The Military Career of Major-General Sir David Bruce

Bruce in Malta

David Bruce (centre), with members of the Mediterranean Fever Commission.

Bruce was commissioned as an army surgeon on 4 August 1883, and the luck of the draw saw him posted on his very first overseas posting to Malta in 1884. Here in Valetta he immediately set to work investigating the problem of 'Malta Fever', which had been for years a major cause of disability in the British Forces stationed on the island, with the gratifying result that he was able to announce the discovery of the etiologic agent *Micrococcus melitensis*. For his work on cholera Bruce received the thanks of the Civil Government and the Director-General of Army Medical Services.

Bruce in South Africa

In 1894 Bruce was posted from the Army Medical School, Netley, where he had been assistant professor of pathology, to South Africa for field service, and here two things happened which raised sky-high Bruce's international repute.

1. A severe disease called 'Nagana' was affecting cattle.

2. The Governor of Natal and Zululand was Sir Walter Hely-Hutchison, who had been formerly the Lieutenant-Governor of Malta, at the time when Bruce was working on the problem of Malta Fever. Sir Walter used his influence and had Bruce seconded to investigate Nagana.
Bruce was by now even more qualified than ever before to undertake biological research. He spent the year 1888, after leaving Malta, at Professor Robert Koch's unique institution in Berlin which was a Mecca for budding bacteriologists, and here he picked up a mass of scientific information and laboratory technology; consequently at Netley Bruce had established a course in bacteriology which was the very first course in this subject in any medical school in Britain.

Bruce set out for Ubombo in Zululand, and within a matter of weeks, but by much hard work, ingenuity, enthusiasm and imagination he found that the parasite was carried to its victim by the tsetse fly, hosted by wild game and that domestic animals such as cattle, horses, donkeys, dogs were susceptible. Bruce managed to ship a dog infected with trypanosomes to Britain; his findings were confirmed and the parasite was called *Trypanosoma brucei* in honour of its discoverer.

Bruce and his wife had to endure the discomfort of travel and the day-to-day living in primitive and often dangerous conditions while at the same time attempting to do medical research in keeping with the best traditions of the European schools as exemplified by the German Koch and the French Pasteur both of whom were much admired by him.

*Travelling at that time was no easy matter, as the railway into Zululand had not been constructed. My wife and I left Pietermaritzburg on 27 October 1894, and travelling by mule-wagon arrived seven days later in Eshowe, the capital of Zululand. There an ox-wagon was provided, and in it we trekked to Ubombo, in the centre of the infected district.*
From 1903 (when Bruce was in Uganda) to the outbreak of World War I, Bruce was the obvious man to ask for in connection with medical research in Africa. Thus the Royal Society in London sent out many commissions to investigate disease, and when official reports reached the Foreign Office that thousands of the inhabitants around the shores of Lake Victoria, Nyanza were dying of the Sleeping Sickness Disease, a commission was sent out to investigate the disease in Uganda. Bruce himself arrived at Entebbe in 1903.

Bruce repeated the marvellous work done previously on his investigation of Nagana, and within a period of six months, from 16 March 1903 to 28 August 1903 he demonstrated the cause of Sleeping Sickness carried by the tsetse fly.

After this third discovery (Brucellosis, Nagana, Sleeping Sickness) it was a fair reward for him to receive the Royal Medal of the Royal Society for 1904. Moreover, the military authorities were not niggardly in recognising his worth.

Bruce had been promoted to the rank of Lieutenant-Colonel for his valuable services during the historic siege of Ladysmith, when he displayed operative surgical skill with the same efficiency and effect as he deployed in his more exciting medical discoveries, and now after his work on Sleeping Sickness he was elevated one more step in the military hierarchy:

_The undermentioned Lieutenant-Colonel to be Brevet Colonel - David Bruce, FRS, MD, RAMC in recognition of his services in investigating the cause of Sleeping Sickness in Uganda, as well as in consideration of the distinction already attained by him in researches connected with Malta Fever and Tsetse Fly Disease._

In 1911 the Secretary of State for the Colonies requested the Royal Society to undertake the charge of investigating the relationship between human and animal diseases, Bruce was naturally selected as the Chairman of the Royal Society Commission, and duly arrived in Nyasaland in January 1912, with the very comprehensive commitment of investigating the connection between parasites and disease affecting the African wild fauna, domestic animals and man himself.

A massive volume of work was produced by this the Fourth Sleeping Sickness Commission, and its findings were of great scientific interest and of equally great practical value. Bruce's discoveries revealed the fascinating and inescapable partnership that must exist between man and all the living things around him - animals, wild game, parasites - even flies. Bruce suggested that there ought to be room in many parts of Africa for game reserves in which all the varieties of big game could live.

On the outbreak of the first World War, Bruce was recalled and left Africa for Britain on 26 March 1914. He was appointed Commandant of the Royal Army Medical College at Millbank. From this period onwards, although he was not personally involved in technical work, his services were in great demand as an experienced administrator and medical adviser to various commissions, committees, organisations and institutions; thus he was intimately connected for quite a long period with that famous organisation The Lister Institute, and was a respected member of that other great London institution The Royal Society.
Tetanus

In this day and age, with our potent vaccines and battery of antibiotics at our disposal, it may be hard to visualise the horrors of tetanus, and therefore it appropriate to mention the part that Bruce played as Chairman of the War Office Committee for the Study of Tetanus.

Tetanus. Analysis of 1458 Cases, which occurred in Military Hospitals during the Years 1914-1918 by Sir David Bruce, K.C.B., F.R.S., Major-General Army Medical Services, Chairman, War Office Committee for the Study of Tetanus.

The purpose of this paper is to place on record the available figures relating to cases of tetanus which occurred in Home Military Hospitals during the Great War of 1914-1918. It may be considered that some of the tables give no very useful or practical information, but they are nevertheless recorded in order that medical officers at the outbreak of some future war may have the opportunity of learning what was done for the prevention and treatment of tetanus during this war.

The total number of British wounded in all theatres of war has been officially reported as 2,032,142. If the number 2,385 be taken as the total number of cases of tetanus which occurred among these wounded, the incidence of tetanus to wounded is 1.17 per 1,000. The most interesting feature is the sudden drop in 1914 from 9 per 1,000 in September to 1.4 per 1,000 in December. This was undoubtedly due to the introduction of prophylactic injections of anti-tetanic serum which did not come into force until the middle of October.
Bruce emphasized the importance of using tetanus antitoxin, and did his utmost to ensure that it was available to the servicemen in adequate quantities; it was a great advance in the treatment of war wounds and it is estimated that this measure may have actually saved the lives of some 20,000 soldiers.

**Trench Fever**

Another military hazard associated with war-time conditions was one of the typhus group of fevers appropriately called Trench Fever; it is true it was a milder disease than the similarly transmitted epidemic typhus, nevertheless it was a major cause of disability amongst the troops, and indeed at one period it was estimated trench fever accounted for 1 in 5 of all admissions to hospitals. It is hard to believe that this disease was second only to influenza as a cause of morbidity.

Bruce's War Office Trench Fever Investigation Commission showed that the carrier of trench fever was the louse, the same parasite as that of epidemic typhus, and hence clearly pointed out a way whereby effective control taken against the louse could interrupt the chain of transmission from man-to-louse-to-man. This committee was formed in November 1917 by Lieutenant-General Sir Alfred Keogh, KCB, then Director-General of Army Medical Services for the purpose of investigating trench fever with a view to the discovery of its causation, mode of spread and prevention.

At that time the Medical Research Committee of the American Red Cross was also organising a similar research programme and, contrasting observations between these two teams, Bruce as Chairman of the British War Office Committee observed:

> The American Commission came to the conclusion that usual manner of infection is by the bite of the louse. The British Commission on the other hand is of the opinion that infection by the bite is quite exceptional and that by far the commonest method is by infection of scratches or other small wounds, with the excreta of the louse.

> It may be thought that as Trench Fever disappeared at the conclusion of the war, it is not necessary to place these remaining experiments on record. On the other hand it would appear to be all the more important since there will probably be no further opportunity of studying the disease until the next European War.

In the years between the two world wars the disease ceased to be recognised, but it reappeared in epidemic form during World War II among German troops on the Eastern Front.
Conclusion

It seems appropriate to re-iterate the sobering words of this remarkable man:

*If there were no wars man would not be called on to stand up to his knees in filthy mud and be torn and lacerated by rough and dirty pieces of shell. It seems a strange and barbarous thing to do, and it is to be hoped that in the course of evolution, mankind will become sufficiently intelligent to find some other way of settling his differences.*

Even in death Bruce and his wife were not to be separated, Major-General Sir David Bruce, KCB, LLD, DSc, FRCP, FRS died on 27 November 1931 in Artillery Mansions, Victoria, London, just four days after the death on the 23 November 1931 of Mary Elizabeth, Lady Bruce, RRC, OBE - ending together on earth at least a rare, most happy, and very fruitful partnership of nearly 50 years.