutions to flood problems. In 1922, he published an article in the journal Modern Physics in which he analysed the physical causes of floods and discussed how scientific knowledge could help reduce their destructive consequences. His engagement with river and flood studies continued in the following years. In 1932, he authored another article titled Need for a Hydraulic Research Laboratory in Bengal, where he proposed the establishment of a specialised research laboratory dedicated to hydraulic studies (Naik, 2017, p. 139). Saha argued that such an institution should be affiliated with a university

rather than an engineering college so that scientific research could guide river management more effectively.

His concern with river-related issues became even more evident in 1938, when he delivered the presidential address at the annual symposium of the Indian National Science Academy (then known as the National Institute of Sciences of India). In this address, titled Problems of Indian Rivers, Saha examined the major challenges associated with river systems in India (Naik, 2017, p. 141). His writings and public lectures significantly influenced the government's decision to establish the Bengal River Research Institute in 1943.

That same year, a severe flood occurred in the Damodar River basin. In response, Saha wrote a series of articles highlighting the urgent need for systematic flood control measures. These efforts eventually led the Government of Bengal to create the Damodar Flood Inquiry Committee, of which Saha became a member. During this period, the journal Science and Culture, founded by Saha, played an important role by providing a platform where scientific perspectives on river management could influence policy discussions.

In 1944, Saha collaborated with Kamlesh Ray to publish an article titled Planning for the Damodar Valley in Science and Culture. In order to develop practical solutions, Saha examined several international flood-control projects, including the Tennessee Valley system (Naik, 2017, p. 144). Through these studies and field observations, he concluded that effective flood mitigation required comprehensive and scientifically planned river basin management. Based on their research, Saha and Ray proposed a series of dam sites within the Damodar Valley. Saha also held discussions with B. R. Ambedkar, who was then responsible for power and public works in the Viceroy's Executive Council, to advocate for a large-scale river control project (Pathak, 2019, p. 89). His persistent efforts ultimately contributed to the creation of the Damodar Valley Corporation, which was established shortly after India's independence and began functioning in March 1948.

Despite the development of science and technology and repeated warnings from past experiences, Northern Bengal has not been able to overcome the destructive impact of floods. In most cases, the extent of damage and loss occurs due to administrative negligence and the absence of proper flood-control planning. Natural calamities, especially floods, could be managed more effectively if lessons from the past were taken seriously, environmental balance was maintained, and the natural flow of rivers and drainage systems was not disturbed. Moreover, scientific research on flood control initiated by scientists such as Meghnad Saha and others could have significantly improved flood management if it had been properly continued and given sustained attention. Instead of prioritizing short-term gains, greater investment and commitment to such scientific approaches might have enabled better control and mitigation of floods.

References:

1. Amrita Bazar Patrika. (1922, November 6).
2. Banerjee, S. (2011). Acharya Prafulla Chandra Ray: An epitome of scientific attitude and human values. Breakthrough, 15(1), 12–24.
3. Banerjee, S. N. (1925). *A nation in making: Being the reminiscences of fifty years of public life* (2nd ed.). Humphrey Milford, Oxford University Press.
4. Chapman, G. P., & Rudra, K. (2007). Water as foe, water as friend: Lessons from Bengal's millennium flood. Journal of South Asian Development, 2(1), 19–49. https://doi.org/10.1177/097317410600200102
5. Feynman, R. P. (1955, December). The value of science. Engineering and Science, 19(3), 13–15.
6. Hunter, W. W. (1876). A statistical account of Bengal (Vol. 8): Districts of Rajshahi and Bogra. London: Trübner & Co.
7. Mahalanobis, P. C. (1927). Report on rainfall and floods in North Bengal, 1870–1922. Bengal Secretariat Book Depot.
8. Mahanti, S. (2002, November). Meghnad Saha: A pioneer in astrophysics. Dream 2047 (Monthly Newsletter of Vigyan Prasar), 5.
9. Misir, K. M. (1965). Rajshahir Itihas (Vols. 1–2). Gatidhara.
10. Naik, P. V. (2017). Meghnad Saha: His life in science and politics. Springer.
11. Nelson, W. H. (1923). Final report on the survey and settlement operations in the district of Rajshahi, 1912–1922. Bengal Secretariat Book Depot.
12. Pathak, A. (2019). Meghnad Saha: A physicist's approach to social problems. In A. Ghatak & A. Pathak (Eds.), Meghnad Saha: A great scientist and a visionary (pp. 82–96). Viva Books.
13. Prasad, R. (2015). Tracks of change: Railways and everyday life in colonial India. Cambridge University Press.
14. Proceedings of the Magistrate of Bogra, 1921, File No. 1356-V.W., West Bengal State Archives, Kolkata.
15. Ray, P. C. (1935). Life and experiences of a Bengali chemist (Vol. 2). Chuckervertty, Chatterjee & Co., Ltd.
16. Ray, P. C. (1996). Life and experiences of a Bengali chemist (Vol. 1). The Asiatic Society. (Original work published 1932)
17. Saha, M. N. (1922, November). The great flood in North Bengal. Modern Review, 32.
18. Saha, M. N. (1932). Need for a hydraulic research laboratory in Bengal. In P. C. Ray's 70th Birthday Commemoration Volume. Calcutta.
19. Singh, P. (2008). The colonial state, zamindars and the politics of flood control in north Bihar (1850–1945). Indian Economic and Social History Review, 45, 239–258. https://doi.org/10.1177/001946460804500203
20. Strong, F. W. (1912). Eastern Bengal district gazetteers: Dinajpur. The Pioneer Press.
21. Superintending Engineer, Northern Circle. (1897, April 6). Extract from the proceedings of the District Board meeting held on 6 April 1896. Selections from the Records of the Bengal Government, Railway Department. Record Room of the Irrigation Department, Patna.
22. The Ananda Bazar. (1922, November 21)