



COLONIAL SCIENCE PRACTICES AND HISTORY OF COAL MINING IN INDIA

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Abstract

Society and science are intertwined. The purpose of science practice is to satisfy societal demands, and societal needs are met by societal support of science practice. With the help of colonial power, western science arrived in India. Colonial science is a practical aspect of modern western science. The main objective of colonial science practices is to make profit from the colony. In order to further own interests, the colonial power in India began coal mining operation. The practice of colonial science and coal mining in India go hand in hand.

Keywords: Society, Colonial science, Practices, Coal, Mining.

Introduction:

Science and society are interrelated. The relationship between science and society can be found at every stage in the history of the world. Currently the social history of science is a part of the mainstream of history because the real progress is spoken of here. Historians have tried to write a social history of science, explaining the evolution of science from a social point of view (Palit, 2005). The goal of science practice is to meet the needs of the society while on the other hand the society provides patronage in the field of science practice. Reviewing the history of the progress of science in the western world shows that in the period of Renaissance the development of science was directly or indirectly related to the society. In fact at this time the close relationship between science and society can be observed in the process of transition from feudalism to capitalism as a socio political system. In other words, in the interest of this transformation society depend on

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science. Again the practice of science was made possible by the patronage of the newly born capitalist. The interrelationship between society and science can be clearly understood by analyzing the character of this development of science and technology in the west (Chattopadhyay and Rajbangshi, 2021). The relationship between science and society is very close. The practice of science fulfills the needs of the society and the practice of science develops under the patronage of the society. The introduction of western science into India was in the hands of the colonial rulers. So this question comes up the western science and colonial science are the same? Colonial science has been defined in many ways. The development of science was affected the economic situation. Science played an important role in the development of capitalism. Metallurgy, chemical industry and mining industry provided a great impetus to trade. The mining sector became the basis of the capitalist system of production. In other words, meeting the needs of the society became the main subject of colonial science practice (Cohen, 2010). Coal mining became important in the practice of colonial science. Coal is a type of mineral that plays an important role in economic development. For their own economic interests, colonial powers insisted on finding India's coal. The history of Indian geology and mining in colonial India dates back to four successive attempts by the Europeans and one by an Indian proto industrialist to open mines in Bengal during the reign of Warren Hastings. Hastings backed each of the five efforts. The first two of these requests- to mine and work iron in Birbhum from Indra Narayan Sharma and to mine coal in Panchet and Birbhum by Sumner and Heatly were made in 1774. The plan of Indra Narayan Sharma never materialized. Sumner and Heatly's did, but the military board rejected their coal after discovering that samples produced just half as much energy as British coal, possibly because it had been extracted from the surface as opposed to from depth (Grout, 2005). The present paper focuses on the history of coal mining activity in India by the colonial ruler in the light of colonial science practice.

Objectives of the study:

- 1) To know what is colonial science practice?
- 2) To know the history of mining activity in colonial India.

Methodology of the study: To done the study various primary, secondary sources used. Primary source used as Geological Survey of Indi's report. Secondary data collected from books, articles, and Journals. Historical method and descriptive method used to done the study.

Review of literature:

Kumar (2006) focused on the concept of colonial science, this work moves on to beforehand creative activities in this subject, problems in science supervisory, science education, specific research, and Indian reaction to all activities.

Chattopadhyay and Rajbangshi (2021) depicted a short history of science in the colonial period in India. The relations between science and society are portrayed by the authors. How science, technology, and medicine developed in the purpose of colonial state describe in the book.

Palit (2005) wrote several essays on science, technology, medicine and the environment in colonial India. Bandopadhyay (1998) described in brief the history of coal mining in Raniganj area. Mondal (2005) depicted a short history of Raniganj sub division of Burdwan district of West Bengal.

What is colonial science practice? :

The introduction of western science into India was in the hands of the colonial rulers. So this question comes up the western science and colonial science are the same? Colonial science has been defined in many ways. Professor Deepak Kumar has identified colonial science as a 'subordinate science'. According to him the result is more important in practice of science in colonial rule. The application of science is more important here. This stress on applied side means that much emphasis is placed on the applied aspects than the basic and exploratory studies in colonial science. Although he favors the use of 'power based' words instead of 'result based' and use of 'knowledge' instead of 'enquiry'. According to him power and knowledge are two sides of the same coin. The combination of these two creates dominance and authority. Colonial rulers established their dominance and authority through the practice of this science. In India colonial science also released in the same way (Kumar, 2006). The famous social scientist Michel Foucault also gave a very nice explanation of power and authority with the relation of knowledge. Eminent scholar Anish Alam entitled colonial science as 'production science'. According to him the colonial science used for exploitation in the colony and gaining maximum profit and increased revenue for the colonial ruler. As per him the colonial power strengthen its periphery in second half of 19th century in India. The existing indigenous knowledge threatened by the colonial power (Alam, 1997, p. 5). Donald Fleming showed that the study of natural history was the forerunner of 19th century scientific initiatives. According to him, this kind of audit proceeds as a result of both practical needs and probability estimates. In this way colonial enterprise was built. There are two types of needs adapting to the colonial environment and looking for financial gain. European scientist demanded an uninterrupted supply of information for scientific research from different parts of the empire, and obtained it through imperial power. Scientist of the colony had to play a subordinate role. They are not given the task of solving theoretical problem; their job was to provide information as subordinate of European scientist (Chattopadhyay and Rajbangshi, 2021). According to Michael Worboys colonial science is basically applied science. He opined that colonial science is the use of science to take advantage of opportunities and to solve practical problems. He thinks those colonial scientists were completely influenced by colonialism (Michael Worboys, 1979). Daniel R. Headrick, in his book "Tools of Empire; Technology and European Imperialism in 19th Century" (1981), shows that technology played a vital role in the development of empires. The use of science and technology for the rapid development of the European empire was unparalleled. According to him, the transfer of European technology was happened in the colonies. The transfer of this technology was adapted as an action plan in the colonies. It was not implemented from the idea of technology distribution. In this case local knowledge and experience was not given importance as local needs were not considered. He tried to show that in colonial India the local people did not have a very good attitude

towards science and technology. He blamed religious practice and tradition among Indians for this. Although this is not entirely true because the colonial ruler used to educate the Indians up to a certain levels. Knowledge of modern science and technology was not given to Indians (Headrick, 1981). According to Ian Inkster imperial and local elements work equally in shaping colonial ideals. He distinguishes between new colony like Australia and Canada and old colony like India. He distinguishes the colonial elements between the two. He tried to show the development of science in the colony in the form of a pyramid. This Pyramid has a broad socio economic basis, there is a very important cultural Institutional infrastructure, and there is a research activity. According to him the second stand on top of the first and the third stands on the second. The development of scientific programs in the colony depends on the broader financial, social base and infrastructure of the cultural institution (Inkster, 1985, pp. 677-704). Jhen Tod to work in Australia on technology and reliance transfer in the world of science and technology understand that the scientific process created among the people by whom they evaluated foreign technology without creating a new technological method and selected it as needed and adopted locally. G.M.G Vaccine studied the relationship between science and government in 19th century Canada and concluded that there was no need to acquire new knowledge as a necessary accessory. The direct transfer of scientific infrastructure to production has done almost nothing. As can be seen, the motivation in the initiatives was not always from 'top to bottom' but from 'bottom to the top'. In discussing India, Professor Deepak Kumar has shown the exact opposite picture. In colonial India, the rulers always idealized development as a condition of 'top to down' development for them (Kumar, 2006). Michael Adas emphasizes the Europeans thinking and behavior. He stresses on the importance of science and technology at the heart of European ideas about civilization. According to him, this science and technology was used to civilize and develop the people of the colony. In fact, he justified the argument of the colonists to make the people of the colony civilized and developed. He did not discuss what the people of the colony thought about the Europeans (Adas, 1990). Louis Pienson thinks that the imperialists spent money on some research, that the investment would be financially profitable. He further added that the only main goal of practice of science of the imperialist was to increase the fame and prestige of their country. According to him, there has been no significant change in the practice of science or its consequences for colonial needs. He speaks of three axes in the practice of colonial science. Functional axis, here the colonial scientists are first and foremost in charge. Research axis, here the research is the principle. Commercial axis, here the scientists work for commercial purpose. He thinks that scientific activity in the colony does not satisfy economic interest in all cases. He mainly focuses on the scientific aspects of colonial science. His opinion is not completely acceptable. Colonial rulers became interested in the practice of science only when they raised the possibility of acquiring that science (Chattopadhyay and Rajbangshi, 2021). Among Indians, the historian Satpal Sagwan opined different view. He looked at colonial rulers and colonial scientist with different eyes. According to him, under the pressure of the profiteering government, the colonial scientists were able to successfully maintain their unique existence. It would not be right to underestimate their achievements in scientific research. In his words, the colonial historian may have been controlled by the colonialists, but it is only a historical

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event and It's not a scandalous chapter at all (Sagwan, 1991). In British India, in the interest of the colonial empire the rulers focused on mainly geology and botany. The few scientific institutes that have been established in British India worked for their own interest. The main purpose of science practice by these institutes was to acquire knowledge about the geographical location of the colony, the land structure, the animals, the religion, the culture and the languages of the colony and use the acquired knowledge for colonial purposes. In 1784 Sir William Jones established Asiatic Society. The main purpose of established Asiatic society is to know the geography, its flora and fauna, its culture and languages, peoples. This knowledge was used to strengthen the colonial rule. The Indians are could not become a member of this institution till 1829 A.D. Indians were denied entry here. The information obtained was reserved only for imperialistic activities and was not disclosed to the general public. India was 'another country' to the colonial British rulers. Religion, culture, language, law, geography and medical science of India must be known. With the knowledge gathered through the Asiatic Society, the country can be ruled and exploited smoothly. Sir William Jones sees the activities of the Asiatic Society as a European Discovery of India and attempts to incorporate Indian ancient culture and educational issues into European interpretations. Colonial science has only dominated on the tradition. In British India there was not happen the real transfer of western science and technology. Instead, European science and technology were used to satisfy colonial interest. In the interest of colonial rulers, the scientific method, language, literature and science was applied (Palit, 2005). Deepak Kumar said that, "Scientific development in British India should be treated as individual romances with natural history without linking them with the political economy of the time" (Kumar, 1991, p. 8). Colonial science is the application of western science to the colonies. It was a kind of 'dependence science', which was an attempt by western scholars in the colony to apply western science.

History of coal mining in India: We can trace the history of coal mining activity in India in the context of colonial science practices. The early history of coal mining in India as well Raniganj coal field may be traced back to 1774, when collector of Chotonagpur and Palamu, Grant Hitley first discovered coal in Raniganj area. He along with Mr. Jhon Sumner applied for permission to the governor general of East India Company for done mining activity in Raniganj area. They got license to done the mining activity. In the same year Messer's Sumner and Hitley firm opened their first coal mine near Sitarampur (Guha, 1987). The Sumner and Hitley firm opened six mines at that time. Out of six there were three at Aituria, Chinacury and Damuria and other three were at west of near Barakar (Geological Survey of India, 1940). Several thousand coals extracted from the mines. In the year 1775 a total amount of 2500 maunds were delivered to the British government. Coal of Hitley and Sumner firm rejected because it is very low quality coal, it burns quickly and it destroyed the Iron. The coal returned to the Hitley's firm (Ibid, 1940). After a long time, in 1804 an officer of a Regiment discovered coal in Burdwan district. They discussed with Major General Hardwicke about their discovery. After a long series of examination, English authority viewed that Indian coal is not good as English coal is. Every time the authorities examined surface coal, not deep ground level coal. At that time east India Company imported coal from Britain. Napoleonic warfare and

Continental system applied by Napoleon upon England changed the scenario. The British maritime trade very much hampered by continental system. The British coal merchants were much afraid of losing profit in coal export business to India. So East India Company authority thinks to re-examine Indian coal, which may be substitute for English coal. In 1814, Governor General Lord Moira and other officials of company appointed Rupert William Jones to examine the quality of Indian coal and coal areas of Bengal. Rupert William Jones got lease of land from Rani of Burdwan for his exploration (Bandopadhyay, 1998, p. 92). Mr. Jones experimented at the depth of 39 feet under the ground in a long time. At last him and company officials came to understand that Indian coal is as better as English coal. He also opened a mine at Egara village near Raniganj. He also did his mining activity on abandoned mines of Mr. Heatly. Mr. Jones got Rs 40,000 in advance from Company for his mining activity. He got 133 bighas Patta of land from Rani of Burdwan. Raniganj emerged as a coal mine area of eastern part of India. Jones achieved success in transported coal to Calcutta. He made some boats and use of River Damodor sent the coal to Calcutta. The coal unloaded at Amtah Ghat. From 1818-20 there are 71,000 maunds coal send to Calcutta (Ibid, 1998). The river transportation is very hazardous because it is depends on only water level of Damodor. In 1820 a big agency house of Calcutta, Messer's Alexandar and Company got the lease of Mr. Rupert Jones and continued their mining activity in Raniganj area. The company already involved into Banking, Indigo cultivation and Shipping. Another company Messer's Jessop and company started mining in Narayankuri and Damulia in 1824. At a time Damulia coal mine area was in the hand of Heatly and Sumner firm. They closed the mines in 1815. Jessop and company bought the Damulia coal field. Mr. Bates bought the property of Heatly at Chinakuri and again started in 1823. Alexandar and company sold their all property of coal business in 1832. The proprieties of Alexandar and company bought by Prince Dwarakanath Tagore, the grandfather of famous Rabindranath Tagore. He joined with a British as a partner and formed Carr, Tagore and company. The Company purchased Chinakuri coal mine in 1837. Messer's Jessop and Company sold their all property of Narayankuri and Damulia. The mine area of Narayankuri and Damulia buy by Messer's Gilmore, Homfray and company in 1939 (Patra and Mal, 2020, pp. 6776-6786). At that time another private company entered in coal business, Messer's Erskine and Company. They started mining activity near Mangalore of Raniganj. Coal send to Calcutta from Raniganj coal area 36,000 tons in 1839 and 91,500 tons in 1846. In 1843, Dwarakanath Tagore purchased the Gilmore, Homfray and Company. Carr, Tagore and company and Gilmore, Homfray and Company merged and formed Bengal Coal Company. In 1844 the Bengal Coal Company employed 5000 persons and have 50,000 boats (Marine Department Proceedings, 1844) .It is the largest coal company of Raniganj until nationalization of Coal field. Later it came under the management of Andrew Yule and Company. Many small private companies also involved in mining activity from 1835 in Raniganj coal area. Baboo Govinda Prasad Pandit opened six pit mines at Searsole. Erskine and Company opened a mine near Raghunathganj. Other Coal mining company of Raniganj were- Messer's Apcar and company, Messer's Grob Durrshmiatt and company, Beerbhum coal company, Barakar coal company, Messer's Madhu Roy and Company, Barboni Coal company, Jagdish coal company, Old East India coal company etc. In 1858, 1860 and 1868 the coal produced in Raniganj area were

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293,000 tons, 285,850 tons, and 459,000 tons. From 1850 the coal production growth rapidly because of East India Railway connected Raniganj to Howrah. The railway connectivity made easy of transportation of coal to Calcutta. On 3rd February, 1855 the East India Railways started rail service between Raniganj and Howrah. In the month of March, 1855 twenty six goods train which carried 187 ton coal reached Howrah to Raniganj (Ghosh, 1974). The railways had also a huge demand for coal for their engines. The East India Railway opened their mines in Giridih of modern Jharkhand. From 1860 to 1890 four big companies were engaged in coal mining activities in Raniganj coal field, they are-The new Beerbhum Coal Company(1861), The Equitable Coal Company(1864), The Raneeganj Coal Company(1873), and The Barakar Coal Company. The Four Company and Bengal Coal Company produced 80% of the total production of coal in 1890. The period is boom phase of coal industry of Raniganj (Papendieck, 1978, p. 173). An American Company Messer's Apcar and Company joined in coal production in that phase. The Company opened their mines at Sitarampur, Lachipur and Barachuk. The other private companies in that phase are-The Boria Coal Company, Birds and Company, and South Barakar Coal Company etc. In 1881 there were 37 collieries in Raniganj Coal field. At the end of 1908 there were 274 collieries on that area. Increase of collieries indicated the raising level of coal production in that phase (Mondal, 2005, p. 51). At the end of 19th century Jharia coal field produced good quality coal so the production in Raniganj area became less. At the time on the eve of the First World War or during the First World War increased demand of coal led to increased level of coal production. Some notable Indian like, Nibaran Chandra Sarkar, K.B.Seal involved in coal mining business. After 1920 coal production of Raniganj coal field became less because of global depression of 1929. Many coal companies closed down at that time. Their mines are never open again. Some Gujrati and Marwari businessman bought some collieries at that time. At the time of Second World War the demand of coal cited but production of coal in Raniganj area not increase due to shortage of man power and the socio-economic condition of the war. After Independence the govt. of India took some important steps in coal sector.

Conclusion:

Coal mining activity in India was complemented by colonial scientific ideas, its application and colonial power. A small number of companies were associated with this activity in Raniganj area of India prior to the enactment of the Charter act of 1813. But the act of 1813 ended the monopoly trade of East India Company. From this period many companies penetrated into India and started their mining activity in the region. A lot of investment started in the coal mining sector. Some Indian capitalists also participated in this. From this time various uses of mining technology and various equipments use to start in the field. Open cast mining came to an end in India after 1920. Coal mining started going deeper into the mine. For the demand of Indian coal such technical difference are observed. Finally, it must be said that colonial science practices and their economic outlook were strengthened by coal mining in India.

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