

# ROLE OF HENRY WESLEY VOYSEY IN THE BUDDING OF GEOLOGY IN COLONIAL INDIA

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Geological Survey of India was established as an instrument of geological exploitation in India by the English East India Company in 1851 although geological investigations began even long before. Among the surveyors, who have done geological observation and investigation thoroughly during the first half of the colonial rule, Henry Wesley Voysey was the pioneer. During a very short period of only five years (1818 – 1824), he made his contributions to an understanding of the geology of India by observing and analyzing a vast tract of Indian peninsula, which justified his title, *Father of Indian Geology*.

Through Colonel W. Lambton's initiative, Voysey joined the Trigonometrical Survey of India at Hyderabad on 15<sup>th</sup> December, 1818 as surgeon and geologist. It is believed by some that the appointment of Voysey was the first official recruitment of a geologist in India.

Voysey's main contributions were on stratigraphical and mineralogical geology. Besides his observation on economic geology, Voysey also contributed significantly in academic analysis of the geological and mineralogical findings. His main survey work was on southern India and some parts of North India. His observation was multidimensional. Voysey's superb geological knowledge was revealed in his examination of certain mountain ranges in South India. Voysey wrote about some unknown geological specimens and he also made experiments on those. One of the most mention worthy contribution of Voysey was his observation on the diamond mines of southern India. He gave a detailed description of the diamond collection process. Beside his commendable survey work, Voysey prepared a geological map of a part of Hyderabad and adjoining region. It is considered to be the first true and comparatively pure geological map in India.

Eight of his articles were published in the *Asiatick Researches* and *Journal of the Asiatic Society of Bengal* posthumously, between the years 1825 and 1850. Many of his followers were indebted to his minute and thorough observations. Thus, it can be said that in the initial stage of the Survey of India, undoubtedly, Voysey provided a matrix for the growth of geology in colonial India.

**Role of Henry Wesley Voysey in the budding of Geology in Colonial India**

**Dr. Sujaya Sarkar**

Geological Survey of India was established as an instrument of geological exploitation in India by the English East India Company in 1851 although geological investigations began even long before accompanied by surveys and mappings, through the journey of various known and unknown persons. Among

the surveyors, who have done geological observation and investigation thoroughly during the first half of the colonial rule, Henry Wesley Voysey was the pioneer. During a very short period of only five years (1818 – 1824), he made his contributions to an understanding of the geology of India by observing and analyzing a vast tract of Indian peninsula. This justified his title, *Father of Indian Geology*.

Beside studying medicine at London and Edinburgh, his early attention was especially directed to mineralogy and geology. He studied those sciences in one of his visits of about two years at Aberdeen under Professor Robert Jamieson, and enjoyed the advantage of a practical course of instruction under the celebrated geologist John MacCulloch, who was famous for his pioneering work on Scottish geology producing the first geological map of the country. (1) He utilized these opportunities most profitably during his later days in India.

From existing literature, it appears that Voysey came to India on or before 1818. When Sir George Everest first joined Colonel W. Lambton, the 'grand old man' of the Trigonometrical Survey of India in 1818, he had with him Dr. Henry Wesley Voysey as a colleague. Through Lambton's efforts, Voysey joined the Trigonometrical Survey of India at Hyderabad on 15<sup>th</sup> December, 1818 as surgeon and geologist. His confidence and competency impressed his employer and eventually within a short time, Voysey became Lambton's only assistant. It is believed by some that the appointment of Voysey was the first effective official recruitment of a geologist in India. (2)

Voysey's main contributions were on stratigraphical and mineralogical geology. Besides his observation on economic geology, Voysey also contributed significantly in academic analysis of the geological and mineralogical findings. His main survey work was on southern India and some parts of North India. Colonel Lambton sent him with the charge of a preparatory journey through Malwa and Gondwana, in order to lay down the line, most eligible, for the progress of the Trigonometrical Survey from Nagpur to Agra. (3) He accompanied George Everest in his hard work on the Godavari and he was one of the earliest observers and writers on the rocks of the Deccan. He wrote that his attempt was 'to take a general survey of the mineralogical character of the country'. (4) His observation was multidimensional. He analysed the characteristic features of the building stones of Agra. In a journey in 1819, Voysey and Everest were in the predominantly granitic area to the northwest of Hyderabad, noting logan stones on the hill tops. In Udgir, which was a basalt area, Voysey noted some basalt columns. In Bidar, which was also on the Deccan plateau basalts, he often observed 'iron-clay', which was actually laterite. In Hyderabad, he visited a village where steel was made. (5) All these were treated in detail by him.

Voysey's superb geological knowledge was revealed in his examination of certain mountain ranges in South India. He prepared a geological sketch of those range of mountains, which he addressed as 'Nalla Malla' mountains or 'Blue Mountains'. He wrote, 'The geological structure of these mountains, it is

difficult to understand, and it cannot be easily explained by either the Huttonian or Wernerian theories'. (6) The different composition of the rocks being so mixed together without order of position, each in its turn being uppermost, that it was not easy to give a definite name which would be applicable to all places. Firstly Voysey thought of naming them as 'shistoze formation', but later thought that, as clay state was probably the most prevalent rock, he gave that name to the whole, observing however that by 'clay slate formation'. (7)

Voysey's other contribution was on the geological and mineralogical structure of the hills of Sitabaldi, Nagpur and its immediate vicinity. He started his report with his remark regarding the structure of that area as an excellent example for observation on geological lines. He wrote that the hill of Sitabaldi, although similar in form and interior structure with other basaltic hills in its neighbourhood, 'merits a mere particular description on account of some peculiarities in the composition of the main rock, hitherto unnoticed by geologists, and for the opportunities afforded by its extensive quarries of studying the varied structure of the rocks of the trap family, which is rarely to be seen in so distinct a manner'. Considering the position of Nagpur, he stated that 'perhaps Nagpur affords more opportunities than any other part of India, of studying the geological history of these rocks, as it is situated near the junction of the primary and overlying rocks'. (8)

Voysey wrote about some unknown geological specimens and he also made experiments on those. He observed semi-columnar basalt containing numerous amygdaloidal cavities, which were for the most part merely lined with a peculiar mineral. Voysey named them as 'conchoidal augite', though he had not been able to determine its composition exactly. He later had an opportunity of fusing a large piece of the Sitabaldi basalt in a steel furnace. After an hour's fusion, the product was found to be a fine black opaque stone, resembling porous obsidian. He mentioned that in the Mediterranean, glass bottles were commonly made from basalt and felt that the basalt of Sitabaldi seemed to be of an equally favourable nature for the similar purpose. (9)

One of the most significant contributions of Voysey was his observation on the diamond mines of southern India. Perhaps it was started in 1821 for observing Banganpalli (Banganapalle) mines. Voysey opined that on or near the banks of the rivers Krishna and Pennar, were situated many diamond mines, which would produce largest diamonds in the world. Among them, one of the famous mines was Golconda mine. Those mines, at the time of his visit, with the exception of two or three were quite deserted. He regretted that no fresh excavations had been made, so that he had no opportunity of ascertaining the mode in which the miners could reach the breccia. He wrote about many holes with an average depth of five feet, most of them were blocked up with rubbish. The local people informed him that the diamond bed was found at that depth. Voysey's opinion was that, much ground remained unopened and many spots might have been pointed out for new and productive mines. (10)

He gave a detailed description of the diamond collection process, though at that time it was not productive. During his visit in 1821, he saw about a dozen of parties at work, each composed of seven or eight people. Parties of boys were engaged in collecting and pounding scattered pieces of breccia. The entire labourers were Dhers or outcasts, and were under no control or inspection. The misery of their appearance did not give favourable ideas of the productiveness of their labour. He reported that sometimes the local miners were engaged in shifting and examining the old rubbish of the mines. That was because, they thought that the diamond was always growing and the chips and small pieces rejected by former searchers, actually increased in size and in process of time, became large diamonds. On his last journey from Nagpur to Calcutta in 1824, he visited the diamond workings of Sambalpur in Orissa. By 11<sup>th</sup> March, 1824, Voysey was at 'Sumbulpoor', where he stayed until 16<sup>th</sup> March, visiting the alluvial diamond workings in the River Eeb and 'Maha Nudee', the present river Mahanadi. In this context he made various academic discussions. The knowledge of the matrix of diamond, one of the great academic analysis in the early colonial period, is mentionworthy. He also pointed out that the character of the surface of the soil, which helped to form diamond in southern India, was the sandstone breccia of the 'Clay Slate formation'. (11)

Beside his commendable survey work, preparation of a geological map of a part of Hyderabad and adjoining region was another significant contribution of Voysey. He wrote a letter to a correspondent in Calcutta (probably H. H. Wilson) dated 1<sup>st</sup> August, 1823. It might be considered as the summary of his geological works in India. He wrote, 'I am preparing a sketch of the geology of India, for which purpose I have been collecting data, since I was first attached to Colonel Lambton .... I have completed several barometrical and geological sections, one of which is nearly a thousand miles from Agra to Madras, another from Bombay to Masulipatam, and several across the province of Hyderabad: it will be ready in about one month ... a synopsis of Indian geology, which will be the foundation of my sketch.' (12)

His reports and writings revealed that within the standards of his day, Voysey remained well informed and updated. He shared many quotations and analysis from several contemporary writings. Voysey's observations were significant in adopting Government's new policy, specially on diamond mines. His account of the Banganpalle diamond mines was published thrice in the English language (in the *Asiatick Researches* in 1825, in the *Philosophical Magazine* in 1826 and in the *Edinburgh Journal* in 1827), and also in German (in the *Froriep's Notizen* in 1827). (13)

Voysey had to face various hazards, - environmental, apparatus-related and financial, which obviously interrupted his progress to a great extent. There were many evidences of his stay in forest, even in a totally wild environment for minute geological and mineralogical investigations. He had to battle with fever for several times since his travelling from 1819. This ultimately caused his early

death. He wrote, 'I may say that I have travelled through a vast forest of 870 miles, of which 600 is perhaps the thickest in India'. (14) He confessed his nervousness while passing through the caves of wild animals. During his stay in the Deccan plateau, he narrated that while observing amethystine quartz veins, running into the jungle from east to west, he was afraid to trace the vein, however, for fear of tigers. He returned back and further resolved to set off again along with Everest. They decided to proceed purposefully in the rainy season to take advantage of any rare periods of exceptionally clear visibility, which might occur. He has to pass through places of powerful banditti. He has to use even elephants and horses for travelling and got bad tumble also. Sometimes the intolerable heat of the day has prevented his excursions. He mentioned that scarcity of meteorological and other apparatus restricted him from making any other than very general observations. (15)

Voysey's last few days in India were marred by financial difficulty and illness. He received an allowance for being a surgeon and geologist to the Survey, as well as his assistant surgeon/hospital assistant's pay from his Regiment. He was put on half pay from the army with effect from 6<sup>th</sup> February, 1823. Phillimore pointed out that working for the Survey debarred him from regimental promotion. Nearly a year after Lambton's death Voysey felt compelled to resign for financial and urgent personal reasons, and set out to return to England. (16) Voysey's last entry in his diary was on 6<sup>th</sup> April, 1824. He died seven days later when he was on his way to Calcutta.

Eight of Voysey's articles appeared in the *Asiatick Researches* and *Journal of the Asiatic Society of Bengal* posthumously, between the years 1825 and 1850 by the active initiative of the Asiatic Society of Bengal. The articles were the result of his travelling over a very wide stretch of the country. The persons who were actively engaged in this arduous but pleasing venture were Horace H. Wilson, H. Piddington and James Franklin. (17) Among them, H. H. Wilson was Voysey's original biographer and acquainted with him. Later, Henry Piddington, the Curator of the Museum of Economic Geology at the Asiatic Society of Bengal wrote, 'I have been able, ... to recover three more of Dr. Voysey's notebooks making in all 5 books of notes, from which I trust we shall be able to extract much valuable information relative to our collections....' Some months later, Piddington wrote to H. Torrens (the then Secretary of the Asiatic Society of Bengal) such as, 'Sir, Having examined alternately the five books of Dr. Voysey's notes, I beg to report, that there is in them much geological information of the very highest interest, for they principally relate to the stupendous geological phenomenon the great trap and granite formation of central India'. (18)

A letter was sent to London requesting a copy of Voysey's geological map for the Museum of Economic Geology, and the reply of 1<sup>st</sup> November 1843 included the following: 'There is only one geological map connected with Dr. Voysey's

report, which includes part of the country between the Godavery and the Kistna. A copy of the map is forwarded as a number in the packet....' (19)

Though Voysey's sudden death have made his work incomplete, but still with this limitation, he is regarded as imitative by contemporary and later geologists. In *The Asiatic Journal and Monthly Register for British India and its Dependencies* it was published that the scientific world will require no better evidence of his worth than that of the late distinguished superintendent of the Grand Trigonometrical Survey, Colonel Lambton, who in speaking his character in 1821, observed that, 'the field for geological science in India is now becoming extensive and interesting, and a man of Mr. Voysey's talents, zeal and interest, must render his services a benefit to his country, and an honour to himself; and such is my opinion of his abilities, that I feel the highest gratification in having him as an associate in these interesting pursuits'. (20)

Many of Voysey's followers were indebted to his minute and thorough observations. James Calder made his passionate regard to Voysey when he said that due to his brilliant observation, other geological observers easily understood the real features of the vast regions in South India, specially the valleys of the Pennar, the Krishna and the Godavari rivers. (21) Later, when James Franklin was engaged in his observation work in a vast region of central India, he adopted Voysey's methodology in his work, where personal observation and the help of specimens obtained from other sources went hand in hand for better analysis of its geological characteristic features. (22)

Voysey had prepared materials for a much more extensive work. It was his design to render a map and description of the geology of the extensive districts in the Deccan, through which he travelled. His minute geological observation discovered the rich geological and mineral resources. He created the first true and comparatively pure geological map for the first time in colonial India, he was the first to comment and analyse the minerals of Hyderabad and adjacent areas. He was the first who effectively worked for expansion of geological studies. His recognition of mineral substances by their external characteristics was as accurate as it was prompt. As he was also a sound chemist, he could readily bring his opinions, founded on exterior appearance, to the test of analysis, and in his analytical inquiries he was equally ingenious and correct. (23)

With the preparation of the survey reports, he gave equal importance to the formation of map-making process. In this way, he helped and inspired the future investigations, which he thought would be more systematic and more academic in geological observations. Thus in the initial stage of the Survey of India, undoubtedly, Voysey provided a matrix for the growth of geology.

## NOTES AND REFERENCES

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