Sir Ronald Ross

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STALWARTS

Introduction

Sir Ronald Ross was born on May 13, 1857, in Almora, India, to a Scottish Army Officer. He desired to be a painter, composer, mathematician, poet, & writer once he grew up.¹ He completed his education in England and enrolled in St Bartholomew’s Hospital Medical College in 1874.

Ross married Rosa Bessie Bloxam in 1889. Dorothy and Sylvia were their two daughters, and Ronald Campbell and Charles Claye were their two sons. His wife died in 1931. Ross died after a long illness and asthma attack. He was cremated next to his wife inside the nearby Putney Vale Cemetery.²

He studied public health and bacteriology. In 1892, he began his research on malaria, and in 1895, he initiated correspondence with Sir Patrick Manson, then the physician of the Seamasans Hospital Society, who later became the medical advisor to the colonial office and the founder of the London School of Tropical Medicine.

He made his landmark discovery of Anopheles mosquitoes transmitting malaria parasites to humans in August 1897, and he maintained his research work in India until 1899, when he retired from the Indian Medical Service. He moved to England, where he worked as a lecturer at the Liverpool School of Tropical Medicine eventually became Professor of Tropical Medicine and accepting a personal chair in Tropical Sanitation at Liverpool University.

Sir Ronald Ross Institute of Parasitology, Osmania University, Begumpet, has a significant legacy in the field of tropical medicine, having won numerous awards. Ronald Ross had worked hard to demonstrate the mysterious Malaria transmission cycle in female Anopheles mosquitoes. This is a place of pride for Hyderabadis, as it was awarded the first Noble Prize in Asia in 1902. This institute can serve as a source of inspiration for many young minds, as Ross was able to make this historical discovery with just a single microscope³ back in the day.

Contributions

Ross led the development of mathematical models for the study of malaria epidemiology in his 1908 report on Mauritius. In his book, he developed the idea further. He also established malaria-fighting organizations in India and Sri Lanka, which have proven to be successful.

Discovery of Malaria Vector Causing Malaria in Humans:

Ross made his first significant breakthrough in May 1895, when he discovered the early stages of the malarial parasite inside the stomach of a mosquito. However, his enthusiasm was interrupted when he was sent to Bangalore to investigate a cholera outbreak. Malaria was not a regular occurrence in Bangalore. He confided to Manson stating, “I am thrown out of employment and have ‘no work to do’.” But in April he had a chance to visit Sigur Ghat near the hill station of Ooty, where he noticed a mosquito on the wall in a peculiar posture, and for this he called it “dappled-winged” mosquito, not knowing the species. He was permitted a short leave in May 1896, allowing him to visit a malaria-endemic region near Ooty. He was seriously ill with severe malaria three days after arriving, in spite of his daily quinine prophylaxis. He was transferred to Secunderabad in June. In July 1897, after two years of failure, he was able to culture 20 adult “brown” mosquitoes from collected larvae. He successfully infected the mosquitoes from a patient named Husein Khan for a price of 8 annas (one anna per blood-fed mosquito!). After blood-feeding, he dissected the mosquitoes. On 20 August he confirmed the presence of the malarial parasite inside the gut of mosquito, which he originally identified as “dappled-wings” (which turned out to be species of the genus Anopheles). The next day, on 21 August, he confirmed the growth of the parasite in the mosquito. This discovery was published on 27 August 1897 in the Indian Medical Gazette.

Positions held:

- In 1901 Ross was elected a Fellow of the Royal College of Surgeons of England and also a Fellow of the Royal Society, of which he became Vice-President from 1911 to 1913.
- In 1902 he was appointed a Companion of the Most Honourable Order of Bath by his Majesty the King of Great Britain, and in 1911 he was elevated to the rank of Knight Commander of the same Order. He received an honorary M.D. degree in Stockholm at the centenary celebration of the Karolinska Institute in 1910. During the First World War (1914-1918).
- Ross was appointed as a consultant physician on tropical diseases to Indian troops and was sent to Alexandria for four months to investigate an outbreak of dysentery that was hampering troops in the Dardanelles.
- In 1917 he was appointed a consultant physician to the War Office and in 1919 he received an honorary post as consultant to the Ministry of Pensions.

Awards and Recognitions

Ronald Ross was awarded the Nobel Prize for Physiology or Medicine in 1902 for his work on malaria, by which he has shown how it enters the organism. In 1923 autobiography Memoirs was awarded that year’s James Tait Black Memorial Prize.

- There are roads named after him in many Indian towns and cities. In Calcutta the road linking Presidency General Hospital with Kidderpore Road has been renamed after him as Sir Ronald Ross Sarani. Earlier this road was known as Hospital Road.
- In his memory, the regional infectious disease hospital at Hyderabad was named Sir Ronald Ross Institute of Tropical and Communicable Diseases. The building where he worked and actually discovered the malarial parasite, located in Secunderabad near the Begumpet Airport, is declared as a heritage site and the road leading up to the building is named Sir Ronald Ross Road.
- In Ludhiana, Christian Medical College has named its hostel as “Ross Hostel”.

Books

- Report on Cholera, General Sanitation, and the Sanitary Department and Regulations, in the C. & M. Station of Bangalore (1896)
- Malarial Fever: Its Cause, Prevention and Treatment; Containing Full Details for the Use of Travellers, Sportsmen, Soldiers, and Residents in Malarious Places (1902)
- First Progress Report of the Campaign Against Mosquitoes in Sierra Leone (1902)
Notes on the Parasites of Mosquitoes Found in India Between 1895 and 1899

Hygiene for Indian Scholars

Note on the Bodies Recently Described by Leishman and Donovan (1903)

Further Notes on Leishman's Bodies (1903)

Report on Malaria at Ismailia and Suez (1903)

Leishmania Donovani Found in Kala-azar (1904)

Researches on Malaria (1905)

Note on a Flagellate Parasite Found in Culex Fatigans (1906)

Malaria in Greece (1909)

Missionaries and the Campaign Against Malaria (1910)

A Case of Sleeping Sickness Studied by Precise Enumerative Methods: Regular Periodical Increase of the Parasites Disclosed (with David Thomson) (1910)

Discussion on the Treatment of Malaria (1918)

Mosquitoes and Malaria in Britain (1918)

Suggestions for the Care of Malaria Patients (1919)

Observations on malaria (1919)

Memoirs, with a Full Account of the Great Malaria Problem and Its Solution (1923)

Malaria-control in Ceylon Plantations (1926)

Solid Space-algebra: The Systems of Hamilton and Grassmann

A Summary of Facts Regarding Malaria Suitable for Public Instruction (with Malcolm Watson) (1930)

Memories of Sir Patrick Manson (1930)

The solution of equations by iteration (with William Stott) (1930)

A Priori Pathometry (with Hilda Phoebe Hudson) (1931)

Mosquito Brigades and How to Organise Them

End Note

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Conflict of Interest: None declared

References


2. “Biography of Sir Ronald Ross”. London School of Hygiene & Tropical Medicine.

3. Sir Ronald Ross Institute of Parasitology [Internet]. Osmania.ac.in. 2021 [cited 25 July 2021].
