

THE FIRST WORLD WAR ON THE PERIPHERY: THE EFFECT OF THE ENVIRONMENT ON BRITISH SOLDIERS IN GERMAN EAST AFRICA, 1914–1918

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Abstract

The First World War in German East Africa was significantly different than the war in Europe. More so than just the geographical difference and that Europe still stands at the forefront of popular memory, the environment of equatorial Africa played an equally significant role as an enemy to the British Army as did the German Army. Rather than just a collection of assorted stories, it is the aim of this article to examine the interaction between the British Army and the environment of German East Africa from 1914-1918 and demonstrate that three environmental factors – climate, disease, and terrain – significantly affected the war and the soldiers that fought in it in a variety of ways, both in terms of military operations and on the human level.

Keywords: First World War, British Empire, German East Africa, the war in East Africa, Jan C. Smuts, environmental history, military history

Introduction

Innumerable monographs, articles, encyclopaedias, tomes and lexicons have been dedicated to the First World War in Europe, but few have been written on the war in the colonies. Indeed, Professor Sir Hew Strachan notes, regarding the overseas colonial enterprise in the years before and during the war, “the colonial was the least significant, and it roused little tension”.¹ As the war raged on, Europe stood front and centre while the war in the colonies remained on the periphery of public consciousness. “Despite its cost in men and money the campaign in [the colonies] was, and is, often referred to as a mere sideshow.”² In reality, however, a substantial portion of the war took place on the periphery, and a new wave of scholarly endeavours has recently been dedicated to European empires in wartime and the soldiers and fighting that took place outside of Europe. Burgeoning from these new studies and most significant to this article is the scholarly effort on the First World War in Africa.³

The nomenclature of the First World War is significant. Colonial soldiers from India, the West Indies, Australia, New Zealand, Canada, South Africa, Egypt and many more fought in Western Europe. Indeed, between one and two million African

soldiers fought for the Allies in some capacity in the First World War.⁴ A few decades ago, study of the western front, and to a lesser extent the eastern front, was the standard approach to the historiography of the war.⁵ Furthermore, the first large-scale use of chemical warfare, one of the defining features of modern warfare around this time, occurred in 1911 and 1912 when the Italian army launched a chemical attack against the African Berber population in Tripolitania.⁶ Similarly, the first use of aircraft in warfare occurred in 1911 when Italian planes bombed a Libyan camp during the Italo-Turkish War.⁷

To truly make the war a ‘world war’ beyond the diverse combatants in the fields of Europe, fighting had to take place all over the world – and it did: from the fields of France to the coast of Chile, to the occupation of German Samoa, to the battle of Pita Baka in New Guinea, and to the diverse terrain in Africa. Indeed, “this was a war between empires” in every sense.⁸ Jan Smuts, South African defence minister at the time and later becoming a British Field General who led campaigns in German South-West Africa and German East Africa said he led

[An] army [that] was an amazingly polyglot one. There were men from the United Kingdom, from South Africa, Cape Corps, Gold Coast, Nigeria and the West Indies; from Kashmir, Jhind, Bhurtpur and Kaparthalu; Boer Settlers from East Africa; Rhodesians, King’s African Rifles native troops [recruited from across boundaries in East Africa], Uganda contingents, Arabs, as well as Belgian and Portuguese troops.⁹

Yet, few know this. Many modern students can name the major battles in Europe (the Somme, Verdun), but how recognisable is the Lake Tanganyika campaign or the battle of Kilimanjaro or the battle of Tanga to a non-specialist? This is particularly noteworthy for the war in German East Africa. Historian Ross Anderson notes:

It was never of first importance, yet it ranged from the modern states of Kenya and Uganda ... through the Congo, Ruanda, Burundi, and Tanzania ... to Zambia, Malawi and Mozambique ... Few inhabitants... escaped its effects or ravages ... If it was insignificant in global terms, the war there was of overwhelming local consequence.”¹⁰

Jan Smuts’ son theorised in a biography of his father, ‘the East Africa campaign ... while apparently a minor side-show in this great world-war, may yet have important bearings on the future history of the world’.¹¹

The scope of the war clearly proclaimed, “Africa mattered to the European powers” and served a key, if peripheral, role throughout the war.¹² Several reasons denote the importance of the war on the periphery – millions of Africans contributed to the war effort, countless resources from Europe (especially Britain) flowed into Africa including: soldiers, food, weapons and money. The British metropole in London sent

around £2.8 billion pounds (adjusted for inflation) to Africa.¹³ Indeed, “the financial cost to the Allies of the Great War in sub-Saharan Africa was immense.”¹⁴ Many British generals made famous by their exploits in the fields of France and Belgium cut their teeth in Africa – Kitchener, Haig, and French to name a few.¹⁵ The first shots fired by Britain in the First World War were not fired on the fields of France or Belgium, but “by a regimental sergeant-major of the West African Frontier Force in (German) Togoland”.¹⁶

As Ross Anderson notes in the title of his book, the war in Africa was *The forgotten front*.¹⁷ But, “the development of the [modern British] army was profoundly shaped by imperial warfare... and these tactical lessons were of considerable value in 1914.”¹⁸ Despite the great strides made in academic works recently,¹⁹ one key piece of study still lacks depth – the impact of the environment. Several overviews of environmental history in Africa have been written during the last few decades, but few studies focused on the relationship between war and the environment.²⁰ The role of the environment in the First World War (and war in general) is an understudied but significant area of scholarship. Nations and empires have ascended and collapsed under the weight of the environment.²¹

The significance of this study lies in connecting these themes – environmental history and the First World War in German East Africa. In the works that address the colonial aspect of the First World War in Africa, there is a lack of in-depth analysis of the role of the environment. In the works that address environmental history during wartime, none has researched the First World War in Africa.²² Some military historians have demonstrated the importance of the environment in passing or have focused on the terrain of specific campaigns, but did not make the environment the driving agent of the argument. For example, Ross Anderson notes, “the extremes of climate and terrain found in East Africa meant that campaign conditions were usually very difficult” compared to the conditions found in Europe during the war.²³ He continues, “another dominating factor was the prevalence of disease.”²⁴ Few works, however, have directly examined the intersections between environmental and military history and offered a succinct study by giving agency to the environment.²⁵ Indeed

[R]arely ... have we studied nature as a soldier. And rarely have we explicitly considered the ecological consequences of warfare as a central, distinctive element of humans’ historically evolving relation to the natural world.²⁶

Nevertheless, the environment consistently played a key role throughout history. Indeed, the natural environment is front and centre in many primary accounts of war, but the secondary literature often overlooks this information in favour of social aspects—nature is merely a backdrop of the physical and psychological attrition.²⁷ But as Richard P. Tucker notes, “nature’s faces are legion”.²⁸

Therefore, this research project examined the environmental history of German East Africa during the First World War, specifically concerning soldiers from the

British Empire.²⁹ The unique conditions in German East Africa during the war years presented a variety of environmental problems for an army conducting war. The size of the territory as well as environmental factors such as the tropical climate created enormous problems of supplying soldiers over so large a landscape. Additionally, the tropical climate also presented the perfect conditions for diseases and insects to wreak havoc. Finally, the natural features, such as what contemporaries referred to as ‘the dense bush,’ of German East Africa must be mentioned because it played such a significant role in the business of war and the lives of the soldiers. These three environmental factors – climate, disease and terrain – significantly affected the war and the soldiers who fought in it in a variety of ways.

In order to demonstrate these factors, much of this research focuses on the development of several key questions:

- Were the successes and failures of the British Army attributable to leadership, or did the environment – through disease, terrain or climate – significantly shape the outcome of the battles in German East Africa in 1914–1918?
- How did the environment shape British military decisions?
- How did the environment affect the soldiers?
- In which ways did these individuals deal with difficulties imposed by environmental conditions?

The answer to these questions will enhance our understanding of the environmental dimension in terms of the discussion of the First World War on the periphery.³⁰ The present study engaged these questions in order to add to this discourse.

To address these questions, I draw primarily upon a limited number of diaries, memoirs, letters, and writings of a few English-speaking officers who lived through this period. Perhaps most significant are those of General Jan Smuts (South African statesman and later a British army general, commander of the British Army in German South-West Africa [1914–1916] and German East Africa [1916–1918]).³¹ Smuts was a competent guerrilla fighter, equal to Lettow-Vorbeck (commander of the German forces in East Africa), having commanded successful campaigns as a Boer general in the Second Boer War (1899–1902) as well as German South West Africa (1914–1916). Secretary of State for War Lord Kitchener, with the unanimous approval of the British War Committee, appointed Smuts to take command of British forces in German East Africa in February 1916 in response to Lettow’s success.³² Smuts’ writings are extensive as he was a public figure for much of his life, and my selection is certainly not exhaustive – the Smuts Collection at the South African National Archives holds much, much more. I have carefully selected a few edited volumes of his letters and memoirs as well as a biography written by his son here, which directly speaks to how the environment shaped the British army in German East Africa. Additionally, I examined the writings of one of Smuts’ adjutant generals (General JHV Crowe), as well as the writings of several British army officers and doctors.³³

The intrinsic bias in such an approach must be addressed head-on. These were mostly upper-class, senior officers who most likely represented the ‘white-man’s burden’ mentality reminiscent of the famous ‘Rhodes Colossus’ political cartoon. Some quotes in the subsequent pages might reflect this same idea. Historians have long since moved passed the white-washing of European empires in Africa and I must reiterate why it is important now to emphasise that the writings of these British officers are in no way comprehensive. This article should therefore not be mistaken as the final word on the British experience in German East Africa during the First World War. The sources here are noticeably skewed to British soldiers of rank, arguably further away from the environment than the average enlisted man. Many average soldiers wrote about their experiences during the war. For example, CW Shackleton, a South African infantryman wrote a wonderfully illustrated account called *East African Experiences*.³⁴ However, I have deliberately chosen just a few rank-heavy examples in order to form a baseline for further research into this field and to demonstrate broadly the relationship between the environment and British imperial efforts during the First World War.

The environment in German East Africa

Jan Smuts describing his time in German East Africa to his son, 1950, said:

It is impossible for those unacquainted with German East Africa to realize the physical, transport, and supply difficulties of the advance over this magnificent country of unrivalled scenery and fertility, consisting of great mountain systems alternating with huge plains; with a great rainfall and wide, unbridged rivers in the regions of the mountains, and insufficient surface water on the plains for the needs of an army; with magnificent bush and primeval forest everywhere, pathless, trackless, except for the spoor of the elephant or the narrow footpaths of the natives.³⁵

As war has changed over the centuries, so has the effect of warring empires on the environment. One constant has remained: the significant interplay between the environment and war. The environment in warfare can be viewed as two sides of the same coin—the impact of war on the environment and the impact of the environment on war. In the aftermath of a battle, the landscape exhibits the most obvious consequences of war, other than the loss of life. This was no different on battlefields during the First World War. Nearly every battle left some grim visage of nature in its wake—zigzagging trenches dug into the earth in Belgium and France or blown out of mountains in Italy and Austria, artillery craters pockmarked along hundreds of miles of no man’s land, displaced or decimated populations of regional fauna, the complete absence of vegetation that could no longer grow in the mud that replaced crop fields and woodlands, and “ghost forest[s] of trees stripped of branches and leaves”.³⁶

Perhaps the most famous image of this landscape came from the Battle of Passchendaele in 1917 (see Figure 1). Australian war photographer Frank Hurley captured an image of soldiers walking across duckboards surrounded by mud and earth.

Every tree for miles was stripped of all foliage. Splinters of wood were haphazardly scattered everywhere from explosions and machine gun fire. Artillery craters were filled with muddy water. The entire backdrop was bleak and miserable. General Jan Smuts once told his son that the war depicted in images like this was nothing more than “a muddy world of trenches and barbed wire”.³⁷



Fig. 1: James Francis Hurley, *Australians crossing chateau wood via duckboard*, October 29, 1917, by permission of the Australian War Memorial, ID E01220. Artillery soldiers of the 4th Australian Division near Hooze cross a makeshift, duckboard bridge during the final days of the Third Battle of Ypres.

The impact of battles on the landscape was deliberate at times, such as scorched earth policies, and accidental at other times. A soldier could duck into his foxhole to avoid a bullet or an artillery shell, but a tree, a field of crops, or animals could not escape this industrialised war. War rarely has a positive effect on the environment and its repercussions continue to be felt long after the fighting ceases. When the soldiers leave, they do not take their natural weapons with them. After the soldiers had fired their last shots, the affected civilians must suffer for years (sometimes decades) the consequences of a war in which they did not participate. Smuts' son later noted of his father's time in Africa, “the Germans had exhibited their characteristic thoroughness in their retreat by poisoning and polluting all water supplies”, which is an effective military tactic against a pursuing enemy army, but devastating to the population that relies on those same supplies for drinking water.³⁸ The British soldiers, mostly cut off from consistent supply lines, lived off the land as best they could. This age-old strategy devastated local vegetation and cultivated land. When the soldiers left and their guns fell silent, the impact they left on the environment resulted in a “long-lasting famine and pandemic that affected southeastern Africa long after the war's end”.³⁹

Also noteworthy is the effect of fighting in a particular environment for so long. As Jan Smuts described to his son, “the campaign ... assumed more and more the character of a campaign against nature, in which climate, geography, and disease fought more effectively against us than the well-trained forces of the enemy”.⁴⁰

Christopher Thornhill, a British intelligence officer, wrote “[the] campaign [in German East Africa] was unique of its kind: the first tropical warfare waged under modern conditions of transport and armament”.⁴¹ Similarly, General JHV Crowe reported that the country was composed entirely of “natural obstacles and climatic difficulties of the most formidable character”.⁴²

Climate

Everyday climatic occurrences, such as rain, had an enormous influence on soldiers. This would seem obvious, but deserves explanation. Rain frequently falls all over the world. During war, however, rain has a much more nuanced effect on people than during times of peace. In peacetime, one can take shelter and move about freely in an effort to avoid the rain. The same cannot happen if that person knows enemy soldiers are around any corner or hiding, waiting for a mistake. During the First World War, this situation created such a demoralising effect that it affected the outcome of battles.⁴³ “From a military point of view the climate is an all-important factor,” General JHV Crowe wrote.⁴⁴

Furthermore, rain can completely demoralise or exhaust an army without an enemy in sight. One night in particular, Smuts experienced “the worst thunder storm within my experience accompanied by torrents of rain [which] ... kept the commando awake the whole night in a soaking wet condition”.⁴⁵ By the next day, his soldiers were too exhausted to engage their enemy decisively.⁴⁶ The following month, in the same conflict, Smuts abandoned an engagement “because it was beginning to rain” and he feared the rain would have a disastrous effect on his soldiers.⁴⁷ Indeed, rain often has a similar effect on all soldiers.

Rain is a common occurrence with or without war in all parts of the world. However, the rain in equatorial Africa deserves special attention. That is not to say rain did not affect the morale of soldiers everywhere. Notably across the equator in Europe, one soldier made simple the power of rain on morale, “the mood among the soldiers brightened considerably, as the rain gave way and the starry-night cleared with the promise of a dry morning”.⁴⁸ However, there was significant difference between the rain in Europe and Africa. The ‘rainy seasons’ in equatorial Africa were incomparable to the atmospheric conditions experienced by soldiers in Europe. One officer begrudgingly hypothesised, “it came on to rain in a manner that is only possible in the tropics—a deluge that is unknown in more temperate climates”.⁴⁹ This constant ‘torrent’ of rain made soldiers miserable.⁵⁰ In April 1916, Jan Smuts recorded the small town called Moshi (located in modern Tanzania) had accumulated over twenty inches of rain.⁵¹ In only a few weeks’ time, another British Officer noted, “as much as ten inches [of rain] had fallen on certain sections of the road”.⁵² During these rainy periods, it would rain for months without end creating an even more unbearable experience for the soldiers.

Early during the First World War, Smuts realised the effect of rain. He once commented to his son how his “troops [were] generally ... shaken in morale” following

a disastrous defeat at the Battle of Salatia Hill in February 1916 – Smuts attributed this to almost completely restricted visibility from a combination of the dense bush and the rainy conditions.⁵³ Throughout letter after letter to his wife and colleagues Smuts complained about the rainy season and its effect on himself and his soldiers.⁵⁴ Indeed –

[T]he rainy season which set in with extreme violence forced us to consider how the climate and seasons were going to affect our campaign ... in the rainy seasons which occupy about half the year much of the country becomes a swamp and military movements become impracticable.⁵⁵

Another British officer, Captain Downes who led a Brigade of Nigerian colonial soldiers, echoed Smuts' detestation of the rain, "it is perhaps hard to realize the difficulties which the rainy season in East Africa entailed for a force acting from such widely separated bases".⁵⁶ He later continued about the effect on the morale of his soldiers:

[W]hen it was left to a man, soon after eighteen months' campaign, to choose between wife, children, good food and a comfortable home, and shortage of food, rain, marching, fatigue, and hard work in a foreign country, it was hardly to be expected that many would choose the latter in preference of the former.⁵⁷

Along with the misery for the soldiers, the already poor infrastructure was worsened by climatic conditions. Rain frequently washed away bridges, traversable roads, and mountain passes that existed and detrimentally affected the army's ability to carry on with the war effectively.⁵⁸ "You cannot imagine how dangerous the rains are in this country," Smuts once wrote to his wife.⁵⁹ On arriving in German East Africa, another British officer noted, "the first march out was about twelve miles, but owing to the heavy rains the condition of the road from the very first was terrible".⁶⁰ Another added, "movement during the rainy season is practically impossible".⁶¹ Reliable communication and ability to supply are essential for any effective military, but in this country communication and consistent supply lines were luxuries not always afforded because of the "great rains".⁶²

The supply troubles caused by the rainy season were devastating. Supply lines were broken; therefore, soldiers could not be resupplied. Soldiers who were not resupplied with steady provisions could not engage the enemy and be expected to be victorious. One of Smuts' adjutant generals noted:

[A]ll seemed to be going well when ... heavy rain began to fall, ushering in the wettest season known in East Africa for many years ... lines of communication ... were interrupted by the washing away of bridges and the flooding of roads: and operations in all areas were hence-forward seriously hampered by the untimely rain.⁶³

There was always a dire and concerted effort to accomplish as much as possible before the rainy season arrived.⁶⁴ Indeed, “the transport question was the great problem throughout the campaign,” another senior officer wrote:

[O]nce the rains commenced, there would no longer be any possibility of using motor transport ... we knew that the roads, or tracks, became absolute quagmires, not inches, but feet deep in mud as the result of heavy rain.⁶⁵

It is significant to note the effect the constant deluge had on soldiers. This should be seen as more than just a collection of random stories in which the soldiers were unhappy because of the rain, which occurred in every theatre of the war. The rainy seasons in equatorial Africa exponentially compounded the misery the soldiers felt. The African rain had a significant depressive effect as demonstrated by many letters and memoirs from the soldiers who lived through it. They wrote about it a lot, but not always just from a strategic stand point – much of the writing was simply to complain about it because for much of the year the rain did not stop. “Owing to the heavy rains the condition on the road ... was terrible,” Captain Downes wrote in his diary.⁶⁶ He later added, “rain promised... a poisonous night”.⁶⁷ When “the rain began to fall ... it poured incessantly from that time onwards”, which always made progress “slow and difficult”.⁶⁸ The East African rain directly hindered and halted military operations at regular intervals as well as devastating the soldiers.⁶⁹

Dark, ominous clouds as far as the eye could see enveloped the sky and shut out the sun. There was no hope-inspiring scenic view of the tropics like one would usually see on a tropical postcard; instead there was a dark, grey overcast, which created a natural depressant. The thunder was almost indistinguishable from a cannon.⁷⁰ The deluge of water pouring against the canopy of the jungle was deafening. Puddles converted the dry African dust into thick mud that was nearly impossible to move through.⁷¹ “The rivers were in flood, the dongas were rivers, the black cotton and red clay soil had all become swamp”.⁷² Soldiers were constantly drenched and without regular supply shipments they were forced to wear their soaked clothing for weeks at a time with no respite, which lead to countless cases of trench foot.⁷³ One might be able to escape into the dense bush to hide from the enemy, but there was nowhere to hide from the endless torrent of rain.

The monsoon-like rain washed away supplies of food in addition to the makeshift infrastructure required in war. Part of the supply troubles included necessities for the soldiers. An already awful experience of war was made worse by supply troubles. “The summer rains had arrived and ... we had no tents” or provisions of any kind, one officer bemoaned; therefore, “we had some uncomfortable wet nights sleeping on the ground” in the rainy season.⁷⁴ Another officer echoed this sentiment, “every afternoon for the past week it had rained extremely hard,” he wrote, “the 3rd Nigeria Regiment and guns had a most unpleasant march... as it had rained incessantly during their journey”.⁷⁵ Another all too important supply that should not be overlooked was medicine, especially quinine (discussed further in the next section).

Even after the rainy season, the climate fared little better for the army. The once wet areas became arid, inhospitable deserts. As Napoleon attested, an army marches on its stomach. However, a slight adjustment is necessary for soldiering in Africa. Even more essential than Napoleon's insistence on food was the necessity of water for soldiers, especially in Africa.⁷⁶ Water scarcity was an imposing danger for soldiers.⁷⁷ The hot, waterless deserts became even more unbearable, if possible, with the absence of water for the soldiers on long, grueling marches. Soaking wet conditions or waterless lakes were the only options depending upon the season. "It is a case of nothing or too much," Smuts once lamented.⁷⁸

Disease

Accompanying this problem of too much or too little water was one of the most notorious sources of casualties in war: disease. The rainy seasons in equatorial Africa lead to perfect breeding conditions for mosquitos. As we saw in Figure 1, there were undoubtedly breeding grounds for mosquitos in Europe, but the difference is that in German East Africa, puddles of similar sizes to those in the fields of Ypres were far more likely to contain malaria mosquitos. For the first time in history, battlefield wounds, not disease, was the main cause of death in Europe – the same was not true in equatorial Africa.⁷⁹ Diseases (a high percentage being malaria cases) "killed hundreds of thousands of people".⁸⁰ Indeed, "the coastal belt and the valleys ... even in dry weather are unhealthy for all... and during the rains there is a great increase in malaria, while dysentery and pneumonia strike down even the Africa native".⁸¹ A British doctor wrote, "I knew that this [East African] rain must mean a new outbreak of fever for many of us".⁸² A scarcity of water led to poor health for the soldiers through dehydration, heat stroke, and weakened immune systems. The "vast waterless areas were another serious difficulty which hampered operations. In East Africa the water question [must be] the first consideration".⁸³ The word 'disease' is a blanket term to refer to an entire host of complications during the First World War; however, often the disease in question was malaria caused by mosquito bites.

Equatorial Africa notoriously houses deadly diseases, for instance malaria, cause by disease-carrying insects, such as mosquitos. "Everywhere the fierce heat of equatorial Africa, accompanied by a wild luxuriance of parasitic life, breeding tropical diseases in the unacclimatised whites ... these conditions make life... in that country far from a pleasure trip," Smuts later noted sarcastically.⁸⁴ Given the enormous tract of land comprising German East Africa, it is unsurprising that disease played such a regular role in the lives of soldiers. Indeed, "it was a land of ... mosquito, jigger flea and horse-sickness fly" and "the malaria mosquito [was] everywhere, except on the highest plateaux ... everywhere belts [were] infested with the deadly tsetse fly," which took an enormous toll on Smuts' army both psychologically and physically, not to mention the British army's limited supply of livestock and beasts of burden.⁸⁵ A doctor who accompanied the British Army wrote in his diary:

So great was the number of new cases [of malaria each day]
... that I took special stock of our quinine, to see if I could

deal with the regiment in what I took to be the proper way, giving every man in it a regular prophylactic dose. I found that if this were done I should soon be tapping my reserves. The risk of being stranded without any was too grave to be taken.⁸⁶

He therefore had to assess carefully which cases he could treat and which ones he could not. One soldier put it as mildly as possible after a 29-kilometer march, commenting that the “mosquitos [were] rather a nuisance”.⁸⁷ Indeed, according to Captain Downes, “malaria was at all times the chief enemy”.⁸⁸

Disease debilitated nearly every soldier from the lowest private to the most powerful general. No one was immune. In 1916, Smuts was bitten by an infected anopheles’ mosquito and spent his whole life recovering from his bout of malaria.⁸⁹ Smuts, as well as most infected soldiers, had a body temperature of 104 °F (40 °C) and a constant aching pain.⁹⁰ Of the roughly 58000 British soldiers deployed in German East Africa in 1916, around 50000 were infected with malaria (or some similar tropical disease).⁹¹ Smuts estimated that “between October and December [1916] we evacuated between 12,000 and 15,000 patients, mostly malaria cases”.⁹² The following year, 1917, saw a 20 percent increase of soldiers and subsequent infection rates.⁹³ Smuts estimated, “the incidence of disease casualties to battle casualties [from 1916–1918] was in the ratio of 31 to 1”.⁹⁴ “Large numbers” of soldiers and civilians frequently “went down with malaria in the pestilential” country.⁹⁵ The prevalence of disease and the extreme weather conditions in equatorial Africa provided a natural Fabian strategy for both sides to employ as an effective fighting tactic. Indeed, “in no other campaign could sickness have played so important a part”.⁹⁶ One British captain noted that over a twelve-month period from 1916–1917, only six soldiers of the original 42 in one of his battalions remained fighting-fit.⁹⁷ The attrition rate of soldiers was shocking, “about 80 percent of the regiments was, after [the first] few months, no longer fit for active service” because of the conditions in German East Africa.⁹⁸

The conditions that armies and the indigenous population endured during the war made them exceptionally susceptible to disease. Soldiers frequently fell victim to sickness “largely owing to the privations they had undergone.”⁹⁹ Rapid and grueling marches across countless miles over such short periods led to malnutrition and weakened immune systems.¹⁰⁰ Sometimes they marched more than 180km in a week and more than 100km in three days!¹⁰¹ Regular shortages of food were common among the columns of soldiers and porters employed by the army. One British Army Doctor noted, “we, like the beasts, were faint with hunger and heat” and were often “too tired to sleep”.¹⁰² Indeed, “men nearly went to sleep whilst marching, and would wake up with a start as they stumbled on the track”.¹⁰³

An army may march on its stomach, but the soldiers in German East Africa “had been making forced marches and fighting on half rations or less” for a significant portion of the campaign.¹⁰⁴ The combination of exhaustion and malnutrition provided the perfect breeding ground for disease in their weakened states.¹⁰⁵ One British contemporary wrote in his journal:

[I]n all this campaign our most deadly enemy was not the human foe who stubbornly retreated before us, but this ... devil of fever who had laid waste that miserable village community in the Lumi swamp ... how terrible was the power [this jungle fever] wielded.¹⁰⁶

The threat of death from the enemy or disease-carrying insects was ever-present and of absolute concern; an underrated problem accompanying insects was the trouble and annoyance noted in several diary entries. At first glance, this issue may seem trivial, but soldiers are human beings subject to the same irritations as everyone. Far from the comforts of his home and family, one soldier noted the ever-present annoyance of bugs and being consistently “troubled with ants.”¹⁰⁷ Mosquitos, ants, and jigger fleas harassed the soldiers all months of the year.¹⁰⁸ By late 1916, some soldiers were simply “fed up with this campaign” because of the awful conditions.¹⁰⁹ One British officer questioned, “I wonder if my reader has ever encountered [African] driver ants?” He continued,

[T]hey are more terrible than any German; they can make a reasonable being do the Marathon in record time; they will make a sane man jump into a stream or fling off his clothes and roll in the grass ... they will take up residence in a house and no one will enter ... Saintly men will rage like fiends when by chance... these “drivers” have the whim to wander up his trousers ... their power to disturb is immense. They are invincible.¹¹⁰

Smuts once noted that “animals died by the thousand[s] after passing through a ... fly belt” of disease in Africa.¹¹¹ Similarly, Captain WD Downes saw beasts of burden dying “at the rate of about a hundred a week ... Pack animals died after a single journey, if not before”.¹¹² One British army doctor who served in German East Africa, Francis Brett Young, was astonished by the impact on wildlife in the aftermath of a battle. He wrote:

Out in the swamp, even without knowing it, one’s ears had been accustomed to the innumerable murmurs of winged life. Here the silence was as profound as that which slumbers at the bottom of the sea, in great depths where there is no life at all. The trunks of the trees stood as motionless as though they had been carved out of coral, and the lianas with which they were hung seemed as little alive as the painted foliage of a theatre: for in these lower levels of the forest no breath of air stirred.¹¹³

The casualty rate among animals was always “naturally very heavy” wherever the armies went, and they were consistently “dying by the hundreds”.¹¹⁴

Much like the rain, there were exponentially more insects in equatorial Africa than in South Africa or Europe, from where the soldiers generally came. These men often came from mild climates and were thrust into a tropical atmosphere.¹¹⁵ They were often tired,

hot, and irritable. A good night's sleep was the exception not the norm – indeed, these were some of the worst nights the soldiers had ever encountered in their lives.¹¹⁶ Lack of sleep, irritability, and disease destroyed the soldiers' will to fight. In peace, one can brush off an ant from a sleeve; one can go to the hospital to receive medical treatment for a case of malaria or dysentery. But during war, one cannot enjoy the luxuries of civilian life. The diseases and the insects carrying them were a constant threat to the army. If more than half of a fighting force was indisposed due to diseases and insects, it could not fight effectively or win a battle.

Terrain

The impact the environment had on the war was not limited to frequently changing weather or the patterns of disease. The sometimes-static landscape also played a decisive role in the war in German East Africa. Hindsight offers an easy window into the aftermath of a battle. One need only look at the field on which it was fought. Commanders looked for the high ground or the dense bush for cover to gain an advantage over the enemy. Indeed, the landscape chooses the battlefield as often as the general does. Leaders often deduced the advantages of occupying the high points surrounded by “bush-covered terrain”, which usually presented a decided advantage to the army that encountered it first.¹¹⁷ As Smuts explained to his son, “As powerful as [any] enemy's military force, the physical and climatic difficulties of the country [add] vastly to his power of defence”.¹¹⁸ The general that fought on his terms and chose his landscape owned the pivotal advantage. After occupying a particularly critical stretch of land known as the Salaita Hill in late 1916, Smuts marvelled at its influence act on his soldiers' confidence:

[N]ever before had I seen so sudden and complete a transformation in the spirits of opposing forces; our men, who had retreated before the enemy in the confusion now advanced with dauntless élan against the hidden foe in the dense bush of the mountain slopes or the Ruwu swamps.¹¹⁹

Hills covered with bush and trees offered excellent advantages for defending forces.¹²⁰ While German East Africa contained a plethora of these advantageous positions, the terrain usually did not offer an advantage.

Equally as common to choosing the land a general wanted to avoid a stretch of land that made military operations difficult, or even impossible. Soldiers did not always have to contend with just the dense bush. Throughout German East Africa “the ground almost everywhere [was composed of] a rich black or red cotton soil, which any transport converts into mud in the rain or dust in the drought”.¹²¹ This made transportation in cars or trucks equally as difficult as transportation through the thick vegetation of the dense bush. It also made marching difficult, if not impossible, for the soldiers because the “road[s] were] extremely dusty and [covered with] dense bush as usual”.¹²² Additionally, the terrain allowed opposing soldiers to escape decisive battles repeatedly.¹²³ “The African bush, with its limited visibility [made it] practically impossible to enclose an enemy”.¹²⁴

Fighting in German East Africa was a vastly different experience from the open fields and clearly defined trench lines in France and Belgium. Soldiers of European empires were hastily trained to fight with Napoleonic tactics – two armies met on opposing sides of a field and fought in this conventional manner. Even the static nature of war in Western Europe clearly defined two opposing forces. Some senior officers, such as Smuts and Crowe fought in colonial wars and rebellions, but many of the soldiers who fought in German East Africa during the First World War were raw recruits who had never experienced a battle.¹²⁵ They were trained to meet the enemy in a field and engage in battle. They were never fully prepared to fight a guerrilla war in the dense bush. In German East Africa enemy positions, occupied territory, and movement were in a constant state of fluidity.

Many places in an enormous territory such as German East Africa were uncultivated, untouched, and lacked any sort of infrastructure familiar to soldiers who were used to the European-style roads, bridges, buildings, and power supplies in places such as France, Britain, Germany, and South Africa (see Figure 2).¹²⁶ The scale of the country was of particular note as well.

It is difficult to realize the [true size of the] area represented by a map. The extent of the country is actually about twice that of the German Empire in Europe, or as extensive as Germany, Italy, Switzerland, the Netherlands, and Denmark taken together.¹²⁷

As noted, these areas were largely untouched by humanity. “Here and there is a clearing where one finds a native village, which consists of a ... few acres of in the vicinity [which] are cultivated, but the country generally is bush or jungle”.¹²⁸



Figure 2: *Bridge construction over the Mgeta River in German East Africa, 27 August, 1916, by permission of the Centenary of World War I in Orange, Orange City Council. A rudimentary bridge under construction.*

In German East Africa, there were few roads, bridges or lines of communication and the roads that existed were often “impassable for ... transport” (see Figure 2).¹²⁹ The existing maps at the time were often unreliable. “On the maps which have been published... roads are shown running in all directions”, however, “these are imaginary. There were no roads ... Roads had to be cut and made step by step as the columns [of soldiers] advanced”.¹³⁰ The imaginary roads led to difficulties for any army trying to effectively operate in the theatre. “The supply and transport situation was bad,” another contemporary noted matter-of-factly, and at times, “mechanical transport ... became impossible”.¹³¹ In the early years of the war the only two railway lines throughout the entire territory were easy prey for sabotage and were effectively destroyed, which ruined any chance of functioning lines of communication or supply chains over railways.¹³²

Nearly all the soldiers who wrote about their time in German East Africa noted the ‘bush-covered terrain’ and the ‘dense bush’ and the impenetrable greenery in many parts of the country. The undergrowth in many of these areas was substantial and unchecked by humans. Indigenous trees, vines, grasses, and shrubs of countless colours, shapes, sizes, and varieties dominated the land more than any army ever could (see Figure 3).¹³³ Inside the forests, the canopy completely blocked out any sunlight – one British officer called it a “primeval forest under a tropical sun”.¹³⁴ Vines were so long and erratic that soldiers would become wrapped and tangled in them. It was “a close tangle of trees with thick undergrowth, which is practically impenetrable”.¹³⁵ Grasses were so thick that one could hardly step through them. Shrubbery and bushes were nearly impenetrable because no one knew what they would find inside.



Figure 3: *Aerial view of the Rufiji River, c.1915*, by permission by the Australian War Memorial, ID A02660. Roughly 180 kilometres southwest of Dar es Salaam, the Rufiji River is flanked by ‘dense bush’ on all sides.

The dense bush offered protection and danger alike. It provided the perfect cover for a retreating army or soldiers who wanted to go undetected. But it also provided numerous hazards and problems. The complications of the dense bush did not stop at inhibiting supplies and marches. One could find anything from poisonous plants to dangerous animals. “The lion and the rhinoceros were the worst enemies,” one officer claimed.¹³⁶ Another stressed that concealed inside were all manner of poisonous plants. For example, another officer described the poisonous effects of the “buffalo bean” plant:

It grows on a low shrub, and as one walks through the bush one brushed off the short hairs which cover it with a velvet-Uke down. At first the presence of the bean is not even noticed; then slight irritation is felt round the bare knees and naked arms while the hairs of the bean work their way into the skin. The irritation gets rapidly worse as the hairs are blown by the breeze up the legs and all over the body, till the whole body is smothered in the dreadful thing. The more one scratches the worse the irritation becomes, and the more quickly it seems to spread. The only cure known by myself is to rub dry earth into the skin, but this, on a wet night, is impossible. The wet makes this dreadful complaint a hundred per cent worse, till maddened with irritation, one rolls on the ground and curses the bean, the bush on which it grows, and the country that has the audacity to produce such a bush.¹³⁷

As noted, the dense bush made transportation (especially of large numbers of soldiers and porters) impractical at best and literally impossible at worst. In some instances, the only way to get to their destination was for an army to march all the way around the dense bush for hundreds of kilometers. Tanks to break through thick areas were not an option in the African theatre. The trucks and vehicles available were ill-designed for the tropical obstacles they faced. Trucks would become tangled in grass or vines, stuck, and had to be abandoned. Walking through the thicket was equally difficult. One contemporary noted the extreme “difficulty of advancing in line through the dense bush”.¹³⁸ Marching came to a snail’s pace because the soldiers had to wade through the overabundance of flora coupled with the tropical fauna they encountered.

The terrain of German East Africa made the war exponentially more difficult than it would have been for soldiers without the added challenge of nature. For the great advantage the high ground could offer, everything else about the terrain presented immense complications. These problems directly shaped the ability of the army to carry out the war effectively. Repeatedly, the dense bush or the thick mud halted soldiers in their tracks or allowed an enemy to hide completely undetected. Few decisive engagements ever occurred because of the terrain in German East Africa.¹³⁹

Conclusion

The sheer size of the territory and the stifling climate fashioned massive supply problems over so large a landscape. The tropical climate presented two equally damaging complications: too much water or too little water. The rainy seasons would inundate the country with so much water that it created a variety of conditions hazardous enough during peacetime, but exponentially worse during war. The other half of the year proved equally detrimental as a scarcity of water created life-threatening conditions. The dense bush of the country constituted another equally imposing enemy. The climate and geography also created the necessary conditions for debilitating diseases such as malaria and its insect carrier, the mosquito, to proliferate and adversely affect an enormous percentage of officers and soldiers. These three environmental factors, climate, disease, and terrain, significantly influenced the war and the soldiers who fought in it in a variety of ways – both in terms of military operations and on the human level. Although we have only looked at a handful of officers here, who undoubtedly had an easier time under such conditions because of the privileges of rank, it would be right to assume that many of the soldiers who served in German East Africa were young and homesick. They lamented the tropical deluges they endured for months on end, the grave sicknesses they endured, and the impenetrable greenery they encountered every day. Indeed, “in German East Africa everything possible that a man could be up against, except cold, existed: Germans, wild beasts, sickness, heat, hunger, flood,” wrote one British officer.¹⁴⁰

Viewing the First World War in Africa through the lens of environmental history demands a re-examination of what we think we know about this subject. The popular version of the war is rife with stories about Paul von Lettow-Vorbeck, the ‘Lion of Africa’ and such heroic, mythical conclusions that even though Germany lost the war, Lettow was never defeated.¹⁴¹ The recent wave of scholarship dedicated to the war in German East Africa from academic historians such as Ross Anderson, Jonathan Krause, Edward Paice, Hew Strachan and Anne Samson has been long overdue and is certainly welcome additions to the historiography. We must take care to understand that this is revisionist history, but the revisions are helping us move away from the mythologising hero-worship. Here, I must invoke Isaac Newton and note that newer insights into the war in German East Africa using the lens of environmental history are only possible by standing on the shoulders of Anderson, Krause, Paice, Strachan and Samson and I have every intention of continuing to build on their work to help move past the hero narrative of Lettow as the ‘Lion of Africa’ or Richard Meinertzhagen as a larger-than-life British hero. After all, the unique conditions in German East Africa during the war years (1914– 1918) put the British army against the environment as much as (perhaps more so) than against Lettow and the German army.¹⁴²

Endnotes

¹ H Strachan. *The First World War* (reissue). New York, NY: Penguin Books, 2013, 37.

² E Paice. *World War I: The African Front*. New York, NY: Pegasus Books, 2008, 4.

³ R Anderson. *The forgotten front: The East Africa Campaign 1914– 1918*. Stroud:

Tempus, 2004; J Krause (ed). *The Greater War: Other combatants and other fronts, 1914– 1918*. Hampshire: Palgrave Macmillan, 2012; Paice *op. cit.* H Strachan. *The First World War in Africa*. New York, NY: Oxford University Press, 2004; A Samson. *World War I in Africa: The forgotten conflict among the European powers*. New York, NY: I.B. Tauris, 2013. These historians do not form an exhaustive list. Indeed, a more complete list would be too large for this note. The online encyclopaedia, *1914– 1918 Online*, contains a list of over 25 recent articles and encyclopaedic entries concerning some aspect of the war in Central and East Africa.

⁴ VB Khapoya. *The African experience*. Upper Saddle River, NJ: Pearson, 2013, 115; Strachan, *The First World War, op. cit.*, p. 67.

⁵ Anderson *op. cit.*, p. 9.

⁶ C Duggan. *The force of destiny: A history of Italy since 1796*. New York, NY: Allen Lane, 2007, 497.

⁷ J Buckley. *Air power in the age of total war*. Hoboken: Taylor and Francis, 1998, 38.

⁸ Anderson *op. cit.*, p. 11.

⁹ Smuts, J.C. *Jan Christian Smuts: A biography*. New York, NY: William Morrow, 1952, 148. A similar title can be found with the first edition: *Jan Christian Smuts by his son*. Cape Town: Cassell, 1952. Certain words have been altered to a synonym, the page numbers and illustrations are different, but the content and context are the same. Hereafter, all citations will refer to *Jan Christian Smuts: A biography*, unless otherwise stated. Smuts's middle name is sometimes also spelled Christiaan in the sources.

¹⁰ Anderson *op. cit.*, p. 9.

¹¹ Smuts *op. cit.*, p. 173.

¹² Paice *op. cit.*, p. 1.

¹³ *Ibid.*, p. 3.

¹⁴ *Ibid.*

¹⁵ *Ibid.*, p. 5.

¹⁶ *Ibid.*, pp. 2-3.

¹⁷ Anderson *op. cit.*, p. 3.

¹⁸ S Jones. "Applying colonial lessons to European war: The British Expeditionary Force 1902– 191". In J Krause *op. cit.*, p. 83.

¹⁹ See note 3.

²⁰ G Maddox. *Sub-Saharan Africa: An environmental history*. Santa Barbara, CA: ABC-CLIO, 2006; JF Richards. *The unending frontier: An environmental history of the early modern world*. Berkeley, CA: University of California Press, 2003; T Griffiths. *Ecology and empire: Environmental history of settler societies*. Seattle, WA: University of Washington Press, 1997; J McCann. *Green land, brown land, black land: An environmental history of Africa, 1800-1990*. Portsmouth: Heinemann, 1999; AC Hamilton. *Environmental history of East Africa: A study of the quaternary*. New York, NY: Academic Press, 1982; S Dovers. *South Africa's environmental history: Cases & comparisons*. Athens OH: Ohio University Press, 2002; U Engel. *Respacing Africa*. Boston, MA: Brill, 2010.

- ²¹ There is perhaps no better book on this specific idea than that by JR McNeill. *Mosquito empires: Ecology and war in the Greater Caribbean, 1620–1914*. New York, NY: Cambridge University Press, 2010. McNeill convincingly argues that differential immunity to certain diseases (yellow fever and malaria) gave people who were already in the Western Hemisphere an advantage over newer arrivals. Such an advantage benefited the Spanish Empire over invaders from North European countries such as Britain and France. Thereafter, it helped revolutionary struggles all over North and South America for independence from Europe. McNeill demonstrates that the diseases transmitted by mosquitoes made a difference in the battle of Yorktown in 1781 (the culmination of the American War of Independence) as well as during the Haitian Revolution and the struggle of Simon Bolívar in South America.
- ²² A scarcity of research has been conducted on environmental history during the First World War. Avner Offer tries to situate the First World War in a purely environmental perspective in A Offer. *The First World War: An Agrarian perspective*. Oxford: Clarendon Press, 1989, but there is little of substance on a microhistory level. However, Offer's study is superb in his conclusions on the agrarian aspect of the war and therefore, this article will not undertake agriculture; Richard P. Tucker and Edmund Russell demonstrated the importance of the environment during wartime, but had no essay on the First World War in RP Tucker and E Russell (eds.) *Natural enemy, natural ally: Toward an environmental history of war* (2nd ed). Corvallis, OR: Oregon State University Press, 2012; Rickard P. Tucker's most recent edited volume, RP Tucker, T Keller, JR McNeill (eds.) *Environmental histories of the First World War*. Cambridge: Cambridge University Press, 2018, begins to fill in this dearth of scholarship. Particularly of note for this article is the essay in *Environmental histories of the First World War* by Thaddeus Sunseri, "Forest policy, wildlife destruction, and disease ecologies". Sunseri brilliantly focuses on forest policy, perceptions of resource potential, wildlife management, and human and animal disease ecologies in sub-Saharan Africa during the war.
- ²³ Anderson *op. cit.*, p. 295.
- ²⁴ *Ibid.*, p. 296.
- ²⁵ One notable exception is CE Closmann (ed). *War and the Environment: Military Destruction in the Modern Age*. College Station, TX: Texas A& M University Press, 2009, but no essay sufficiently analyses the First World War in Africa; see also note 22.
- ²⁶ Tucker & Russel, *op. cit.*, p. 1.
- ²⁷ D Brantz. "Environments of death: Trench warfare on the Western Front, 1914–1918". In Closmann *op. cit.*, p. 70.
- ²⁸ Tucker & Russel *op. cit.*, p. 1.
- ²⁹ This project originally began as a portion of my master's thesis. I was unable to delve into greater detail on some of the themes and ideas in this article. White soldiers from Britain and South Africa certainly served in Africa, but it is significant to note that countless more Africans from all over the

continent served the British and German empires in German East Africa as well. It has been clearly demonstrated by several historians cited throughout these notes how significant the indigenous population of Africa was to the British, Belgian, and German Empires before, during, and after the First World War. I intend to investigate further the themes of this article from the German perspective and the African perspective.

- ³⁰ An underemphasized problem has plagued the historiography of German East Africa. Most scholars used to rely heavily on two primary sources — P von Lettow-Vorbeck. *My Reminiscences of East Africa*. London: Hurst and Blackett, 1922 and R Meinertzhagen. *Army Diary, 1899– 1926*. Edinburgh: Oliver & Boyd, 1960. Lettow’s writings and memoirs are potentially useful as a starting point for study, but outside the scope of this particular article because I focus on the British viewpoint. However, Meinertzhagen’s writings were recently challenged in a new study: B Garfield. *The Meinertzhagen mystery: The life and legend of a colossal fraud*. Washington, DC: Potomac Books, 2007. In this book, Garfield questioned the validity of Richard Meinertzhagen and demonstrated that *Army diary* was mostly fabricated and fancied out of vanity on the part of Meinertzhagen. He demonstrated that Meinertzhagen was a racist, jingoist, larger-than-life myth popularised through his extraordinary exploits that he almost entirely invented to cast himself in a glowing light. Therefore, I avoided the use of *Army diary* in this paper.
- ³¹ Smuts *op. cit.*; J Smuts. *Memoirs of the Boer War*, eds. G Natrass & SB Spies. Johannesburg: Jonathan Ball, 1994; J Smuts. *Selections from the Smuts papers*, vols. 1– 3, eds. WK Hancock & J van der Poel. Cambridge: Cambridge University Press, 1966.
- ³² R Anderson. “J C Smuts and J L Deventer: South African commanders-in-chief of a British expeditionary force,” *Scientia Militaria* 31, 2. 2003. 125.
- ³³ JHV Crowe. *General Smuts’ campaign in East Africa*. London: John Murray, 1918; WD Downes. *With the Nigerians in German East Africa*. London: Methuen, 1919; FB Young. *Marching on Tanga: With General Smuts in East Africa*. London: W. Collins, 1917; CJ Thornhill. *Taking Tanganyika: Experiences of an intelligence officer 1914– 1918* (reprint). Uckfield: Naval and Military Press, 2004; ES Thompson. “A machine gunner’s odyssey through German East Africa: The diary of E.S. Thompson, Part 3 18 September 1916 – 26 February 1917,” *South African Military History Journal* 7/6. 1988. 220-233.
- ³⁴ CW Shackleton. *East African experiences, 1916*. Durban: Knox Publishing Company, 1940.
- ³⁵ Smuts, *Jan Christian Smuts ... op. cit.*, p. 155.
- ³⁶ Tucker & Russel *op. cit.*, p. 4.
- ³⁷ Smuts, *Jan Christian Smuts by his son ... op. cit.*, p. 252.
- ³⁸ Smuts, *Jan Christian Smuts ... op. cit.*, p. 139.
- ³⁹ MR Moyd. *Violent intermediaries: African soldiers, conquest and everyday colonialism in German East Africa*. Athens, OH: Ohio University Press, 2014, 144.

- ⁴⁰ Smuts, *Jan Christian Smuts ... op. cit.*, p. 151.
- ⁴¹ Thornhill *op. cit.*, p. 11.
- ⁴² Crowe *op. cit.*, p. v-vi.
- ⁴³ Smuts, *Memoirs ... op. cit.*, p. 8; See also Smuts, *Jan Christian Smuts ... op. cit.*, pp. 150–51.
- ⁴⁴ JHV Crowe served under Jan Smuts' command during the campaign in German East Africa; Crowe *op. cit.*, p. 21.
- ⁴⁵ *Ibid.*, p. 108.
- ⁴⁶ *Ibid.*
- ⁴⁷ *Ibid.*, p. 161.
- ⁴⁸ E Jünger. *In Stahlgewittern* (48th ed). Stuttgart: Klett-Cotta, 2007, 256.
- ⁴⁹ Downes *op. cit.*, p. 82.
- ⁵⁰ *Ibid.*, pp. 112, 152.
- ⁵¹ Smuts, *Selections from the Smuts papers ... op. cit.*, p. 351; 'Moshi' is also sometimes spelled 'Moschi' in the sources.
- ⁵² Crowe *op. cit.*, p. 246.
- ⁵³ Smuts, *Jan Christian Smuts ... op. cit.*, p. 150-51.
- ⁵⁴ Smuts, *Selections from the Smuts Papers ... op. cit.*, pp. 332-442; see also Downes *op. cit.*, p. 28.
- ⁵⁵ Smuts, *Jan Christian Smuts ... op. cit.*, pp. 154– 155.
- ⁵⁶ Downes *op. cit.*, p. 86.
- ⁵⁷ *Ibid.*, p. 45.
- ⁵⁸ Smuts, *Jan Christian Smuts ... op. cit.*, p. 155.
- ⁵⁹ Smuts, *Selections from the Smuts papers ... op. cit.*, p. 407.
- ⁶⁰ Downes *op. cit.*, p. 63.
- ⁶¹ Crowe *op. cit.*, p. 21.
- ⁶² Smuts, *Selections from the Smuts Papers ... op. cit.*, p. 406.
- ⁶³ Quoted in Downes *op. cit.*, pp. 85-6.
- ⁶⁴ Crowe *op. cit.*, pp.195, 227.
- ⁶⁵ *Ibid.*, p. 106.
- ⁶⁶ Downes *op. cit.*, p. 63; see also Young *op. cit.*, p. 56.
- ⁶⁷ Downes *op. cit.*, p. 234.
- ⁶⁸ Crowe *op. cit.*, p. 114.
- ⁶⁹ *Ibid.*, p. 116.
- ⁷⁰ Downes *op. cit.*, p. 242.
- ⁷¹ Crowe *op. cit.*, p. 9.
- ⁷² *Ibid.*, p. 117; a 'donga' is a South African term for a dry ravine.
- ⁷³ Young *op. cit.*, p. 209.
- ⁷⁴ Thompson *op. cit.*, p. 225.
- ⁷⁵ Downes *op. cit.*, p. 56.
- ⁷⁶ Evert Kleynhans, for example, argues that access to drinking water in German South West Africa essentially dictated most of the South African campaign during the First World War. This argument should also be included with discussion of German East Africa. See E Kleynhans. "A critical analysis of the impact of water on the South African campaign in German South West Africa, 1914 -1915". *Historia* 61/2. 2016. 29–53.

- ⁷⁷ Thompson *op. cit.*, p. 221.
- ⁷⁸ Smuts, *Selections from the Smuts Papers... op. cit.*, p. 407.
- ⁷⁹ H Strachan (ed.) *The Oxford illustrated history of the First World War* (2nd ed).
Oxford: Oxford University Press, 2014, 9.
- ⁸⁰ *Ibid.*, p. 100.
- ⁸¹ Downes *op. cit.*, p. 87.
- ⁸² Young *op. cit.*, p. 209.
- ⁸³ Crowe *op. cit.*, p. 10.
- ⁸⁴ Smuts, *Jan Christian Smuts ... op. cit.*, p. 155.
- ⁸⁵ *Ibid.*, p. 164, 168. see also, Young *op. cit.*, p. 139; Downes *op. cit.*, p. 96.
- ⁸⁶ Young *op. cit.*, p. 71.
- ⁸⁷ Thompson, *op. cit.*, p. 222.
- ⁸⁸ Downes *op. cit.*, p. 32.
- ⁸⁹ Smuts, *Jan Christian Smuts ... op. cit.*, p. 156.
- ⁹⁰ Modern medical doctors call any temperature over 104 °F ‘hyperpyrexia’, which requires immediate medical attention or there is a serious risk of death. Malaria frequently causes fevers in excess of 104 °F.
- ⁹¹ Smuts, *Jan Christian Smuts ... op. cit.*, p. 156.
- ⁹² Quoted in Crowe *op. cit.*, p. xiv.
- ⁹³ Smuts, *Jan Christian Smuts ... op. cit.*, p. 156.
- ⁹⁴ *Ibid.*
- ⁹⁵ Crowe *op. cit.*, p. 216.
- ⁹⁶ Downes *op. cit.*, p. 269.
- ⁹⁷ *Ibid.*, pp. 269–70.
- ⁹⁸ *Ibid.*, p. 32.
- ⁹⁹ Crowe *op. cit.*, p. 126.
- ¹⁰⁰ Jan Smuts regularly mentions to his son how hard he pushed his soldiers during long marches across German East Africa in Smuts, *Jan Christian Smuts ... op. cit.*, chapter XVI.
- ¹⁰¹ Thompson *op. cit.*, pp. 220, 225.
- ¹⁰² Young *op. cit.*, p. 56–57, 65.
- ¹⁰³ Downes *op. cit.*, p. 181.
- ¹⁰⁴ Young *op. cit.*, p. 109.
- ¹⁰⁵ Moyd *op. cit.*, p. 144.
- ¹⁰⁶ Young *op. cit.*, p. 16.
- ¹⁰⁷ Thompson *op. cit.*, pp. 174, 177.
- ¹⁰⁸ *Ibid.*, 230.
- ¹⁰⁹ *Ibid.*, 224.
- ¹¹⁰ Downes *op. cit.*, pp. 103–4.
- ¹¹¹ *Ibid.*, 169.
- ¹¹² Downes *op. cit.*, pp. 88, 113.
- ¹¹³ Young *op. cit.*, pp. 8–9.
- ¹¹⁴ Crowe *op. cit.*, pp. 187, 217.
- ¹¹⁵ That is not to say there are no insects in Britain, Germany or South Africa. However, the diversity of insects and bugs is exponentially greater closer to the equator, such as in German East Africa.

- ¹¹⁶ In a majority of his diary entries, ES Thompson noted his difficulty sleeping in this country and the constant hot, dry air in Thompson *op. cit.*, pp. 163–179, 227.
- ¹¹⁷ Smuts, *Memoirs of the Boer War*, 91.
- ¹¹⁸ Smuts, *Jan Christian Smuts... op. cit.*, p. 150.
- ¹¹⁹ *Ibid.*, p. 167.
- ¹²⁰ Downes *op. cit.*, p. 70.
- ¹²¹ Smuts, *Jan Christian Smuts... op. cit.*, p. 155.
- ¹²² Thompson *op. cit.*, p. 175.
- ¹²³ Downes *op. cit.*, pp. 152–3.
- ¹²⁴ Smuts, *Jan Christian Smuts*, 160.
- ¹²⁵ Crowe *op. cit.*, p. 2.
- ¹²⁶ See Figure 2.
- ¹²⁷ Crowe *op. cit.*, p. 19.
- ¹²⁸ *Ibid.*, p. 13.
- ¹²⁹ Downes *op. cit.*, p. 86.
- ¹³⁰ Crowe *op. cit.*, p. 8–9.
- ¹³¹ Downes *op. cit.*, pp. 88, 96.
- ¹³² Smuts, *Jan Christian Smuts... op. cit.*, p. 128.
- ¹³³ See Figure 3.
- ¹³⁴ Crowe *op. cit.*, p. 10.
- ¹³⁵ *Ibid.*, p. 13.
- ¹³⁶ *Ibid.*, p. 16.
- ¹³⁷ The ‘buffalo bean’ plant described here is now known to science as *Mucuna pruriens*. Downes *op. cit.*, p. 234–5.
- ¹³⁸ *Ibid.*, p. 20.
- ¹³⁹ A notable exception was the battle at Salaita Hill mentioned earlier.
- ¹⁴⁰ Downes *op. cit.*, p. 269.
- ¹⁴¹ See for example the popular histories that almost glorify Lettow: B Farwell. *The Great War in Africa, 1914–1918*. New York, NY: Norton, 1986; R Gaudi. *African Kaiser: General Paul von Lettow-Vorbeck and the Great War in Africa, 1914–1918*. New York, NY: Caliber, 2017; EP Hoyt. *Guerilla: Colonel von Lettow-Vorbeck and Germany’s East African Empire*. New York, NY: Macmillan, 1981; C Miller. *Battle for Bundu: The First World War in East Africa*. New York, NY: Macmillan, 1974.
- ¹⁴² Several scholars deserve acknowledgement for their invaluable help with this article. I would like to thank my thesis advisor, Jill C. Bender, who helped me form and shape the argument in its earliest stages. I would also like to thank my colleagues, Timothy M. Reagin and Michael J. Hugunin, who gave me helpful feedback on drafts throughout the writing process. And special thanks to the editorial team at *Scientia Militaria*, Thomas Mandrup and the anonymous referees who gave me wonderful suggestions that helped to focus this article and the language editor who helped me ‘clean up’ the article.