Sir David Bruce, a pioneer of tropical medicine

November 27 2006 marks the 75th anniversary of the death of Sir David Bruce at the age of 76 years. He was one of a distinguished group of British physicians, mostly serving in the Royal Army Medical Corps (RAMC) or the Indian Medical Service (IMS), who made enormous contributions to the knowledge of the aetiology, spread and control of a number of important tropical diseases.

Among these pioneers was Sir Ronald Ross (1857–1932), of the IMS. After intensive research under the most difficult conditions, he was able to show that the Anopheles mosquito was responsible for the transmission of the malaria parasite. He received the Nobel Prize in 1902. General Sir William Boog Leishman (1865–1926), was also a member of the RAMC who, with the aid of Colonel Charles Donovan (1863–1951) of the IMS, described the Leishman-Donovan bodies, the inclusion structures within the reticulo-endothelial cells of patients with Kala-Azar, which is now usually termed Leishmaniasis. He also carried out important work on the clinical use of anti-typhoid vaccine.

Sir Leonard Rogers (1868–1962) joined the RAMC shortly after qualifying from St. Mary's and was posted to India. His work saved countless lives, first by introducing the use of emetine in the treatment of amoebic dysentery, and then by his demonstration of the importance of massive fluid and elecrolyte replacement in the treatment of cholera ('Roger's fluid').

And the man who might be regarded as the 'father' of them all, Sir Patrick Manson (1844–1912), an Aberdeen graduate, who worked successively in Formosa, Amoy and Hong Kong and who showed that the embryos of *Filaria bancrofti*, the causative organisms of elephantiasis, are transmitted by the Culex mosquito. It was Manson who inspired Ronald Ross into his malaria transmission studies (Manson showed him the malaria parasites when Ross was on leave in London), and it was Manson who went on to help found the London School of Tropical Medicine.

And so to David Bruce. He was born in Melbourne, Australia in 1855 and was brought to Scotland as a child. He graduated from Edinburgh University in 1881, having given up thoughts of becoming a professional footballer, and soon joined the RAMC, passing out from the Military College, then at Netley, at the top of the class.

> **'Bruce made important contributions to the aetiology of sleeping sickness, establishing the relationship between this disease, trypanosomes and transmission by the tsetse fly'**

After marrying, Bruce was posted to Malta, purchased a microscope out of his own pocket and, in 1886, was able to announce the identification of the causative organism (obtained from the spleens of two fatal cases) of what was then called Malta fever – also known as Gibraltar fever, Mediterranean fever or undulant fever – a painful lingering disease, with pyrexia, anaemia and joint involvement. The disease is now termed brucellosis, and the organism known as *Brucella melitensis*. However, measures to control the disease, by improvements in hygiene, water purification and drainage, failed to control the disease among the British garrison.

A commission was set up in 1905 to investigate the matter, with Bruce as chairman. the following year, a Maltese doctor in the team, Thermistocles Zammit, found that five of six goats fed with the organism developed specific agglutinins in their blood and the organisms were recovered from their milk. It was soon found that nearly half the goats on the island were infected, and a considerable proportion were excreting the organism in their milk. Forbidding the army and navy personnel of Malta from drinking goat's milk solved the problem.

In 1889 Bruce was elected a Fellow of the Royal Society and was appointed assistant professor of pathology at Netley. In 1894 he was posted to South Africa. He was soon requested by the Governor of Natal to proceed to Zululand to investigate an outbreak of Nagana among the cattle. Bruce was soon able to demonstrate this to be as a result of a trypanosome, now named *Trypanosoma brucei*, and that it was transmitted by the tsetse fly.

Bruce's work was interrupted by the outbreak of the Boer War, in the course of which he distinguished himself during the siege of Ladysmith. Further work was carried out in Uganda on sleeping sickness, and Bruce made important contributions to the aetiology of sleeping sickness, establishing the relationship between this disease, trypanosomes and transmission by the tsetse fly, thus adding to Aldo Castellani's (1877–1971) demonstration of the presence of trypanosomes in the CSF of patients with this disease.

Bruce returned to London during the First World War as commandant of the Royal Army Medical College and did important work proving the value of prophylactic antitetanus serum. He died while attending the funeral of his wife, who had pre-deceased him by 4 days. **BJHM**

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Further reading

Anonymous (1931) Obituary; Sir David Bruce KCB, FRS. *Lancet* **ii:** 1270–1