Tsetse fly.

'Seeing great sorrows'*

Climate, disease and the calamitous 1890s in Uganda. **Georgina Endfield** and colleagues are using letters and journals from missionaries in Africa to link disease to climate.

Dr Albert Cook and friends at the Mengo Hospital, Uganda, in March 1897.

Wellcome Library, London.

By any standards, the 1890s was a calamitous decade in Uganda. Drought, floods, famine, various human and livestock diseases, war, and the social and political turbulence associated with establishing a new British Protectorate, had all taken their toll on the region and its inhabitants. But worse was to come. These events were followed by one of the most devastating social and ecological crises to befall East African society – an epidemic of sleeping sickness that began in 1898 and spread from Lake Victoria in north-east Uganda to Buganda in the west, north to the river valleys of Bunyoro, across Lakes Edward and George into Rwanda, and finally east into Kenya.

The epidemic claimed more than 350,000 lives between 1900 and 1920 – an estimated quarter of a million in Uganda alone – and led to a flurry of international scientific and medical expeditions, and large-scale forced evacuation programmes.

Sleeping sickness is caused by a parasite (the trypanosome), transmitted by the bite of the tsetse fly, and remains one of the most damaging diseases in East Africa today. Along with diseases like plague and tick-borne relapsing fever, sleeping sickness is thought to have strong environmental and climatic controls.

Curiously, epidemics may have been more effectively managed in precolonial days through a combination of indigenous farming and animal husbandry. Wild cattle, for example, are a natural host of trypanosome and effectively created a buffer zone between human populations and the bush habitat of the tsetse fly. Identifying the precise mechanisms and environmental circumstances which trigger the emergence and re-emergence of such diseases in epidemic proportions, remains a major challenge.

A NERC-funded project headed by David Ryves from Loughborough University is collecting lake, climatic and epidemiological archives to reconstruct long-term climate and disease histories in Uganda. PhD student Keely Mills has begun to reconstruct a picture of changes in hydrology, climate and vegetation over the last 1500 years by analysing lake sediment of several closed basin crater lakes in the south-west of Uganda. I have been exploring documentary sources to investigate more recent environmental changes.

Some of these sources are letters, personal papers and journals written by medical missionaries of the Church Missionary Society (CMS) posted to East Africa in the second half of the nineteenth century.** These sources are already revealing insights into a number of important ecological, climatic and medical themes.

> "Missionaries kept weather diaries.

Many missionaries kept weather diaries which give a useful record of the timing, and the social and environmental implications, of unusual weather in the second half of the nineteenth century and early twentieth century – a period for which there is limited regional instrumental weather data.

These observations are allowing us to reconstruct the impact of prolonged droughts on the region, including the severe 1898-1900 drought. In a letter dated 26 March 1899, for example, Dr Albert Cook, writing from the Busoga province, south-east Uganda, noted, 'We have had practically no rain since last November, the rains due at the beginning of March have failed and we have only had two or three showers. Enjala etuse (hunger

has arrived) was the graphic answer of a man who I asked about the state of the weather a day or two ago.'

By early October 1899, prolonged drought and food scarcities had taken their toll further west in Masindi, Bunyoro province. Arthur Fisher reported that 'We are generally hindered here by famine owing to failure of rains. The distress is sad throughout the country. I am told that the Nile is lower now than it has ever been before in the memory of the oldest inhabitants. All the well-known rivers here are almost dry. I jumped across the great Kafu River sometime ago which nearly drowned me in 1895 as I tried to swim across it.'

The missionaries drew links between drought and the prevalence of disease. Cook noted, 'I tried to find if the present drought had any influence upon the severity of fever and I find it has. From May 1897 – April 1899 there have been 79 admissions for 'fever' into our hospital with a death rate of 14 percent. Taking the admissions for this year only, I find the death rate is 30 percent, a very decided increase.'

Cook's medical notes also reveal an observed increase in tick-borne fever around this time, while drought and hunger might have also exacerbated the 'true outbreak of plague'. The doctors also blamed the unusual weather for the re-emergence of cattle disease. Rinderpest had already swept across Uganda in 1891 contributing to massive livestock losses, but on 13 June 1900, Fisher commented that since arriving in Bunyoro in February 1899, he had 'lost 15 cows from some kind of plague introduced into the country by cattle from the Nile District and want of rain.'

Although the rains finally arrived in eastern Uganda and

PhD student Keely Mills taking samples from lake sediment.

southern Bunyoro province by the end of October 1899, communities elsewhere were less fortunate. In December 1899, Fisher noted that 'the famine still continues in North Bunyoro and the natives are leaving their gardens and going south along the lake' where food was described as 'plentiful'.

Historical literature has long suggested that the disruption associated with establishing a British colonial regime in East Africa was pivotal to the sleeping sickness epidemic that followed the calamitous 1890s. Certainly, the major social, economic and political upheaval contributed to significant changes in traditional land-use systems and mobility patterns which may have hitherto kept epidemic diseases under control.

The dramatic decline in cattle populations to various diseases may have also meant that the trypanosome was forced to switch to a new human host, while food scarcity and famine inevitably lowered human susceptibility to disease at this time. Climatic parameters, however, may have played an equally important role in creating the conditions necessary for an eruption in the tsetse fly population. The consecutive droughts and famine in the last two years of the century may have led to the population abandoning agricultural land and migrating to fly belts, particularly around lake-shore areas. The unusual rainfall which followed might well have brought some hopes of improved crop production and an end to the food scarcity, but also ensured the regeneration of lake-shore bush. By encouraging the regeneration of this very favourable tsetse fly habitat, and effectively driving more famine affected people into these zones, climate may have been central to this most devastating epidemic.

This research represents a key step towards unravelling the complex relationship between climate, environmental change, human activity and disease emergence and re-emergence in East Africa. Further exploration of demographic dynamics and the changes in land-use and cover in this most crucial period is now essential if we want to test this hypothesis further. ❖

**An extract from Dr Albert Cook's medical journal, 2 October 1899.*
***Held in the CMS archives at the University of Birmingham, and the Wellcome Trust Archives and Manuscripts collections.*

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