

Historical Perspectives

Robert Archibald: A pioneer of tropical medicine in the Sudan

"I feel my heart is in that country and my work too" [1]

(Archibald, writing about being away from the Sudan during the First World War)

Ahmed A. Adeel

Department of Microbiology, King Khalid university hospital and College of Medicine, King Saud University, Riyadh, Saudi Arabia

Robert George Archibald was born in India on July 4, 1880. He graduated from Edinburgh with M.B., Ch.B. in 1902. After holding a number of resident hospital appointments in Britain, he joined the R.A.M.C. in 1906 winning the prize in pathology at the Army Medical College at Milbank in that year. He worked for one year in Colonel (later Sir) William Leishman's laboratory under his personal supervision. In 1907 he joined the Sleeping Sickness Commission in Uganda headed by Colonel (later Sir) David Bruce. After spending an eventful period in Uganda, he was transferred to Sudan in 1908 as regimental medical officer and at the same time he held the post of Assistant Bacteriologist and Pathologist in the Wellcome Tropical Research Laboratories in Khartoum (WTRLK) under Andrew Balfour [2].

Balfour found in Archibald a hard-working and capable scientist who assisted him in the laboratory work and in producing the voluminous "Reviews". Archibald had a pleasant and friendly character. He extended his friendship



Photograph of Robert Archibald
Source - Photographic archives of the Ministry of Information, Khartoum, Sudan, 1996

Correspondence to:

Prof Ahmed Awad Adeel

Department of Pathology,
King Khalid University Hospital and College of Medicine,
King Saud University, P O Box 2925,
Riyadh 11461, Saudi Arabia.
Email: aadeel@ksu.edu.sa

How to cite this article:

Adeel AA. Robert Archibald: A Pioneer of Tropical Medicine in the Sudan. Sudan J Paediatr 2012;12(2):77-80.

to Sudanese staff in the laboratory as well as to British officials, who held him in great respect. Early in his career he travelled extensively in the Sudan, learnt Arabic, acquired insight into the Sudanese people and developed a strong attachment to this country. While on duty in the Dardanelles during the First World War he expressed his attachment to the Sudan in a letter to Chalmers in which he stated:

“I feel my heart is in that country and my work too” [1]

Archibald maintained this attachment to the Sudan for a lifetime he spent in devoted service that left a lasting impact on this country and on tropical medicine.

In 1920, Robert Archibald succeeded Chalmers as director of the Wellcome Tropical Research Laboratories in Khartoum. By this time, the laboratories were already placed in the forefront of tropical disease research at the international level. In the Sudan the laboratories assumed a leading role in the post-war economic development. The directorship of Archibald was characterized by immense activity, rapid expansion of the laboratory services to cover the whole country, and close collaboration with other government departments in research. These achievements were attributed to a great extent to the personal and professional qualities of Robert Archibald who led the laboratories in their last and most fruitful years, 1920 to 1934. The work of Archibald was recognized by a knighthood conferred on him in 1934, being the only doctor to receive the accolade while still in the Sudan service [3].

After the First World War the WTRLK underwent a huge expansion to meet increasing demands of the health services and agricultural projects. After filling the war vacancies, new posts were created so that by 1920 the laboratories were employing 16 British staff out of a total of 31 in the entire Education Department. Laboratory assistants were recruited from graduates of the Gordon College High School.

Throughout the directorship of Archibald there was a steady increase in the volume of routine pathology tests handled by the Bacteriology Section due to the development of the peripheral health care system. Unlike his predecessors who saw involvement in the routine tests as a diversion from research, Archibald advocated applied research based on these routine tests. He repeatedly showed gratification at the ever-increasing load of routine tests especially of specimens sent from outstations. In this way he managed to build strong collaboration with medical officers.

In 1928, the Stack Memorial Laboratories were opened near Khartoum Civil Hospital and the Kitchener School of Medicine. The Bacteriological Section was moved to the Stack Laboratories. The new buildings allowed greater expansion in the bacteriology services and easy access to hospital patients. A small pathology laboratory was also opened in Omdurman to serve Omdurman hospital.

Early in his directorship, Archibald proposed a long-term policy of decentralization of laboratory services by building regional laboratories in the different provinces of the Sudan to carry out medical, entomological and chemical investigations. Before funds were available to erect such laboratories he encouraged, as a short-term measure, visits to outstations by members of the staff to acquire knowledge of the field conditions. These visits brought the laboratories closer to the other government departments and oriented their research towards the local problems seen during their visits to these outstations. Archibald himself visited every province in the Sudan. He studied meningitis and Kala-azar in the East, Sleeping Sickness in the South, Bilharzia and Tsetse flies in the Nuba Mountains in the West and Bilharzia in Dongola Province in the North. He conducted these visits as multidisciplinary research tours that covered many aspects in the visited area. For example, in his report on a visit to the Nuba Mountains Province he states objectives of the visit as follows: “

1. To ascertain the existence of Bilharziasis in the districts traversed.
2. To obtain the intermediate molluscan hosts.
3. To study the natural conditions under which these intermediate hosts existed with view of preventive measures being carried out.
4. To locate the existence and habitat of the Tsetse fly in Koalib Hills.
5. In conjunction with the Government Entomologist to examine cotton for the presence of pests and obtain further information regarding certain habits of the cotton stainer bug.” [4]

On his way he reports on various aspects related to public health ranging from mosquito wiring in the government houses and adequacy of their ventilation to inventories of sera available in the hospitals.

In 1927, a Railway Laboratory Car was fitted to be used for medical research in outstations. It soon proved its value. In 1928 it was requisitioned on twenty eight occasions. Among its different uses, this car made possible the regular bacteriological examination of water supplies from the main towns in Sudan connected by the railways. Regional laboratories were established in Wad Medani, Port Sudan, Atbara and Berber.

Post-war economic boom in the Sudan was manifested by a great expansion in agriculture and railways. Archibald himself made numerous studies on diseases of cotton. Besides its routine duties, the Chemical Section became involved in planning big agricultural and construction projects. Tests were done on the building materials used for dams and other government buildings. By 1928, a soil survey was completed that included chemical analysis of samples covering three million feddans (Sudanese feddan =1.038 acres) intended for cultivation of cotton. In Atbara, where the main Sudan Railways workshops were located, a small laboratory was opened. This laboratory tested fuel and oil lubricants, the calorific value of coals, analysis of metals and alloys

and undertook regular examination of samples of boiler water brought from different railway stations.

The Entomology Section covered a variety of fields: surveys for insect vectors for human and animal diseases, control of migratory locusts and other plant pests and experiments in breeding honey bees and silkworm. Control of locusts required extensive operations in different parts of the country. Harold King the entomologist who coordinated all this work from the WTRLK was thus nicknamed “the King of Locusts”. All this work required immense activity in the regional laboratories and training Sudanese laboratory assistants, some of whom were soon put in charge of regional laboratories. This section gathered a valuable taxonomic collection of insects of medical and economic importance. This reference collection was classified with the help of the British Museum, and included numerous species new to science.

With improved communications and development of peripheral health services, epidemics in remote areas that used to pass unnoticed by the authorities in Khartoum were now brought under scrutiny of the pathologists of the WTRLK. The country was under constant threat of disease outbreaks not only from within the Sudan but also from neighboring African states that did little to prevent spread of diseases across its borders [5]. Relapsing fever spread unchecked from West Africa into the western province of Darfur, sleeping sickness reached the southern Sudan from Congo and Uganda, Kala-azar invaded from Ethiopia in the east and from the north there was continuous influx of agricultural workers with schistosomiasis and intestinal parasites. The WTRLK offered great services in controlling these epidemics. Quarantine was established in Halfa on the Sudan-Egypt borders to examine Egyptian agricultural and workers imported laborers were mainly screened for bilharzia. In 1920, 16500 laborers were screened, and in the following year anthelmintic treatment was accompanied by louse disinfestation for all

those passing through this quarantine. This work offered an opportunity to carry out investigations on intestinal parasites. The laboratories also started to produce large quantities of vaccines especially anti-rabies vaccine, cholera vaccine, and vaccines for local strains of typhoid and paratyphoid. Vaccination campaigns were organized for risk groups like soldiers and pilgrims.

During his work in Sudan, Archibald authored or co-authored more than forty original research papers covering diverse topics in the epidemiology, pathology, therapeutics, parasitology and mycology of tropical diseases of humans and animals. He also published original research on the diseases of cotton. The Entomology and Chemical Sections produced publications in international journals, in the local "Sudan Notes and Records" and in "Bulletins" issued by the WTRLK. A notable publication by Archibald was "The Practice of Medicine in the Tropics" [6], edited together with Bayam. This is an authoritative compendium in three volumes (2250 pages) that covers not only tropical diseases but also certain diseases not peculiar to the tropics but having special features in tropical countries. The book also included chapters on nursing, diseases of women, water analysis, preparation of vaccines and laboratory techniques.

In the early 1930s the Sudan was hit by severe recession. This required reduction of salaries of government employees and termination of services of others including workers in the WTRLK. The laboratories lost some of their best scientists. However, the laboratories were too deeply rooted by now to be wiped out by financial crisis. Although at the beginning professionals were in charge of education in Sudan, later Governors appointed political officers to be in charge of the Department of Education to which the WTRLK belong. As part of this suppression the different units of the WTRLK were distributed among other government departments. After dismemberment of the WTRLK, Archibald worked for two years in Stack Memorial Laboratories which housed the Bacteriological Section of the WTRLK. In 1936 he left for the West Indies where he took charge of a leper settlement in Trinidad. At the beginning of the second world war he returned to Dorset and worked as pathologist and consultant in tropical medicine. In 1947 he joined King Farouk University in Egypt as Professor of Bacteriology, becoming also Professor of Parasitology in 1949. He died suddenly at the age of 72 while on a visit to Salisbury, Southern Rhodesia.

REFERENCES

1. Archibald to Chalmers. 2-31/1/1916. The Sudan Archives, University of Durham (SAD) 199;1:213-215
2. Abdel-Hameed A. The Wellcome Tropical Research Laboratories in Khartoum, 1903-1934: an experiment in development. *Medical History* 1997;41:30-58
3. Obituary, Sir Robert G. Archibald. *The British Medical Journal*, 1953:1112-1113
4. Cruikshank, A. The Golden Age of Tropical Medicine and its Impact on the Modernization of the Sudan. In MW Daly (Editor): *Modernization in the Sudan*. Lilian Barber Press, Inc, New York 1985:85-100
5. Archibald R G. Notes Regarding Visit to the Nuba Mountains Province 25th December, 1926. Unpublished document, The Central Laboratory Khartoum
6. Bayam W and Archibald R G. *The Practice of Medicine in the Tropics*. Vols I, II and III, Henry Frowde and Hodder Stoughton, London 1921:1-2550