

Livingstone: His Contributions as a Doctor*

BY

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Few men have stirred our Victorian ancestors' imagination more than David Livingstone. He made his name as an explorer and missionary. His career was the kind of success story which Victorians admired—here was a man who started off as a "piecer" in a cotton factory, worked his way to a medical diploma, accomplished great things and died a famous man, his remains finding a last resting place at Westminster Abbey. His life and death inspired countless others to follow in his trail and devote themselves to Africa. Writers later found him a splendid subject for biography, and there now exist more than 50 books to tell his story. Yet historians have tended to miss something essential about the man. Livingstone may have left his mark in many ways—at ethnography and exploration, geography and political thought. But above all he was a doctor. A diploma in medicine formed his sole professional qualification: medicine remained one of his main interests throughout his life, and it is with his career as a physician that we shall be most concerned here.

Livingstone qualified as a Licentiate of the Royal Faculty of Physicians and Surgeons (Glasgow) in 1840, having nearly failed to pass because he considered the stethoscope a useful instrument. Yet 17 years later, having been the first to cross the African continent from Loanda on the west to Quelimane on the east, the same medical body elected him an Honorary Fellow, describing him as "a scientific discoverer and benefactor of the human race." After another 15 years, only a year before his death, the "Medical Committee" in England informed him that they had elected him an honorary member. He was in fact accepted by medical bodies as a doctor. Livingstone, however, did not practice medicine all these years, for after 1856 he no longer could be called a medical missionary, although he continued to maintain a more than ordinary interest in medicine; indeed, he acknowledges in the latter part of his life his indebtedness to medicine in that "the medical education has led me to a continual tendency to suspend judgment."

Livingstone's life as a doctor was spent mostly in Bechuanaland from 1841 till 1853, when he

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left for the north in search of his healthy station. Being then a medical missionary, his duties were rather different from those of the doctor in general practice who devotes his entire time to his profession, whereas to the medical missionary medicine is only a part—albeit an important one—of his service. The medical missionary practises medicine so that the patient will be attracted to the Christian Gospel through the power of healing. Medicine and Christianity are closely interrelated; they could not be separated one from the other. Livingstone entered medicine only after he had satisfied his father that he would not enrich himself, for financial reward and medicine were incompatible. Both father and son believed in man's service to God.

Livingstone did not originally plan to go to Africa, but as happens so often, chance took a hand. Robert Moffat, a well-known pioneer of the London Missionary Society and the founder of its work in Bechuanaland, happened to visit Britain. Livingstone was due to leave for Jamaica as a medical missionary, but as there were other doctors already in the service and Bechuanaland had none, Moffat persuaded him to come out to him.

Despite his utter loneliness and isolation from medical colleagues, I am amazed at the high standard of medical practice attained by Livingstone. He made sure, despite his strained financial circumstances, that medical journals and the latest textbooks on medicine reached him. He was well read, and this knowledge was to stand him in good stead when he devised his now famous treatment for malaria. He was popular with his patients, who came in their hundreds to consult him. He was particularly good with eye complaints (it will be remembered that he attended the ophthalmic hospital in Moorfields) and he built up a fine reputation for his skill in obstetrics. Livingstone was perhaps at his best when carrying out some line of clinical research. Much of this was of a high order as well as being original. He might have been the first to use arsenic for trypanosomiasis. In a letter to the *British Medical Journal* in 1858 he describes how some 17 years before he gave arsenic by mouth to a mare suffering from trypanosomiasis. The mare lived for six months. In Bechuanaland he recorded brilliantly the morbid appearances of the disease in cattle. This may well be the first accurate account we possess.

Many details are given on his investigations into the medical practice of the witchdoctor. These are as good as any I have seen. He always held an open mind about their methods of practice. He did not condemn or scoff at

them. Instead, he was patient and tolerant. He studied the techniques of divination and rain-making and, what is so extraordinary for a European doctor, he even submitted himself to their remedies in order to find a cure for malaria. He went to great lengths to prepare a list of the many herbal remedies used by the witchdoctors in the Tete district in 1856. After much thought he came to the conclusion that most of the witchdoctors' practices were magical, highly suspect and even dangerous because of the delay before proper treatment is instituted. Yet never once did he show any disrespect towards them or hurt their feelings. When chief Sebetwane was dying of pneumonia he went to great lengths to avoid intruding on their presence until his opinion was sought. He made sure that Dr. John Kirk, the medical officer to the Zambesi Expedition of 1858, was respectful to African herbalists. This regard for others must have been one of the reasons for his success and popularity with the African peoples. He treated all men alike—no matter what their colour or origin.

He was inquisitive. His range of interests in medicine was catholic. No matter what problem faced him, he tackled it with enthusiasm. When he reached the Tete district in November, 1856, he found himself in the midst of a small-pox outbreak. He felt impelled to vaccinate the contacts, but alas, he possessed no vaccine. However, he did not despair, for he inoculated a heifer with the virus. Unfortunately the inoculation failed to take. Undaunted by this failure, he at once wrote to the Cape asking for vaccine virus to be sent by the next ship in capillary tubes.

He was asked in 1856 by the Governor of Quelimane to submit a report on the causes of the unhealthiness of Sena, a small town on the lower Zambesi. His conclusions were a model of good public health argument. What struck him was the low-lying site chosen, with its filthy pools and the "exhalations from much decaying vegetable matter." Livingstone did not advise moving the station to another site, for Sena was prosperous despite the fever. What was needed, he advised, was the removal of the collections of water and decaying vegetable matter.

As Livingstone was passing through Angola on his return to Sekeletu's country in 1854, he was puzzled by the great amount of liquid falling from rain trees and was inclined to think that insects living on the branches distilled the water. In order to settle the point he cut the bark on the tree side (*Ricinus communis*) of the insects, scraped its liburnum and cut a hole

in the side of the branch, thus demonstrating that the fluid was not derived from the tree. He found, however, that the distillation continued unabated.

In November, 1854, Livingstone became interested in what was the most suitable colour for dress in the tropics. He believed that white was the most cooling. "A thermometer placed on cotton of pure white which covers my cap showed the same temperature as when on a blue woollen jacket, both being in the sun at the same exposure, but when the instrument was covered with white cotton lined with wool it showed about half a degree lower temperature than when covered with black cotton similarly lined. . . . But though the thermometer says there is no difference, imagination asserts the instrument to be wrong."

His researches were always carried out single-handed with the scantiest equipment in the wilds of Africa; Livingstone wrote on anything which happened to catch his sharp and discerning eye. Indeed, some of the contributions were original and should place David Livingstone amongst the leaders of tropical medicine. He was the first to bring to the notice of the medical world his finding that the tampan (*O. moubata*) was responsible for the transmission of African relapsing fever. In 1855 he crossed over the continent towards Angola and observed that Africans who lived on a manioc diet suffered from visual disturbances. This observation was made at a time when, I believe, this association had not been observed in man as yet, although it had been found that animals living on a starch diet developed similar lesions.

In 1856 at Tete, and again in 1859 near Lake Bangweulu, Livingstone gives an accurate description of the "boils" produced by the maggot fly. "I extracted 20 *Funyes*, an insect like a maggot, whose eggs had been inserted on my having been put into an old house infested with them." Again Livingstone may well have been the first to record this interesting infestation of Africa.

As he approached the East Coast in 1856 he was thrilled when he found what he believed to be the cinchona tree growing in the forests at Senna. He went to much trouble to send samples over to Kew for identification and was disappointed when he learned his impressions were incorrect.

David Livingstone even used electricity in the treatment of paralysis or weakness of the limbs when a certain Mr. Hamilton in Bechuanaland became ill with paralysis. He not only recom-

mended that electricity be applied, but outlined how it was to be given.

He was sorry that he had no retort apparatus to prepare chloroform, which he hoped would lessen the pains of his wife Mary when her baby was due. He had just read of Simpson's work on chloroform and, armed with chloral hydrate, he could have made the anaesthetic, but he lacked the retort.

As far as I know he was the first to mention the mosquito and malaria. "Myriads of mosquitoes showed, as probably they always do, the presence of malaria." Could not Patrick Manson, still a young man when the book containing this remark was published, have noticed it? Perhaps this memory came to light again from the deep recesses of his mind when he was to think of the mosquito as the transmitting agent in filariasis and malaria.

But this was by no means all. Livingstone describes *Maculo*—disease subsequently recorded under the term of Chiufa, in which a spreading gangrene of the rectum sets in. I believe this is the first account of a disease which is no longer encountered in Africa. Whilst wandering about Northern Rhodesia, in the lake district, shortly before his death in 1873, he provides us with an excellent account of earth eating (geophagy). At about this time he gives a vivid account of tropical ulcer in slaves. When he says that syphilis was common among the African tribes of Central Africa I consider that he was actually witnessing yaws. However, he mentions that he met no consumption or scrofula in the local people, and this finding remains so far our only evidence that this disease must have been rare in the indigenous population at this period.

The greatest service Livingstone rendered to Africa arose directly out of his being a doctor. After some years in Bechuanaland he realised that there was no future for him there. He turned his eyes to the north beyond Lake Ngami, where no white man had ever survived because of the fever. He was threatened by the Boers. He disapproved openly of their feeling towards Africans; besides, he was somewhat disappointed in the Bechuana. He could do better for his calling if he could settle among Sebetwane's people who were concentrated around Linyante, on the Chobe River, not far from the Victoria Falls.

Earlier on, in 1832 and 1841, the British authorities sponsored two great expeditions to the Niger at a time when interest in the potentialities of the West Coast was rapidly developing. Both ventures—undertaken at great expense—

ended in disaster. Mortality from fever on the ships was terrible. M'William, the senior medical officer to the 1841 Expedition, had no clear answer how to treat malaria. Bleeding had been definitely discarded. He had used quinine, but haphazardly. Sometimes it was given early, but more often late, in the course of the disease. He published his findings in a book in 1843 and Livingstone had procured a copy whilst in Bechuanaland and must have studied it most carefully. He detected in brilliant fashion that in the 16 cases of fever described by M'William, quinine was effective provided it was given early. M'William had failed to note this. M'William, however, did stress the intense staining of the liver with dark bile in his autopsy studies. Livingstone decided to place his trust in quinine and by his genius concocted a pill—the now famous Livingstone pill, which is made up of a mixture of quinine and purgatives. The latter are designed to free the excess bile from the system and at the same time to allow the quinine to operate against the noxious agent of malaria. But he did not stop there, for he was insistent that gr. iii of quinine sulphate be given every half hour until the ears rang. David Livingstone was one of the very first who used quinine early and correctly, even though he may at times be criticised for being a little heavy-handed.

It is extraordinary that, when all seemed hopeless, he was able to compound this medicine and be ready to try it out at the first opportunity. This came in 1850, when he made his first attempt to reach Sebetwane, but he was forced to recross the Zouga river because of the tsetse. It was now that news reached him that two English hunters were lying dangerously ill with fever at Lake Ngami, one already having died. Here was his chance. He went to their aid, administered the quinine and the results were more than gratifying, because one of the men was in a continual state of delirium. On rejoining his family he discovered that his wife and children had in the meantime gone down with the fever, and once again the results were dramatic. He knew he had the answer to malaria. Armed with his fever remedy, he later reached Sebetwane's country and was able, because of his intelligent use of quinine, to cross Africa, despite numerous and severe bouts of malaria, from west to east in 1856.

David Livingstone had the greatest respect for the fever of Africa. He never took a chance with it. He taught Kirk and Meller, his medical officers in the Zambesi Expedition (1858-1864). He insisted on the Livingstone regime of treatment. The result was that his Zambesi Expedi-

tion continued to operate in the very unhealthy reaches of the Zambesi and Shire rivers for over four years with comparatively slight loss of life. In contrast to this we have the sad fate of the missionaries in the Helmore-Price Mission to Linyanti and of the U.M.C.A. Mission to Nyasaland. The loss of life from malaria was so high that both mission stations had to be abandoned. Quinine was not given as it should have been, despite Livingstone's urgent appeals.

As a doctor, David Livingstone showed kindness and humility. We know that he must have had limitless energy. He had drive and determination to a remarkable degree. Can we detect in his behaviour anything which would give us a conception of his true personality? After carefully studying his actions I am confident that David Livingstone had an obsessional make-up. I would not go so far as to say that his obsession actually produced psychiatric symptoms. But he was driven by his obsession of bringing Christian help to the heathen of Africa. I have found at least two typical examples of this tendency in his behaviour. Despite the fact that he was told by reliable sources that the Kebrabasa rapids close to Tete on the Zambesi were impassable, not only did he go up once to inspect them for himself, but he returned once more to make quite certain. Later, having failed to find an entry into Lake Nyasa from the Rovuma river, he insisted on taking his ship there again, thus nearly causing a mutiny amongst the personnel on the ship, as it was patently obvious to all the others that no such passage existed.

The truth is that David Livingstone was a single-minded man. All that mattered was that he should plant a mission among the Africans and open up Central Africa where others could do the same. He put his faith in the British, who alone among the nations of the world could be entrusted with their conversion. In order to achieve this he saw a need to educate Africans, teach them the skills of the world; and for this to be done he favoured Britain sending out her colonists to Central Africa. Here, then, we see David Livingstone in the guise of an Imperialist, who like Rhodes saw a great future for the Africans under the "Union Jack." Both men favoured the Imperial link, both had implicit faith in the British way of life. To David Livingstone this cult had a strong Christian bias; to Cecil Rhodes it meant a better system of justice and fair play through commerce and government. As the years went on the young medico moved further and further away from his basic training, preferring to adopt a broader approach in order to effect a spiritual uplift for

the masses of Africa. To men of our generation "colonialism" has lost much of its former glory. There is, however, another side to the Imperial story, and this is symbolised by people like David Livingstone. No matter how we interpret the European's role in Africa, none can gainsay the magnificent contribution which that splendid Scots doctor made to the Dark Continent, alike as a scientist, as a doctor and as a man.
