



## A political ecology of beef in colonial Tanzania and the global periphery, 1864–1961

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### Abstract

British colonial policy makers in East Africa from the 1930s to about 1960 drew on a model of pastoral industrialization that had its origins in the Chaco savannas of Paraguay earlier in the century. Based on the political ecology of a particular sector of beef processing – meat extract and corned beef – most famously represented by Liebig's Extract of Meat Company (Lemco), it was hoped that this company's ability to consume tens of thousands of marginal 'scrub' or 'famine' cattle as the raw material for its products would ease pressures on African land that contributed to desertification and soil erosion. Following World War II, colonial policy experts, especially veterinarians, enticed Lemco to Tanganyika in advance of a planned destocking campaign designed to develop cattle, cattle owners, and pastures along modern ranching lines, in large part owing to perceptions of a world meat shortage. The failure to modernize the cattle environment in the late colonial period and beyond stemmed largely from Lemco's structural reliance on unimproved cattle that were most suited to arid grasslands of global peripheries.

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Industrial beef production in colonial Tanzania began in 1950, with the opening of the Tangombe factory in Dar es Salaam.<sup>1</sup> Tangombe was the main slaughterhouse of Tanganyika Packers Limited (TPL), a division of Liebig's Extract of Meat Company (Lemco), which held a 49% share in the new company in partnership with the Tanganyika Government.<sup>2</sup> More a marriage of convenience than a manifestation of state control, TPL was the latest expansion of Lemco's global corned beef and meat extract empire, which had opened its first factory in Fray Bentos, Uruguay in 1864.<sup>3</sup> From the 1930s through the 1950s, British colonial policy makers and 'experts', foremost among them veterinarians, believed that the entry of Lemco into Tanganyika would transform and improve African pastoral landscapes, cattle, and cattle-keeping peoples, creating a 'revolution in the native economy'.<sup>4</sup> They saw Lemco as a panacea

for a host of ills, including eroded grasslands and agricultural land; emergent desertification; environments infested with tsetse flies, ticks, and myriad livestock diseases; minimally productive cattle; and African cattle keepers insufficiently engaged with colonial markets and an internationalizing economy. By providing a market for tens of thousands of cattle annually, Lemco would stimulate a modern ranching economy while freeing up pasture for agricultural expansion and diversification. Industrial beef production in turn would improve the health of tens of thousands of Tanganyikan plantation and industrial workers by increasing meat in the diet – a hallmark of modern societies – and respond to the growing visibility of malnutrition and protein deficiency among colonial peoples.<sup>5</sup> Moreover, Lemco would ease post-World War II consumer meat shortages in Britain and the world. By substituting

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<sup>1</sup> Tangombe was an acronym for 'Tanganyika ng'ombe' – Tanganyikan cattle. In 1964 independent Tanganyika and Zanzibar formed the United Republic of Tanzania.

<sup>2</sup> Memorandum and Articles of Association of Tanganyika Packers Limited, Incorporated 6 November 1947, Tanzania National Archives [hereafter TNA] 36841.

<sup>3</sup> Wie Liebig's Fleischextrakt gemacht wird, Bundesarchiv-Berlin [hereafter BAB] R1001/1703, 125–126; M. Finlay, Quackery and cookery: Justus von Liebig's extract of meat and the theory of nutrition in the Victorian Age, *Bulletin of the History of Medicine* 66 (1992) 404–418; H.-J. Teuteberg, *Die Rolle des Fleischextrakts für die Ernährungswissenschaften und den Aufstieg der Suppenindustrie*, Stuttgart, 1990, 12–14; Liebig's Extract of Meat Co. Ltd Annual Reports, No. E. 3710, 'Prospectus', 1862. Unilever Archives, Port Sunlight, U.K. [hereafter UA].

<sup>4</sup> File minutes by W.B.L. Monson, 7 February 1946, British National Archives, Kew [hereafter BNA], CO 852/573/4. Governors of Tanganyika and directors of the Veterinary Department from 1934, as well as key members of the Africa section of the Colonial Office, saw the entry of Lemco as key to rural modernization. Among them were Governors Winfred Jackson, William Battershill, and Edward Twining.

<sup>5</sup> J. Ruxin, The United Nations protein advisory group, in: D.F. Smith, J. Phillips (Eds), *Food, Science, Policy and Regulation in the Twentieth Century: International and Comparative Perspectives*, London, 2000, 152–166.

commodities largely produced in dollar zones, and by potentially penetrating American markets, the Tangombe factory would help to ease British dependence on American products. As one of the biggest industrial employers in Tanganyika in the 1950s, Lemco also marked a break with the pre-World War II past when industrial production was dominated by the metropole. Lemco would therefore demonstrate the benefits of colonial rule to Africans at a time of nationalism in Tanganyika, hopefully delaying the push for independence for the foreseeable future.

Lemco's arrival in Tanganyika represented the intersection of two lines of colonial thinking about the development of the indigenous cattle economy. One sought to build on Western success in upgrading cattle and pastures for a commercial and industrialized beef industry, drawing on models well established in Europe, the United States, and the Plate River nations of Uruguay and Argentina. The best known and most successful model of modern industrial beef production was pioneered in Chicago, where the centralization of the packing houses following the Civil War sparked the transformation of Western prairies and Midwestern feedlots, stimulated the introduction of pure-bred and cross-bred cattle, altered consumer tastes by introducing fatty beef on a wide scale, and created myriad industrial and consumer uses for cattle beyond meat, tallow and hide.<sup>6</sup>

As American beef production catered to its own burgeoning domestic market after 1900, focusing on refrigerated beef, Argentina and Uruguay stepped in to act as a beef frontier for British and other European consumers. The technological transformation of the lower Plate River mirrored the Chicago model, and largely relied on its meat packers for technology and capital.<sup>7</sup> All the tools of the 'Euro-American' ranching complex followed, including purebred cattle, fencing, windmills, fodder grasses that replaced natural pasture, railway and steamship linkages, modern factories, and eventually local consumers who became voracious eaters of high-grade beef.

A second model of commercial beef production, most associated with Liebig's Extract of Meat Company, originated in the dry, hot, tropical and sub-tropical *Chaco* and *Cerrado* savannas straddling the Uruguay, Paraña, and Paraguay Rivers of the upper River Plate basin. After 1864 Lemco entered this region to make use of hundreds of thousands of marginal, semi-feral *Criollo* cattle, descended from Iberian stock imported during the sixteenth century, which fed mainly on indigenous scrub grasslands. Rounded up by *vaquero* 'cowboys' and driven long distances to Lemco's *estancia* holding grounds to recover weight, they then entered the industrial plants in Fray Bentos, Uruguay, later Colón, Argentina, and eventually Zeballos Cue, Paraguay, where they were boiled down to make meat extract, a thick beef paste used to provision armies, hospitals, and pantries as a tea, soup or stew base. Shortly after the turn of the century, the products derived from

marginal cattle expanded to include corned beef, and gradually came to dominate the beef factories of the South American dry savannas. Both meat extract and corned beef relied minimally on cattle upgrading and pasture improvement. Indeed, the investments in fodder grasses, infrastructure, and pedigreed cattle characteristic of the Chicago model that drove prices upward threatened the profitability of this global niche industry. When this happened, it pushed meat extract companies like Lemco to other parts of the region or world, where cattle costs were low, particularly to the arid savannas of southern and eastern Africa. Unlike 'Chicago' beef, Lemco's was an industry that could still profit from drought-stricken cattle trekked over long distances under treacherous conditions.

From the interwar years of British colonial rule in East Africa, the 'meat extract/corned beef' model of commercialized cattle guided colonial thinking, in part superseding, in part co-existing uneasily with an emergent 'high modernist' or 'developmentalist' strain of colonial social and economic planning, which had faith in the role of scientific experts – veterinarians, ecologists, entomologists and sociologists – to foster a commercial ranching economy as a natural evolution of 'meat extract pastoralism'.<sup>8</sup> If the ranching model had succeeded, Tanzanian cattle would have been transformed into high-grade beef producers, savannas would have become irrigated pastures growing fodder grasses, largely free of livestock diseases and their wildlife hosts, and African cattle keepers would have become primarily oriented to breeding beef for the market, with minimal regard for the cultural and subsistence value of cattle. Tanzania – today Africa's second largest cattle economy – would have become a major supplier of chilled or frozen beef for the world market. None of this has happened. Instead, the 'industrialization of cattle' that took place in Tanzania from the 1930s to independence in 1961 (and beyond) was based on corned beef and meat extract, a sector that had limited potential to transform cattle and pastures – indeed, which only survived by relying on low-cost cattle of the global periphery. If modern ranching was a sector that mustered the most advanced technological, organizational and scientific knowledge to develop the pastoral landscape, the Lemco model, in contrast, was decidedly 'low modernist', stopping short of bringing to bear unbridled state power, the best science, and sweeping social and landscape engineering, instead seeking to achieve more realizable goals that recognized the limitations posed by the East African environment.

The tension between these competing models of 'cattle industrialization', from the 1920s to the end of colonial rule, was key to debates about emergent African desertification and soil erosion, which were usually blamed on the overabundance of livestock on inadequate land.<sup>9</sup> British colonial rulers believed that African cattle keepers refused to sell adequate numbers of cattle regularly enough to keep herds at sustainable levels. They responded to this problem by forcing Africans to cull annual quotas of livestock in order to

<sup>6</sup> W. Cronon, *Nature's Metropolis: Chicago and the Great West*, New York, 1991, 207–259; J. Rifkin, *Beyond Beef: The Rise and Fall of the Cattle Culture*, New York, 1992, 113–123.

<sup>7</sup> J. Crossley and R. Greenhill, The River Plate beef trade, in: D.C.M. Platt (Ed.) *Business Imperialism 1840–1930*, Oxford, 1977, 284–334.

<sup>8</sup> Recent studies of development paradigms in colonial Africa have rightly stressed continuities with pre-World War II economic initiatives, while making clear that the war, coupled with post-war European economic malaise, added urgency and power to new far-reaching projects. J.M. Hodge, *Triumph of the Expert: Agrarian Doctrines of Development and the Legacies of British Colonialism*, Athens, OH, 2007; H. Tilley, *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge, 1870–1959*, Chicago, 2011, 69–113. James Scott defines 'high modernism' as the 'aspiration to the administrative ordering of nature and society' carried out by 'engineers, planners, technocrats, high-level administrators, architects, scientists, and visionaries'. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*, New Haven, 1988, 88.

<sup>9</sup> D. Anderson, Depression, dust bowl, demography, and drought: the colonial state and soil conservation in East Africa during the 1930s, *African Affairs* 83 (1984) 321–343; W. Beinart, *The Rise of Conservation in South Africa: Settlers, Livestock, and the Environment*, Oxford, 2003; J. McCracken, Conservation and resistance in colonial Malawi: the 'dead north' revisited, in: W. Beinart, J. McGregor (Eds), *Social History and African Environments*, Oxford, 2003, 155–174; J. Swift, Desertification: narratives, winners and losers, in: M. Leach, R. Mearns (Eds), *The Lie of the Land: Challenging the Received Wisdom on the African Environment*, Oxford, 1996, 73–90; D. Hodgson, *Once Intrepid Warriors: Gender, Ethnicity, and the Cultural Politics of Maasai Development*, Bloomington, 2001; R. Waller, 'Clean' and 'dirty': cattle disease control policy in colonial Kenya, 1900–1940, *Journal of African History* 45 (2004) 45–80; D. Anderson, *Eroding the Commons: The Politics of Ecology in Baringo, Kenya 1890–1963*, Oxford, 2002; R. Schuknecht, *British Colonial Development Policy after the Second World War: The Case of Sukumaland, Tanganyika*, Berlin, 2008.

rehabilitate the land and facilitate rotational grazing and agricultural modernization. Colonial thinkers, among them all the governors of Tanganyika after 1934, believed that successful development and rehabilitation could only be accomplished if a commercial beef industry were present to absorb tens of thousands of 'surplus' cattle, providing a payment to stock owners as an incentive for ongoing market production. While a handful of studies have addressed the role of the commercial beef industry in facilitating colonial destocking-and-development schemes, these studies have not recognized that the main corporation to participate in these schemes – Lemco – brought with it a particular 'political ecology of beef' that owed much to its South American precedents.<sup>10</sup> The colonial officials and 'experts' who after the 1930s aspired to fundamentally transform African cattle, pastures, and people, failed to recognize that Lemco could only survive by consuming marginal cattle for a niche industry. Lemco was a catalyst to destocking and anti-erosion campaigns, but by its very nature the company could not provide the 'radical break with history and tradition' that some colonial policy makers envisioned.<sup>11</sup>

### Meat extract and the global periphery

In its first fifty years Lemco specialized in the production of meat extract, owing to problems of shipping live animals and fresh and refrigerated meat in an era of devastating cattle epizootics and emergent public health concerns.<sup>12</sup> Tens of thousands of European cattle succumbed to bovine pleuro-pneumonia, Rinderpest, anthrax, and hoof-and-mouth disease after the mid nineteenth century, and American cattle carried Texas fever and its tick hosts across the oceans. Cases of meat contamination that killed hundreds of consumers convinced policy makers to take meat and animal inspection seriously, empowering professionally trained veterinarians to take a leading role in public health.<sup>13</sup> As steamships expedited transport of live animals, and, from the 1870s, chilled and frozen beef, the threat of disease outbreaks increased. In response, state officials enacted strict policies of quarantine and inspection, and sometimes completely curtailed imports of livestock, frozen meat, sausage and sometimes canned meat.<sup>14</sup> In 1895, for example,

the German Reichstag prohibited livestock imports from almost all countries.<sup>15</sup> In 1900 Britain prohibited cattle imports after hoof-and-mouth disease was reported in Argentina.<sup>16</sup>

Even as disease, legislation, and quarantines curtailed the free flow of live animals and refrigerated beef, working classes demanded more meat in their diets. Industrialization increased the perception that a healthy population needed meat, and Social Darwinians believed meat-eating nations would dominate non-meat eating territories.<sup>17</sup> In Germany by the 1890s there were continuous outcries and consumer protests that meat was in short supply and too expensive, a result not only of quarantines and meat-inspection laws, but a tariff policy that protected rural producers.<sup>18</sup> Europe's ability to expand its beef output was limited by climate, while agricultural intensification ate up pasturelands, creating a 'beef productivity barrier' and a 'mid-Victorian meat famine'.<sup>19</sup> Refrigerated or canned meat did not end problems of meat contamination or disease transfer.<sup>20</sup> Despite the risks, many policy makers in Britain and Germany looked to new pastoralist frontiers across the seas to overcome Europe's meat shortage.

This was the context for Justus von Liebig's popularization of a meat extract that purportedly provided all the nutrients of fresh meat. From 1848 Liebig – the most famous German chemist of his day – developed a meat extract that was initially sold in pharmacies and often prescribed by doctors.<sup>21</sup> Unlike past beef extracts, Liebig's excluded non-nutritious elements like fat and gelatin, and was much more concentrated than rival formulas. 'A pound of meat extract contains the dissolved contents of thirty pounds of pure meat', Liebig wrote, providing nutrients essential for the health of Germany's 'potato-eating population'.<sup>22</sup> Liebig challenged business and industry to make use of cheap Australian or South American cattle to manufacture beef extract on a mass scale.<sup>23</sup> In 1861 a German railway engineer working in Brazil, Georg Giebert, responded. Giebert had observed that most South American beef was discarded as the carcasses were used principally for hides and tallow, although meat producers, called *saladeros*, had earlier made *tasajo* salted beef mainly to provision Caribbean and Brazilian slave plantations and mines.<sup>24</sup> In 1863 Giebert converted a *saladero* at Fray Bentos on the lower Rio de la Plata in Uruguay, where the

<sup>10</sup> S. Chipungu, *Commercializing a Peasant Resource: Cattle Trade in Sukumaland (Tanzania) 1919–1961*, Lusaka, 1988, 35–47; Schuknecht, *British Colonial Development Policy after the Second World War* (note 9), 158–163; M. Fleisher, *Kuria Cattle Raiders: Violence and Vigilantism on the Tanzania/Kenya Frontier*, Ann Arbor, 2000, 73–75; D. Hodgson, Taking stock: state control, ethnic identity, and pastoralist development in Tanganyika, 1940–1961, *Journal of African History* 41 (2000) 55–78, here 63, 67; J. Munro, *Colonial Rule and the Kamba: Social Change in the Kenya Highlands 1889–1939*, Oxford, 1975, 220–221; R. Tignor, Kamba political protest: the destocking controversy of 1938, *African Historical Studies* 4 (1971) 237–251; D. Anderson, Kenya's cattle trade and the economics of empire, 1918–48, in: K. Brown, D. Gilfoyle (Eds), *Healing the Herds: Disease, Livestock Economies, and the Globalization of Veterinary Medicine*, Athens, OH, 2010, 250–268. Chipungu among these points out that a particular political ecology accompanied meat canning with respect to its effect on the Sukumaland environment.

<sup>11</sup> Scott, *Seeing Like a State* (note 8), 93.

<sup>12</sup> R. Perren, *Taste, Trade, and Technology: The Development of the International Meat Industry since 1840*, Aldershot, 2005, 46–47, 219; C. Hutson, Texas fever in Kansas, 1866–1930, *Agricultural History* 68 (1994) 74–104.

<sup>13</sup> J. Fisher, To kill or not to kill: the eradication of contagious bovine pleuro-pneumonia in Western Europe, *Medical History* 47 (2003) 314–331; J. Fisher, The economic effects of cattle disease in Britain and its containment, 1850–1900, *Agricultural History* 54 (1980) 278–294; M. Worboys, *Spreading Germs: Disease Theories and Medical Practice in Britain, 1865–1900*, Cambridge, 2000, 43–72; D. Brantz, Animal bodies, human health, and the reform of slaughterhouses in nineteenth-century Berlin, in: P. Young Lee (Ed.), *Meat, Modernity, and the Rise of the Slaughterhouse*, Durham, NH, 2008, 71–85.

<sup>14</sup> U. Spiekermann, Dangerous meat? German-American quarrels over pork and beef, 1870–1900, *Bulletin of the German Historical Institute* 46 (2010) 93–109.

<sup>15</sup> J. Esslen, On the high price of meat in the German empire in 1905, *The Economic Journal* 16 (1906) 130–135; C. Nonn, *Verbraucherprotest und Parteiensystem im wilhelminischen Deutschland*, Düsseldorf, 1996, 117–121.

<sup>16</sup> Perren, *Taste, Trade, and Technology* (note 12), 293.

<sup>17</sup> C. Otter, Civilizing slaughter: the development of the British public abattoir, 1850–1910, in: Lee, *Meat, Modernity, and the Rise of the Slaughterhouse*, 89–106.

<sup>18</sup> Staatsarchiv Oldenburg, Best. 262, 1–2983, Die Fleischsteuerung 1898–1914, Bürgerverein an den wohlhälllichen Stadtmagistrat und Stadtrat Oldenburg, 1 November 1906.

<sup>19</sup> A. Strickon, The Euro-American ranching complex, in: A. Leeds, A. Vayda (Eds), *Man, Culture, and Animals: The Role of Animals in Human Ecological Adjustments*, Washington, 1965, 235; Perren, *Taste, Trade, and Technology* (note 12), 8.

<sup>20</sup> R. Perren, The North American beef and cattle trade with Great Britain, 1870–1914, *Economic History Review New Series* 24 (1971) 430–444.

<sup>21</sup> M. Finlay, Early marketing of the theory of nutrition: the science and culture of Liebig's extract of meat, in: H. Kamminga, A. Cunningham (Eds), *The Science and Culture of Nutrition, 1840–1940*, Amsterdam, 1995, 48–74.

<sup>22</sup> Briefwechsel zwischen Justus von Liebig und Theodore Reuning über landwirtschaftliche Fragen aus den Jahren 1855 bis 1873, Dresden, 1884, 168.

<sup>23</sup> Finlay, Early marketing of the theory of nutrition (note 21), 53.

<sup>24</sup> R. Fitzgibbon, Uruguay's agricultural problems, *Economic Geography* 29 (1953) 251–262.

average price of a full-grown steer was only £2, to produce Liebig's beef extract.<sup>25</sup> Financing came from Belgian businessmen, who created the Société des Fray Bentos Giebert & Cie., later known as Liebig's Extract of Meat Company, Ltd. based in London.<sup>26</sup>

Liebig's meat extract was produced by removing tendons and fat from beef before grinding it, boiling it in water, and filtering it in a series of cauldrons to separate the remaining fat and produce a pure concentrated paste. One *Criollo* cow produced about 3–3.75 kg of meat extract, allowing a profit because the cost of pasturing and driving the animal to the factory was so low.<sup>27</sup> Meat extract was only competitive when produced in peripheral regions where land costs were low, pastures were natural, and cattle were 'unusually cheap', 'principally the River Plate and Brazils (sic)', as the company prospectus stated.<sup>28</sup> Liebig claimed that a person received all the benefits of half a kg of beef from just three teaspoons of extract.<sup>29</sup> Leftover fat and meat residue was used for tallow, meat meal, and fodder. By-products like hides, tongues, horns, hooves, bones, and intestines helped ensure the profitability of the business.<sup>30</sup>

In 1873, after practical methods of canning had been developed, Liebig's added corned beef as a product of its Fray Bentos factory, although this sector became significant only after 1908 when canning was improved and curtailments of livestock and chilled beef shipping created meat shortages.<sup>31</sup> To be 'corned', beef was minced, separated from bone and fatty tissue, thoroughly salted, then boiled in large vats.<sup>32</sup> The boiled beef was packed in trapezoid-shaped cans under steam pressure, boiled again for several hours, then punctured to allow fat and air to escape. The holes were then soldered and the cans boiled for a few hours longer. Although this process killed pathogens, inspection was not possible in all cases. Reports that American troops in Cuba, provisioned with canned meat, suffered extensive disease outbreaks justified the German Imperial Law of June 3, 1900, which banned canned meat imports.<sup>33</sup> Despite these problems, the low cost of corned beef, its long shelf life, and its capacity to be shipped great distances cheaply without spoilage, and improvements in health inspection infrastructures led to its wide acceptance as a global commodity in the interwar years. Like meat extract, corned beef was a product ideally suited for production in the global periphery. Although the marketability of corned beef benefited from improved cross-bred cattle (called *Mestiço*), it did not depend on cattle upgrading, since most of the animal fat was lost in the manufacturing process.<sup>34</sup> In the long run, beef extract production became secondary to the increasingly important corned beef industry. Because meat extract was regarded as a luxury after the turn of the century, Lemco and its rivals

developed cheaper substitutes such as beef cubes.<sup>35</sup> However, meat extract was fundamental to Lemco's ongoing success, because no other beef commodity could use the most marginal cattle from natural savannas, and no other meat commodity was as free from the suspicion of harboring pathogens.

Most meat packers produced corned beef as a by-product from inferior cuts of beef not destined to be locally butchered, chilled, or frozen. But because Lemco concentrated on this commodity when demand escalated during World War I, its Fray Bentos label was associated with the highest-quality corned beef. Corned beef was a staple of militaries, and therefore had a steady demand that escalated during wartime. Although consumers overwhelmingly favored fresh beef, and then, respectively, chilled and frozen beef, corned beef consumption increased during times of falling wages or depression. During the depressions of the 1920s and 1930s in Britain and the Continent, and at times of wartime meat shortages, demand for corned beef rose steadily and became a staple of working-class household diets.<sup>36</sup>

At the turn of the century two divergent models of beef production in the Plate River Basin competed for cattle and pasturelands. Most historical attention has been given to the American-dominated fresh-, chilled-, and frozen-beef industry of the Pampas hinterlands of Argentina and Uruguay. This sector relied on cattle improvement, importing expensive Hereford, Shorthorn, Durham and Angus bulls to upgrade indigenous cattle to produce a marbled beef that was most desired by British and American consumers. Upgraded cattle required barbed wire, alfalfa, irrigation, railway and steamship transport, centralized meat packing, and refrigeration.<sup>37</sup> The 'notorious Chicago companies' like Swift and Armour that dominated this industry in the lower River Plate drove up the demand for high-grade beef, increasing cattle prices tremendously after the turn of the century.<sup>38</sup>

Although Lemco had its origins in the River Plate at Fray Bentos and Colón, competition from American meat packers drove Liebig's toward the northern periphery. Owing to cattle and pasture upgrading, the £2 per steer that attracted Lemco to Fray Bentos in the 1860s commanded £4–5 by 1895 and £15–20 by 1907.<sup>39</sup> As alfalfa became a major crop for fattening high-grade cattle in the River Plate hinterland, land prices also escalated.<sup>40</sup> Meat extract and corned beef were not profitable under these circumstances, forcing Lemco to seek new pasturelands and cheaper cattle elsewhere.<sup>41</sup> The political ecology of corned beef and meat extract took full form on the Paraguayan *Chaco* savanna, where *Criollo* cattle were abundant and capitalized American beef packers had little interest because their cattle could not survive the harsh

<sup>25</sup> Liebig's Extract of Meat Co. Annual Reports, No. E. 3710, 'Prospectus', 1862. UA (note 3).

<sup>26</sup> Pritsch, Kaiserlich Deutsches General-Konsulat für Belgien to Chancellor von Bülow, 27 June 1906, BAB 1703.

<sup>27</sup> R. Ostertag, *Handbook of Meat Inspection*, New York, 1907, 824.

<sup>28</sup> Liebig's Extract of Meat Co. Annual Reports, No. E. 3710, 'Prospectus', 1862. UA (note 3).

<sup>29</sup> Wie Liebig's Fleischextrakt gemacht wird, 125, BAB 1703. Liebig's nutritional claims for meat extract were later proven to be false. Finlay, Quackery and cookery (note 3); Teuteberg, *Die Rolle des Fleischextrakts für die Ernährungswissenschaften und den Aufstieg der Suppenindustrie* (note 3), 13–14.

<sup>30</sup> H. Heyl, *Zeit und Geld Erspart*, BAB 1703, 18.

<sup>31</sup> Crossley and Greenhill, The River Plate beef trade (note 7), 296, 330.

<sup>32</sup> Ostertag, *Handbook of Meat Inspection* (note 27), 821–823.

<sup>33</sup> Ostertag, *Handbook of Meat Inspection* (note 27), 63–66, 822.

<sup>34</sup> Crossley and Greenhill, The River Plate beef trade (note 7), 297.

<sup>35</sup> Minutes of the 48th Ordinary General Meeting of the Shareholders of Liebig's Extract of Meat Co. Ltd, 5 June 1913, UA.

<sup>36</sup> Food Consumption in the United Kingdom, *The Lancet* (13 September 13 1947) 403.

<sup>37</sup> Crossley and Greenhill, The River Plate beef trade (note 7), 312; Strickon, The Euro-American ranching complex (note 19), 245.

<sup>38</sup> Crossley and Greenhill, The River Plate beef trade (note 7), 318.

<sup>39</sup> Das Viehzucht-Unternehmen der Firma Brauss Mahn & Co. 1907, BAB/R1001/1711, 19–22.

<sup>40</sup> Between 1894 and 1914 Argentine land under alfalfa increased tenfold, overtaking wheat. D. Rock, The Argentine economy, 1890–1914: some salient features, in: G. di Tella, D.C.M. Platt (Eds), *The Political Economy of Argentina 1880–1946*, New York, 1986, 60–73. Strickon, The Euro-American ranching complex (note 19), 249.

<sup>41</sup> Liebig's Extract of Meat Limited. General Meeting Minute Book, From 43rd Ordinary General Meeting of the Shareholders of the Liebig's Extract of Meat Co. Limited, 5 June 1908; Minutes of the 48th Ordinary General Meeting of the Shareholders of Liebig's Extract of Meat Co. Ltd, Thursday, 5 June 1913, UA (note 35).

environment. In the mid 1920s Lemco sold its Fray Bentos factory (but retained its factory at Colón) and opened a new plant at Zeballos Cué in Paraguay, where less salubrious conditions benefited the industry.<sup>42</sup> Lemco differed from the fresh- and frozen-meat packers by owning and renting its own *estancias* as holding and fattening grounds for cattle rounded up by *vaqueros* and herded long distances over harsh terrain, with a consequent loss of weight along the way. In 1909 Lemco owned or rented 547,000 ha in Argentina, Uruguay and Paraguay, most of them in the dry savannas.<sup>43</sup> (Fig. 1) Although the company also upgraded cattle on its Uruguayan ranches, these cosmetic efforts were counterproductive to an industry that did not benefit appreciably from higher quality beef, as they ate into company profits and pushed Lemco further into the periphery.<sup>44</sup>

### Ecologies of Tanganyikan pastoralism

Owing to Lemco's long history of disposing of marginal cattle from the Plate River savannas, British colonial officials of the 1930s viewed the company as a solution to myriad development problems in the huge cattle reservoir of the East African savannas. On the face of it, there was no reason why grasslands-Africa should not become a 'second Paraguay' in the commercialization of cattle. Tanzanian savannas are broadly similar to the Chaco. Although the region's grasslands are locally diverse, it has been classified as a Southern Acacia-Commiphora Bushlands and Thickets savanna.<sup>45</sup> The northern Tanzanian cattle savannas have a dual rainfall pattern, with a primary 'long rain' season from about March to May and a secondary 'short rain' season from November to December. Annual rainfall averages 500 mm in the southeast to 1200 mm in the northwest, roughly similar to the Chaco.<sup>46</sup> Also like the Chaco, the northern Tanzanian savanna 'is sharply seasonal' with frequent long periods of heat stress to which shrubs, trees, grasses and cattle have adapted. For generations pastoralists and farmers have burned the savannas to promote new grass growth or to fertilize the land – also a practice in the Chaco and Cerrado – since savanna soils are generally poor in phosphorus and nitrogen.<sup>47</sup> Tanzanian savannas contain many microclimates determined in part by more humid eastward-facing and more arid westward facing land forms, the latter of which are deprived of moisture from Indian Ocean monsoons.<sup>48</sup> Many of the

natural grasses of the region, such as Elephant Grass (*Pennisetum purpureum*) and Guinea Grass (*Panicum maximum*) are palatable to livestock during early stages of growth, but became coarse and fibrous if not grazed or burned.<sup>49</sup> Guinea Grass in particular is tolerant of burning, adapted to low rainfall, but if overgrazed is quickly superseded by other grasses. These kinds of indigenous grasses were well suited to transhumant pastoralism as frequently practiced in East Africa. In contrast, the favored ranch fodder grass, alfalfa, needed irrigation and a great amount of labor, and was not suited to the arid, sparse Tanzanian or Paraguayan savannas.<sup>50</sup> In both East Africa and South America, there was a close connection between hardy indigenous grasses and an economy based on less productive, but well adapted cattle that did not produce great meat, but were suitable for extract and corned beef.

There were also important differences between the River Plate environment and that of tropical East Africa. Horses could not survive African diseases, such as sleeping sickness and horse sickness, so that a classic ranching economy using *vaquero* labor could not be developed. By the interwar years about two-thirds of the Tanzanian landscape was unsuitable for cattle owing to the presence of tsetse flies that were a vector of sleeping sickness (Fig. 2). Competition for water and forage from wild ungulates and other mammals, most of which were vectors of diseases that killed or weakened cattle, was more acute in the African savannas. Unlike the Americas, where cattle and even many pasture grasses first arrived with the Spanish and Portuguese conquest, African cattle economies emerged during the Neolithic food revolutions.<sup>51</sup> In East Africa, livestock keeping is about three thousand years old.<sup>52</sup> Over time African cattle, especially the Zebu (*Bos indicus*) that dominated the Tanganyikan savannas, adapted to drought, aridity, seasonal grass and water shortage, and were resistant to many endemic diseases.<sup>53</sup> These characteristics also meant that Zebu matured slowly, achieving low weights that might be only half or a third of European upgraded animals, and lower even than unimproved *Criollo*.<sup>54</sup>

East African cattle keepers had long engaged in local, regional, and even international markets. From at least the mid-nineteenth century East Africans had traded thousands of livestock hides annually into Indian Ocean networks.<sup>55</sup> In the Tabora region before the Rinderpest epizootic of the 1890s, cattle were sold regularly to local butchers in exchange for imported cotton cloth.<sup>56</sup> During the

<sup>42</sup> Crossley and Greenhill, The River Plate beef trade (note 7), 297–298; Notes from the 60th Ordinary General Meeting of the Shareholders of Liebig's Extract of Meat Co. Limited, London, 29 January 1925, UA.

<sup>43</sup> From 44th Ordinary General Meeting of the Shareholders of the Liebig's Extract of Meat Co. Limited, Wednesday, 16 June 1909, UA.

<sup>44</sup> For this argument see J.C. Crossley, Location of beef processing, *Annals of the Association of American Geographers* 66 (1976) 60–75. Liebig's Board Minutes, Notes from the 56th Ordinary General Meeting of the Shareholders of Liebig's Extract of Meat Co. Limited, London, 29 July 1921, UA; R. Endlich, Die Rinderzucht in den zentralen Teilen Südamerikas, *Beiheft zum Tropenpflanzer* 2 (1901) 175–267, 199; Crossley and Greenhill, The River Plate beef trade (note 7), 289. See also the analysis of the Cerrado cattle industry of neighboring Brazil. R. Wilcox, 'The law of the least effort': cattle ranching and the environment in the savanna of Mato Grosso, Brazil, *Environmental History* 4 (1999) 338–368; R. Wilcox, Paraguayans and the making of the Brazilian far west, 1870–1935, *The Americas* 49 (1993) 479–512.

<sup>45</sup> N. Burgess, J. D'Amico Hales, E. Underwood, E. Dinerstein et al, *Terrestrial Ecoregions of Africa and Madagascar: A Conservation Assessment*, Washington, 2004, 300–301; W. Sanford and E. Wangari, Tropical grasslands: dynamics and utilization, *Nature and Resources* 21 (1985) 12–27.

<sup>46</sup> L.A. Lewis and L. Berry, *African Environments and Resources*, Boston, 1988, 223–238.

<sup>47</sup> Sanford and Wangari, Tropical grasslands (note 45), 15–16.

<sup>48</sup> G. Gillman, East African vegetation types, *Journal of Ecology* 24 (1936) 502–505.

<sup>49</sup> E.G. van Voorthuizen, A grazing potential in the Tanga region of Tanzania, *Journal of Range Management* 23 (1970) 325–330; H.J. van Rensburg, Notes on fodder and pasture grasses in Tanganyika Territory, *East African Agricultural Journal* 13 (1948) 149–152.

<sup>50</sup> van Rensburg, Notes on fodder and pasture grasses in Tanganyika Territory (note 49), 152.

<sup>51</sup> J. Parsons, Spread of African pasture grasses to the American tropics, *Journal of Range Management* 25 (1972) 12–17; A. Sluyter, The ecological origins and consequences of cattle ranching in sixteenth-century New Spain, *Geographical Review* 86 (1996) 161–177; J. Carney and R. Rosomoff, *In the Shadow of Slavery: Africa's Botanical Legacy in the Atlantic World*, Berkeley, 2009, Chapter 9.

<sup>52</sup> K. Homeewood, *Ecology of African Pastoralist Societies*, Oxford, 2008, 36–43.

<sup>53</sup> F. Marshall, Rethinking the role of *Bos indicus* in sub-Saharan Africa, *Current Anthropology* 30 (1989) 235–240.

<sup>54</sup> Reiseberichte von Prof. von Ostertag, BAB/R1001/6071/1, 142; Strickon, The Euro-American ranching complex (note 19), 233.

<sup>55</sup> K. Evers, Das Hamburger Zanzibarhandelshaus W. O'Swald & Co. 1847–1890: Zur Geschichte des Hamburger Handels mit Ostafrika, PhD dissertation, University of Hamburg, 1986, Table 9.

<sup>56</sup> Bericht des Stationchefs von Tabora, Lt. Sigl, über den Handelsausfuhr von Tabora, 1 January 1892, BAB/R1001/639.



Fig. 1. Plate River Basin showing Lemco Ranches c. 1925.



Fig. 2. Tanganyika showing Tsetse Zones c. 1937.

epizootic, Maasai exchanged cattle for iron hoes from southwest of Lake Victoria that their smiths refashioned into spears to supplement local iron production.<sup>57</sup> Maasai had long relied on a regional trade with farmers, mediated through women who regularly attended markets, disposing of milk, hides, and livestock for grain and products of the Swahili caravan trade.<sup>58</sup> And during the

interwar years Sukuma stock owners welcomed the arrival of a short-lived meat factory at Mwanza to supplement local butcheries as an outlet for marketed cattle, but only when it offered competitive prices.<sup>59</sup> In general, farmers like the Sukuma were more likely to sell livestock regularly, while societies relying more exclusively on pastoralism sold cattle particularly at times of

<sup>57</sup> M. Merker, *Die Masai: Ethnographische Monographie eines ostafrikanischen Semitenvolkes*, Berlin, 1968, 111–116.

<sup>58</sup> J. Bernsten, The Maasai and their neighbors: variables of interaction, *African Economic History* 2 (1976) 1–11; D. Hodgson, Pastoralism, patriarchy and history: changing gender relations among Maasai in Tanganyika, 1890–1940, *Journal of African History* 40 (1999) 47.

<sup>59</sup> Chipungu, *Commercializing a Peasant Resource* (note 10), 3–9.

pronounced drought, when obtaining something for emaciated animals was better than watching them die.<sup>60</sup>

Despite regular engagement with local and long-distance markets, Tanzanian cattle-keeping was not the same as ranching.<sup>61</sup> Ranching is directed at producing cattle or cattle products for a market, especially for meat, and African cattle keeping was fundamentally subsistence-oriented, and primarily aimed at milk production. Globally, ranching emerged in response to an industrial sector or urban markets that created a consumer demand for cattle products. Ranching is generally associated with specific technologies to improve cattle for meat production, especially fencing, windmills, and fodder plants. As cattle bulk increases through breed improvement, ranching relies on railroads or trucks to get cattle to market to mitigate weight loss and mortality. Breed improvement also increases pressure on the environment, since an improved steer demands much more water and forage than Zebu or Criollo cattle.<sup>62</sup> Spatial considerations are also different between subsistence-oriented pastoralists and market-oriented ranchers, the latter being concerned with proximity to waterways, railroads, urban centers or ports, the former highly dependent on seasonal movement and pasture diversity that might take them deeper into the periphery. Most Tanzanian cattle lands were far from the main railways owing to the colonial emphasis on agriculture. Livestock traders – often diasporic Somalis – trekked cattle hundreds of kilometers over dry, tick- or tsetse-infested landscapes, relying on seasonal rivers or water holes, and, as a consequence, many animals died along the way or lost considerable weight. Most significantly, despite veterinary progress in identifying and combating East African livestock diseases in the interwar years, the disease factor alone was enough to prevent live animal or refrigerated beef exports from East Africa to Europe. When British colonial officials debated methods of commercializing African cattle in the interwar years, they assumed that they would be dealing with ‘scrub cattle’ with little export value as fresh or refrigerated meat.<sup>63</sup>

### The ‘overstocking crisis’ and the entry of Liebig’s into colonial East Africa

By the interwar years British colonial officials and ‘experts’, the latter including a new generation of ecologically trained scientists, viewed East African landscapes as increasingly degraded and eroded.<sup>64</sup> Influenced first by a concern about soil erosion in the United States that seemed to be realized as the Dust Bowl

burgeoned in the 1930s, and driven by declining agricultural profits as depression hit East Africa after 1929, colonial officials worried that African livestock were reaching unsustainable levels that transformed arable land into ‘stony waste intersected by gullies’ while the nutritious perennial grasses of pasturelands had begun to be replaced by less nutritious annual grasses, weeds, and bare ground.<sup>65</sup> Although natural disasters like recurrent drought and locusts were part of the problem, to colonial officials the main culprit was communal landholding that gave Africans no incentive to graze livestock at sustainable levels, and an African penchant to maintain large herds for purposes of prestige, culture, and security rather than for commercial investment.<sup>66</sup> In addition, the expansion of the tsetse belt in the interwar years, doubling between 1914 and 1937, artificially increased livestock densities.<sup>67</sup> Beyond this dramatic change in land availability, African cattle populations increased absolutely every decade, despite periodic losses from drought and disease. The estimated two million cattle in Tanganyika on the eve of World War I became five million by the early 1930s.<sup>68</sup> The Tanganyikan Veterinary Department was most concerned about livestock densities among agro-pastoralists, such as Sukuma and Mbulu, who did not practice transhumance enough to mitigate overgrazing.<sup>69</sup>

The problem in the colonial mind was not that there were too many African cattle, but that they were insufficiently productive for a commercial economy. As plunging commodity prices during the depression forced colonial governments to operate on a shoe string, officials sought new global markets for untapped products. African cattle took up land that could be used for cash crops, while not contributing sufficiently to economic development with products such as hides, ghee, meat, and bone meal for fertilizer. Overstocked regions lacked sufficient grazing and water, impairing milk productivity, fertility, calf growth, and overall weight gain.<sup>70</sup> This was especially true during the depression, when drought years were frequent. Viewing so-called ‘scrub cattle’ as a detriment to development rather than as a resource, colonialists proposed desperate measures to get rid of them. In Kenya, veterinary officials planned to build a fertilizer factory to dispose of African cattle at a loss.<sup>71</sup> Settlers in southern Africa proposed that African cattle from Kenya, Tanganyika, Swaziland and Rhodesia be sold to the Soviet Union following the severe meat shortage that followed the mass livestock slaughter during collectivization in spring 1930.<sup>72</sup>

The United States seemed to offer a solution to British Africa’s overstocking dilemma. In 1933, as drought turned the southern

<sup>60</sup> Chipungu, *Commercializing a Peasant Resource* (note 10), 4; Hodgson, *Taking stock* (note 10), 63; Schuknecht, *British Colonial Development Policy after the Second World War* (note 9), 157.

<sup>61</sup> Strickon, *The Euro-American ranching complex* (note 19), 230.

<sup>62</sup> Strickon, *The Euro-American ranching complex* (note 19), 233. A single cow required one ton of hay to survive a North American winter. J. Young and B. Sparks, *Cattle in the Cold Desert*, Logan, 1985, 159.

<sup>63</sup> R. Daubney, *Memorandum on the Possibility of Exporting Native Cattle as Frozen or Canned Beef, 1934*, BNA/CO 323/1299/3.

<sup>64</sup> Anderson, *Eroding the Commons* (note 9); Anderson, *Depression, dust bowl, demography, and drought* (note 9); Tilley, *Africa as a Living Laboratory* (note 8), Chapter 2; Hodge, *Triumph of the Expert* (note 8), 146–152.

<sup>65</sup> Tanganyika Territory, Department of Veterinary Science and Animal Husbandry, *A Memorandum on the Economics of the Cattle Industry in Tanganyika*, Dar es Salaam, 1934, 8–9.

<sup>66</sup> Tanganyika Territory, *A Memorandum on the Economics of the Cattle Industry in Tanganyika* (note 65), 11.

<sup>67</sup> H. Kjekshus, *Ecology Control and Economic Development in East African History: The Case of Tanganyika 1850–1950*, Berkeley, 1977, 162–165; R.R. Staples, *Combating soil erosion in the Central Province of Tanganyika Territory*, *East African Agricultural Journal* 7 (1942) 194. Historians have since identified a variety of other factors, including colonial land-use practices, as contributing to the spread of tsetse habitat. H.T. Dublin, *Dynamics of the Serengeti-Mara woodlands: an historical perspective*, *Forest and Conservation History* 35 (1991) 169–178.

<sup>68</sup> H. Byatt, *Administrator’s Office, Wilhelmstal to Secretary of State for the Colonies*, 7 May 1918, BNA/CO 691/96/15 131; Tanganyika Territory, *A Memorandum on the Economics of the Cattle Industry in Tanganyika* (note 65), 1.

<sup>69</sup> Tanganyika Territory, *A Memorandum on the Economics of the Cattle Industry in Tanganyika* (note 65), 5. As many scholars have noted, Maasai ‘pure pastoralism’ is historically contingent and the exception rather than the norm. T. Spear, R. Waller (Eds), *Being Maasai: Ethnicity and Identity in East Africa*, London, 1993.

<sup>70</sup> Tanganyika Territory, *A Memorandum on the Economics of the Cattle Industry in Tanganyika* (note 65), 18.

<sup>71</sup> File minutes by J.E.W. Flood, 12 March 1934, BNA/CO 323/1299/3.

<sup>72</sup> Daubney, *Memorandum on the Possibility of Exporting Native Cattle as Frozen or Canned Beef*, n.d. [1934] (note 63); G.P. Paton, *Commercial Counsellor, British Embassy, Moscow to Department of Overseas Trade*, 15 October 1934, BNA/CO 323/1299/3, 10. The Soviets favored live cattle from Mongolia that had consumer and industrial uses.



Great Plains into the 'Dust Bowl', the Roosevelt administration addressed unemployment and declining markets by buying millions of emaciated cattle with no market demand, animals that alive would only contribute to ongoing desiccation and loss of forage.<sup>73</sup> A new agency, the Federal Emergency Relief Association, processed these cattle into corned beef in its own factories and with private partners like Swift and Hormel, and then used it as food relief for the unemployed. Some eight million cattle that otherwise would have starved were disposed of in this way. As drought seemed to emerge as a permanent problem in East Africa, Robert Daubney, the Kenyan Director of the Veterinary Department, traveled to the United States in 1934 to study the program, and returned to propose to his counterpart in Tanganyika that the two East African territories invite a private company to build a corned beef and meat extract factory capable of processing 50,000–100,000 African cattle annually.<sup>74</sup> Lemco seemed ideal for East African conditions. Officials assumed that state pressure was needed to induce Africans to part with their cattle at necessarily low prices, and Lemco only agreed to come to East Africa with vague assurances of steady cattle supplies.<sup>75</sup>

Liebig's interest in East Africa stemmed from unstable world conditions in the early 1930s. The Chaco War from 1932 to 1935 between Bolivia and Paraguay created insecurity for Lemco's Zeballos Cue factory. During the depression the Argentine government, largely dominated by ranchers' interests, demanded higher prices for cattle, higher wages for factory workers, and higher export tolls on meat products.<sup>76</sup> With the abandonment of free trade in Britain, 'imperial preference' set quotas on products from outside the Empire to boost the British livestock industry.<sup>77</sup> These policies inflated fresh and refrigerated meat prices, allowing Lemco room to attract new customers. There were clear advantages to operating in Empire domains, especially in a major cattle region such as East Africa, where marginal cattle were suitable for meat extract and corned beef, but not for competitors in the refrigerated beef industry.<sup>78</sup>

From the early 1930s British policy makers lobbied Liebig's to set up a factory in East Africa. Plans to locate the factory on the coast in Mombasa or Tanga to take cattle from both Kenya and Tanganyika eventually gave way to a Kenyan factory on the railway line at Athi River southwest of Nairobi.<sup>79</sup> Brought into production in 1938,

Lemco's Athi River factory was intended to coincide with a series of compulsory cattle destocking and land rehabilitation schemes in Kenya, beginning with the Kamba and Maasai in close proximity to the factory.<sup>80</sup> When Kamba farmers organized widespread opposition to destocking, including hiring a lawyer, writing petitions, and a protest march to Nairobi, the Kenyan government abandoned forced destocking, seeking to achieve culling through 'education and propaganda'.<sup>81</sup> But the low prices that Lemco offered for cattle (about 4/- per 100 lbs.) to produce meat extract provided little incentive for people to sell. Liebig's expressed great bitterness that the government did not force Africans to sell sufficient cattle at low prices, suspending operations after losses of over £9400 in the first year.<sup>82</sup>

Although the establishment of the Athi River factory did not include Tanganyikan participation, it did not take Tanganyika long to become the factory's main supplier. In late 1939 the Tanganyikan Veterinary Department invited a Liebig's representative to attend cattle auctions, where he found prices to be cheap enough for the firm to compete successfully with Somali and other African traders.<sup>83</sup> Cattle sales were encouraged by the 'almost complete failure of the rains' in some regions of northern Tanganyika in 1939, and then again in 1942 and 1943.<sup>84</sup> Lemco was willing to trek Tanganyikan 'famine' cattle hundreds of kilometers to Athi River, incurring weight loss and 15% mortality along the way. In May 1940 83% of cattle slaughtered at Athi River – over 48,000 animals – came from Tanganyika.<sup>85</sup> A month later, with the entry of Italy into World War II, the British began military operations in northeast Africa and made war preparations in the Middle East, creating great urgency for canned meat for British forces.<sup>86</sup> Lemco converted the Athi River factory for wartime production, using halal methods to make corned beef that was suitable for Muslim troops of the East African and the South East Asian Commands.<sup>87</sup> Defense Regulations empowered the Tanganyikan Government to compel stock owners to sell set regular quotas of their animals, and the needs of Liebig's were prioritized in the cattle markets.<sup>88</sup> About 90,000 Tanganyikan cattle annually supplied the Athi River factory during the war.<sup>89</sup>

Wartime circumstances, as well as old problems, led Tanganyikan Government and Colonial Office officials to conclude that a Liebig's factory in Tanganyika was desirable. Apart from the high cattle mortality during the trek to Kenya, Tanganyikan officials deplored that many by-products of cattle industrialization – tallow,

<sup>73</sup> C. Lambert, The drought cattle purchase, 1934–1935: problems and complaints, *Agricultural History* 45 (1971) 85–93; C. Lambert, Want and plenty: the Federal Surplus Relief Corporation and the AAA, *Agricultural History* 46 (1972) 390–400; D. Worster, *Under Western Skies: Nature and History in the American West*, New York, 1992, 102–103.

<sup>74</sup> File Minutes by F.A. Stockdale, 17 October 1934, BNA/CO 323/1299/3; Anderson, Depression, dust bowl, demography, and drought (note 9), 331–332.

<sup>75</sup> Daubney, Memorandum on the Possibility of Exporting Native Cattle as Frozen or Canned Beef, n.d. [1934], BNA/CO 323/1299/3 (note 63).

<sup>76</sup> Crossley and Greenhill, The River Plate beef trade (note 7), 316–318; Perren, *Taste, Trade, and Technology* (note 12), 136–142.

<sup>77</sup> Livestock and Meat (Government Policy), 6 July 1936, BNA/CO 852/16/8 46.

<sup>78</sup> Kenyan settlers at this time failed to attract a chilled beef industry to process their cattle for export, in part because of inadequate land under alfalfa to sustain high-grade cattle. Industrial Development in the Colonies, correspondence, BNA/CO 852/105/9. An early attempt to develop a meat industry at Mwanza quickly failed. Chipungu, *Commercializing a Peasant Resource* (note 10), 19–26; L. Jones, Commercial politics and the overstocking crisis in Mwanza Province, Tanganyika, 1926–1935, *African Economic History* 23 (1995) 129–142.

<sup>79</sup> Establishment of a Factory in Kenya by Messrs. Liebig's Meat Extract Company. n.d. [1936], BNA/CO 852/16/8.

<sup>80</sup> Colonial Office Vote Debate – Kenya Brief No. 4, 31 May 1939, BNA/CO 852/219/12; Munro, *Colonial Rule and the Kamba* (note 10); Tignor, Kamba political protest (note 10); Anderson, Kenya's cattle trade and the economics of empire (note 10); Anderson, *Eroding the Commons* (note 9), 183–189.

<sup>81</sup> Colonial Office Vote Debate – Kenya Brief No. 4, 31 May 1939, BNA/CO 852/219/12 (note 80).

<sup>82</sup> File Minutes, 19 December 1939, 9, BNA/CO 852/219/12.

<sup>83</sup> Cattle Walk 450 Miles to Kenya, *East African Standard* (19 December 1939) 5, BNA/CO 852/219/12; Liebig's Extract of Meat Company, *The Times Company Meetings*, 16 February 1940, 3, UA.

<sup>84</sup> Governor, Tanganyika to Secretary of State for the Colonies, 3 June 1940, BNA/CO 691/177/1; N. Westcott, The impact of the Second World War on Tanganyika, 1939–49, in: D. Killingray, R. Rathbone, *Africa and the Second World War*, New York, 1986, 147–148.

<sup>85</sup> Secretariat, Nairobi, to Colonial Office, 18 May 1940, BNA/CO 852/288/14.

<sup>86</sup> D. Killingray and R. Rathbone, Introduction, in: Killingray and Rathbone, *Africa and the Second World War*, 9; Westcott, The impact of the Second World War on Tanganyika, 1939–49 (note 84), 143–159.

<sup>87</sup> G. Green to J.J.W. Herbertson, 30 January 1945, BNA/CO 852/573/2, 48.

<sup>88</sup> Acting Director of Veterinary Services to Member for Agriculture and Natural Resources, 17 June 1950, TNA 36856/3.

<sup>89</sup> Meat Factory in Tanganyika, Colonial Office, 16 June 1944, BNA/CO 852/573/2; N.R. Reid, A note on some future lines of development in the beef industry, 22 September 1952, TNA 40906.

hides, bone meal, meat meal, and fertilizer – were lost when live animals left the colony. Destocking was still seen as the solution to soil erosion and over-stressed water supplies, especially in the drought years that were frequent during the war. In late 1941, fearing another drought, the Tanganyika Government made plans to buy famine cattle for their hides alone as an emergency measure, returning the meat to their owners.<sup>90</sup> From the Colonial Office and the Ministry of Food came the call for more corned beef and dehydrated beef for United Kingdom needs. This urgency escalated by 1945 as policy makers feared the ‘serious world shortage of animal protein’ that was expected after the war.<sup>91</sup> By then the Colonial Office argued that a Lemco factory in Tanganyika was ‘a good example of the type of secondary industry that we want to establish in the Colonies’.<sup>92</sup>

Early in 1942 the Tanganyika Government invited Liebig’s to build a factory in the territory, although wartime supply problems delayed the project for several years.<sup>93</sup> Originally the factory was to be built at Gulwe on the Central Railway close to the cattle herds of Southern Highlands and Central Provinces, and too distant from Kenya to compete with Athi River. When peace in 1945 ended military contracts for Kenyan corned beef, Liebig’s closed the Athi River factory, and decided to build the Tanganyika factory in the coastal capital of Dar es Salaam and a smaller refrigerated meat factory in Arusha near the Kenyan border.<sup>94</sup> Liebig’s director wrote ‘Our interest lies in the supply of meat products from sources within the Empire which will render us less dependent upon, and tributary to, South America ...’.<sup>95</sup> As in 1930s Kenya, Lemco came to Tanganyika with the expectation that the government would guarantee ample cattle supplies at cheap prices. Liebig’s, after all, was providing an important service that would rehabilitate and develop the territory while providing meat for British citizens.

When compulsory wartime cattle controls ended in 1946, numbers of cattle on the market declined by 63,000 head.<sup>96</sup> Because Lemco directors and colonial officials alike understood that extraordinary measures were needed to get Africans to sell cattle under these conditions, they agreed to establish a parastatal relationship in which the Tanganyika Government would hold a 51% share in the new company branch, Tanganyika Packers Ltd (TPL), and Lemco would hold the other 49%. Lemco would also have to compete with other demands for cattle. Over 85,000 Tanganyikan soldiers and military employees returned from the war with wages ready to be spent to increase their personal cattle herds, or to consume greater quantities of fresh beef.<sup>97</sup> By 1944 labor laws mandated a basic diet for all wage workers that included two pounds of meat weekly, which would require thousands of cattle

for the plantation and mining sectors.<sup>98</sup> The Groundnut Scheme, intended to produce massive quantities of peanut oil for the Empire on Tanganyikan land, was expected to create a demand for at least 3000 tons of meat per year for 120,000 workers and their families at Kongwa.<sup>99</sup> There was an ongoing demand from local butchers to supply towns and urban centers, which before the war had required some 100,000 cattle annually. All this meant that Liebig’s would be hard pressed to compete in a free market for cattle. For this reason, the Tanganyikan Government created a Livestock Marketing Board, headed by the Director of Veterinary Services, to coordinate cattle marketing and maintain stock routes. The chairman of the Marketing Board was the Director of the Veterinary Department, who was also a member of the board of Tanganyika Packers.

### The post-war destocking campaign in Tanganyika

With cattle numbers in Tanganyika reaching 6.5 million by 1946, despite wartime forced marketing and frequent drought, colonial officials regarded the soil erosion threat to be as serious as in 1933. At the same time, H.J. Lowe, Director of Veterinary Services at war’s end, did not believe that Africans would sell sufficient numbers of cattle voluntarily to meet both domestic and commercial needs.<sup>100</sup> By then colonial policy anticipated that ‘in the course of a year or two the native authorities would be issuing instructions for the slaughter of surplus cattle from the point of view of preventing over-crowding’.<sup>101</sup> As in Kenya in 1937, destocking could not take place without a commercial outlet for cattle. The agreement that created Tanganyika Packers in 1947 provided the stimulus to begin the destocking program.

Mbulu District was the ‘guinea pig’ for destocking.<sup>102</sup> It was bisected by a highlands plateau that ranged between 1300 and 2100 m in altitude, averaging 760 mm of rain annually, abutting the Rift valley and the Maasai Steppe to the east. The plateau was dominated by Iraqw farmers, who pastured some 200,000 cattle and 180,000 small livestock in 1947. Neighboring Africans of the district – Barabaig, Mbugwe, Ufomi – possessed another 170,000 cattle in distinct regions generally lower in altitude. Tsetse habitat surrounded the plateau and was encroaching. British officials had long considered the plateau to be under severe threat of erosion.<sup>103</sup> Although landscapes varied widely in the district, on average it carried about twenty-five cattle per sq km compared to, for example, about a third that density in neighboring Maasai District.<sup>104</sup> Despite this density, Iraqw livestock raising was fairly sophisticated, and included pasturing on communal lands, on areas immediately around one’s hut, in crop fields after harvest, and hand feeding. In

<sup>90</sup> Acting Chief Secretary to Director of Veterinary Services, 9 August 1941; Provincial Commissioner Central Province to Director of Veterinary Services, 18 August 1941, TNA 30070.

<sup>91</sup> Meat factory in Tanganyika, 16 June 1944, BNA/CO 852/573/2 (note 89).

<sup>92</sup> G. Bryant, Colonial Office, to S.E. Innes, Board of Trade, 19 February 1945, BNA/CO 852/573/3.

<sup>93</sup> Meat factory in Tanganyika, 16 June 1944, BNA/CO 852/573/2 (note 89).

<sup>94</sup> It was argued that greater internal consumption of Southern Highlands cattle would limit stock available to Liebig’s. K.M. Carlisle to Undersecretary of State for the Colonies, 27 February 1945, BNA/CO 852/573/3.

<sup>95</sup> K.M. Carlisle to Colonial Office, 12 February 1946, BNA/CO 852/573/4.

<sup>96</sup> Director of Veterinary Services to MANR, 17 June 1950, TNA 36856/3/1; *Annual Report of the Department of Veterinary Science and Animal Husbandry 1947*, Dar es Salaam, 1949, 18 [hereafter *Annual Report* for selected years].

<sup>97</sup> G. Sandford, Acting Governor Tanganyika to Oliver Stanley, Secretary of State for the Colonies, 30 April 1945, BNA/CO 852/573/3.

<sup>98</sup> R.W.R. Miller, Rations for African labour, *East African Agricultural Journal* 12 (1946) 108; Meat Supplies to Sisal Areas, Labour Commissioner to Chief Secretary, 23 May 1947; Tanganyika Sisal Growers Association to MANR, 1 March 1948, TNA 25535/II.

<sup>99</sup> Reid to Mellor, 28 September 1947, TNA 36722.

<sup>100</sup> Governor William Battershill to Gerard Clauson, Colonial Office, 9 January 1946, BNA/CO 852/573/4.

<sup>101</sup> File minutes, Andrew Cohen, Colonial Office, 30 January 1946, BNA/CO 852/573/4.

<sup>102</sup> Memorandum on an Application under the Colonial Development and Welfare Act for the Grant of Funds to Finance a General Rehabilitation and Development Plan for the Mbulu District, Northern Province, Tanganyika Territory, BNA/CO 691/198/6; *Annual Report*, 1952 (note 96), 41.

<sup>103</sup> On early British conservation interventions in Umbulu see Y.Q. Lawi, *May the spider web blind witches and wild animals: local knowledge and the political ecology of natural resource use in Iraqwland, Tanzania, 1900–1985*, PhD dissertation, Boston University, 2000, Chapter 4.

<sup>104</sup> Based on an estimate of 685,200 cattle in Maasai District (77,700 sq. km.) in 1950, compared to 370,000 cattle in Mbulu District. Livestock Census, TNA 41672/II.

1933 district officials had first recommended conservationist interventions that centered on creating a demonstration farm to assess livestock carrying capacity, to introduce better pasture management, and to selectively breed local Zebu.<sup>105</sup> These measures mirrored similar methods directed at the Kamba and Baringo of Kenya at the same time, including encouragement of individualized land use and rotational grazing that would force people to cull surplus cattle.<sup>106</sup> The authoritarian way in which district officials requisitioned land for the demonstration farm created resentment, and in response Africans refused to cooperate.<sup>107</sup>

Empowered by the Colonial Development and Welfare Act of 1940, which created a pool of funds available for colonial development schemes, the district officer, E.G. Rowe, in consultation with 'technical experts' – pasture and tsetse research officers, veterinarians, foresters, and agronomists – concluded by war's end that Mbulu District was in serious need of rehabilitation owing to human and livestock population pressure that caused overgrazing, erosion, and impaired soil and pasture fertility.<sup>108</sup> The CDW provided £90,000 for a five-year development and anti-erosion scheme, and Mbulu native authorities provided another £34,100. These funds enabled an exceptional level of social and landscape engineering, especially by eliminating tsetse through bush clearing, which demanded much paid or corvee labor. Bush clearing in turn allowed some Iraqw people to expand onto the plains, relieving pressure on the plateau. Hillside terracing, grazing bans, and tree planting would rehabilitate eroded lands. Livestock would be destocked to the land's assessed carrying capacity to check further deterioration. Grazing reserves and pasture management would be introduced, and inferior stock would be culled in order to improve overall cattle quality and productivity.<sup>109</sup> The hated stock farm was revived to demonstrate how good husbandry could reverse erosion, part of a propaganda campaign that preceded mass destocking. Local officials spent several years preparing people in public meetings, so that the scheme would not elicit sudden political opposition as occurred in Kenya. A sociologist was hired to assess how far the administration could go with destocking, comparing Iraqw attitudes specifically with the Kamba of Kenya. Officials brought Iraqw chiefs on site visits to severely eroded Kondoia region to the south to demonstrate what the future held if they did not cooperate with the campaign.

Mbulu destocking was interrupted by a severe drought in 1949 that killed one million Tanganyikan cattle – one sixth of the national herd. Despite the loss, destocking was not about

decreasing cattle in the territory, but instilling new methods of animal husbandry that included regular marketing of cattle in good years and bad. It took until 1951 for the first year of the culling campaign to be launched, following the opening of Lemco's Dar es Salaam factory in July 1950 and its Arusha plant in 1952.<sup>110</sup> With these outlets in place, district officials surveyed Mbulu land carrying capacity, and determined that over three years 20% of the plateau's cattle should be sold or removed in some manner.<sup>111</sup> This was done with frequent markets and by clearing tsetse bush to open up expansion lands on the plains. A system of cattle dips was created to combat tick-borne East Coast Fever, so that a healthier herd would result over time. Although Mbulu District grazed only 5% of Tanganyikan cattle, in 1951 the region supplied 16% of livestock sold in official markets, altogether 31,000 cattle.<sup>112</sup>

Mbulu was the model for destocking in other cattle regions of Tanganyika; Native Authorities from other cattle districts were brought to tour the region.<sup>113</sup> Most were expected to cull 5% of their cattle each year, so that annual sales were to be ingrained as 'permanent and natural'.<sup>114</sup> In practice annual destocking might range from about 2% to as much as 15%.<sup>115</sup> Regular culling was expected to bring at least 300,000 cattle onto the market annually, steadily supplying Liebig's factories, in addition to local butcheries and livestock markets. For the 1950s this level was reached only in 1953 when 311,544 cattle were sold, 'the highest figure ever', but it was attributed to a major drought that year rather than to destocking.<sup>116</sup> For the rest of the 1950s about 250,000 cattle were sold on primary markets annually, with numbers generally declining as the decade progressed.<sup>117</sup>

Despite pressure from culling schemes, Africans resisted selling regular quotas of their cattle. In the aftermath of the 1949 drought, people sought to rebuild their herds.<sup>118</sup> When agricultural prices were high, such as during the 'cotton boom' of the early 1950s, people in cotton regions such as Sukumaland sold crops to pay taxes and obtain commodities without having to part with their livestock. An annual tax obligation of about 16/- to 20/- in 1950, at a time when an emaciated steer could sell for 120/-, meant that there was little indirect pressure to part with many cattle.<sup>119</sup> 'Unrestrained' state power was not characteristic of 1950s destocking schemes.<sup>120</sup> TPL's factories often closed down for months for lack of cattle.<sup>121</sup> Under these circumstances, Lemco pushed hard and unsuccessfully to introduce a weight-and-grade system to replace cattle auctions, which would have allowed prices to be fixed through marketing officers.<sup>122</sup> When Liebig's fell short of cattle for its factories, it was usually because its agents were

<sup>105</sup> Stock Farm Mbulu District, PC Northern to Chief Secretary, 2 March 1936, TNA 23515.

<sup>106</sup> Anderson, *Eroding the Commons* (note 9), 183–188.

<sup>107</sup> Mikael Ahho to PC, 9 February 1936, TNA 23515.

<sup>108</sup> Governor William Battershill to Arthur Creech Jones, Secretary of State for the Colonies, 28 May 1947, BNA/CO 691/198/6; E. Winter and L. Molyneux, Population patterns and problems among the Iraqw, *Ethnology* 2 (1963) 490–505; C.I. Meek, Stock reduction in the Mbulu Highlands, Tanganyika, *Journal of African Administration* 5 (1953) 158–166.

<sup>109</sup> G.T. Bell, The Iraqw chieftdom, Mbulu District. Destocking scheme. Progress report no. 1, 17 April 1951, TNA 39194.

<sup>110</sup> Liebig's Extract of Meat Co., Directors' Report and Accounts 31 August 1950, UA.

<sup>111</sup> Lawi, May the spider web blind witches and wild animals (note 103), 268–286.

<sup>112</sup> C.I. Meek, The Iraqw chieftdom, Mbulu District. Destocking scheme. Progress report no. 2, 29 April 1952, TNA 39194.

<sup>113</sup> Chipungu, *Commercializing a Peasant Resource* (note 10), 39.

<sup>114</sup> A.E. Trotman, Member for Agriculture and Natural Resources to Director of Veterinary Services, 8 January 1952, TNA 41672.

<sup>115</sup> *Annual Report*, 1957 (note 96), I, 35.

<sup>116</sup> *Annual Report*, 1954 (note 96), 19.

<sup>117</sup> *Annual Report*, 1958 (note 96), 33.

<sup>118</sup> K. Brinton, Tanganyika Packers Ltd. to A.M. Bruce-Hutt, Chief Secretary, 20 April 1951, TNA 41672.

<sup>119</sup> N. Reid to Provincial Commissioner, Lake Province, 12 February 1952, TNA 41672. The Maasai Council at this time imposed a supplementary tax of 30/- per homestead head to compel destocking at a level of about 3–4% for Maasai District in the early 1950s. Hodgson, Taking stock (note 10), 58.

<sup>120</sup> Scott, *Seeing Like a State* (note 8).

<sup>121</sup> Liebig's Extract of Meat Co. Ltd., Directors' Report and Accounts 31st August 1954, UA.

<sup>122</sup> K. Brinton, Memorandum, 19 April 1951, TNA 41672. Weight-and-grade meant that cattle prices should be based on quality. In practice, since few weigh bridges were available in rural areas, marketing officers assessed cattle value with no mechanism for the seller to contest the result. Provincial Commissioner, Western Province to Member for Local Government, Dar es Salaam, 17 May 1951, TNA 41672, 3.

unwilling to pay the prices Africans demanded, or because they perceived cattle quality (meat content) to be inadequate – not because cattle weren't available. The cattle markets of the 1950s were not perfectly free, and Liebig's had clear buying advantages with the support of government marketing officers. But officials also feared the perception that its policies benefited a government-affiliated corporation. Africans also had options about which cattle to sell. Among the Sukuma, for example, stock owners preferred to sell immature cattle that had not acquired immunities to diseases like East Coast Fever – animals that were not desirable to Liebig's because of their low weights.<sup>123</sup> If stock owners did not get the prices they wanted, they could sometimes wait for better prices later in the year. Moreover, competition from local butchers or Somali traders for the live cattle market acted to drive prices upward, and in the 1950s diamond and gold mining corporations active in Lake Province created a steady cattle demand to feed workers. For these reasons, average cattle prices rose steadily during the decade from about 82/- in 1950 to 170/- by 1958, levels that threatened TPL's profitability.<sup>124</sup>

### *Ranching and colonial development*

Accompanying the arrival of Liebig's in Tanganyika were efforts by the Department of Veterinary Services to foster a ranching complex.<sup>125</sup> Ideally, cattle destocked regularly through anti-erosion schemes and market incentives, especially immature steers and heifers, would be brought to ranches to be rehabilitated after a long trek or transport, fattened in a disease-free environment, and, when they reached optimal weights after about three years, sold to plantations, town abattoirs, and Lemco for (it was hoped) eventual export as refrigerated beef. From a development point of view, ranching made a lot of sense. It would help alleviate the 'present world shortage of meat' and provide more protein to Tanganyikan workers.<sup>126</sup> By transforming natural rangelands into pastures practicing rotational grazing, with secure sources of water, fenced for protection from predators, and cleaned of debilitating diseases, a better environment for better cattle could be created. Selecting indigenous Zebu for quality of beef production, with steady upgrading with European stock, would over time create a herd that fattened more quickly, reached higher weights, and provided much more meat, adding value to the product. In 1950, when cattle on the primary markets could be purchased for about £4 per head, improved ranch cattle were projected to sell for £9–£12 per head. With an average weight of 600 lbs, ranching cattle might be 200 lbs greater per head than unimproved mature cattle, and three times

the weight of immature steers.<sup>127</sup> One observer in 1957 claimed that a typical steer provided only 40 lbs of meat compared to 700 lbs for a ranching animal.<sup>128</sup> Locating ranchlands close to rail lines, abattoirs, and markets would alleviate weight loss and mortality from overland treks, and avoid exposure to localities infected with sleeping sickness, Rinderpest, or East Coast Fever. If irrigated fodder grasses could be grown successfully, less pasture would be needed for fattening, freeing up land for agriculture, while mitigating damage to plant cover and soil. It was natural that colonial veterinarians aspired to apply scientific innovations developed at the Mpwapa Veterinary Research Center to create the best cattle and pasture, as ranching demanded.

The problem was that ranch development was extremely expensive, particularly in Tanganyika's disease environments. Colonial officials defined ranches as enterprises of at least 4000 ha, with fencing, boreholes, windmills, cattle dips, and regular veterinary oversight.<sup>129</sup> Woodland habitats of tsetse flies would have to be cleared and maintained, grounds harboring ticks would have to be cleaned, and drugs and chemicals that provided permanent or temporary resistance to these diseases would have to be available. Ranches required wage laborers to herd cattle, construct and renew firebreaks around pastures, brand, dip, and vaccinate animals, and maintain corrals, fences, and buildings. At least £1 per acre was needed to prepare pasture for a modern cattle economy, with no profit for seven to ten years. Government planners admitted that all 'easy' land in Tanganyika ('land with good pasturage, water and freedom from tsetse') was already occupied by Africans and their livestock, so remaining lands required 'the intelligent use of scientific knowledge' and large capital inputs.<sup>130</sup> British policy makers therefore assumed that European entrepreneurs or settlers were needed for ranching.<sup>131</sup>

In 1950 district officials identified nineteen parcels throughout Tanganyika that had potential as ranches.<sup>132</sup> Illustrative of these was Essimigor, a 300,000-acre parcel on the Maasai Steppe, well placed to take in destocked cattle from Mbulu and from the main cattle districts of Lake Province.<sup>133</sup> Said to be little used by Maasai because it was 'tsetse land', the parcel was made available on a 66-year lease by the government in 1950.<sup>134</sup> Although some settlers and a sisal corporation expressed interest, the Tanganyika Government and the Colonial Secretary favored a bid by the Colonial Development Corporation because of its ability to muster substantial financing.<sup>135</sup> The CDC proposed a £5 million ranching scheme to raise 30,000 Zebu cattle at Essimigor and 50,000 Ankole cattle at Bukoba (northwest of Lake Victoria), both of which would supply a 6,000,000 acre Malagarasi ranch in western Tanganyika to graze one million cattle.<sup>136</sup> The CDC's goal was to

<sup>123</sup> Schuknecht, *British Colonial Development Policy after the Second World War* (note 9), 179.

<sup>124</sup> *Annual Report*, 1958 (note 96), 33.

<sup>125</sup> Reid, A note on some future lines of development in the beef industry, 22 September 1952, TNA 40906 (note 89).

<sup>126</sup> Governor Edward Twining to Arthur Creech Jones, 14 November 1949, TNA 37545. On the post-war world food crisis see Hodge, *Triumph of the Expert* (note 8), 209–211; A. Staples, *The Birth of Development: How the World Bank, Food and Agricultural Organization, and World Health Organization Changed the World, 1945–1965*, Kent, OH, 2006, 84.

<sup>127</sup> Note on Ranching Potentialities and Economics, TNA 40906; Acting Director of Veterinary Services to Member for Agriculture and Natural Resources, 17 June 1950, TNA 36856/3 (note 88).

<sup>128</sup> A. Skeffington, *Tanganyika Journey*, London, 1960, 24.

<sup>129</sup> Ranching: Availability of Land For, File Minutes, Member for Local Government, 4 December 1952, TNA 40906.

<sup>130</sup> Note on Ranching Potentialities and Economics, TNA 40906 (note 127).

<sup>131</sup> Minutes by Trotman, Member for Agriculture and Natural Resources, 9 December 1952, TNA 40906.

<sup>132</sup> Ranching: availability of land for, Secretariat minutes, 4 December 1952, TNA 40906.

<sup>133</sup> Acting Director of Veterinary Services, Mpwapa to MANR, DSM, 6 June 1950, TNA 37545; Note on Ranching Potentialities and Economics, TNA 40906 (note 127); Suggested Areas for Survey for Ranching, BNA/CO 691/206/3.

<sup>134</sup> T.M. Revington, Provincial Commissioner, Northern Province, to Land Settlement Officer, 29 July 1949, TNA 40906.

<sup>135</sup> Alienation of land – 300,000 Acre Ranching Project in the Masai District, Minute of J.H.W., 31 March 1950, BNA/CO 691/206/3. The CDC, along with the Overseas Food Corporation, was a public corporation created by the Overseas Resources Development Act of 1948. The CDC was meant to finance colonial projects previously left to private enterprises, especially to produce food and raw materials. E.R. Wicker, *The Colonial Development Corporation (1948–54)*, *Review of Economic Studies* 23 (1955–56) 213–228.

<sup>136</sup> Colonial Development Corporation ranching, 13 April 1950, TNA 37545; Proposal for ranching near Mto-wa-Mbu Masai District, 1950, File Minutes, TNA 37545.

increase beef supplies to Britain at a time when obtaining food from sterling zones was a high priority.<sup>137</sup> Governor Twining dismissed Maasai claims to the land, but it was hoped that leasing to the CDC, rather than to settlers, would assuage the Maasai Council that their land was not being permanently alienated.<sup>138</sup> Located close to Ngorongoro Crater, Lake Manyara and other lands being demarcated as wildlife reserves, Essimngor required at least 32 km of five-strand barbed-wire fencing to keep out large game at a cost of £94 per km.<sup>139</sup> To clear Essimngor of tsetse bush required between 3000 and 12,000 man days per 2.6 km<sup>2</sup> – an extraordinary demand for millions of man-days of labor at a time of labor shortage throughout sparsely populated Tanganyika, particularly in pastoral districts.<sup>140</sup> The Mto wa Mbu parcel of Essimngor alone required 990,000 man-days to be cleared for ranching, at an estimated cost of £99,000.<sup>141</sup> Use of machinery would double the costs while not eliminating the need for labor.

The Essimngor project never came to fruition. As early as 1950, CDC officials were ready to withdraw when the settler Tanganyika European Council objected that it usurped their interests.<sup>142</sup> The CDC was also concerned about Maasai opposition, especially in light of recent ‘political agitation in Tanganyika’ over land policy.<sup>143</sup> The failure of the Groundnut Scheme (like the CDC project, financed by the Overseas Resources Development Act of 1948) called into question similar mega-schemes to use African land to improve the global diet.<sup>144</sup> The extraordinary expense of creating ranch land from tsetse land also deterred the project, and ultimately deterred private investors and settlers from taking up the lease.

Essimngor’s demise did not end the ambition to create a ranching infrastructure in Tanganyika, nor the need for temporary holding grounds for destocked cattle awaiting transport to markets and slaughterhouses.<sup>145</sup> When the Groundnut Scheme was scaled back in the late 1940s, the bulk of land cleared to grow peanuts at Kongwa near Mpwapwa Veterinary Research Station on the Central Railway line was recast as a ranch. The Overseas Food Corporation and the Ministry of Food set aside 28,000 ha of this land to fatten African cattle, both to prevent the land from reverting to tsetse habitat, and to provide an outlet for destocking schemes.<sup>146</sup> By 1957 the Kongwa ranch grazed about 8000 head, and began breeding its own cattle to supply fresh meat to residents of Dar es Salaam. Today Kongwa ranch is considered to be the ‘gold standard’ of fresh beef in Tanzania. Besides Kongwa, some sisal corporations also developed ranches to supply meat to their workers by fattening immature African cattle, some out of frustration about the inability to obtain sufficient cattle after the arrival of Liebig’s.<sup>147</sup> The Veterinary Department created its own ranches at Mpwapwa and Mkata to

experiment with pasture development and cattle breeding. Both made some headway in modern stock raising under veterinary oversight, but are most notable as the major outlets for thousands of immature cattle that Africans marketed as a result of culling schemes.

As the most ambitious development model for cattle keeping in Tanganyika, ranching faced substantial obstacles. The marbled beef that ranches produced was too expensive for most Tanganyikan consumers, who preferred the affordable meat from unimproved African cattle and small livestock.<sup>148</sup> Likewise, fattened cattle produced on ranches could not be processed profitably into corned beef or meat extract, which boiled away most fat, so did not find a ready buyer in Tanganyika Packers.<sup>149</sup> Had ranching succeeded on a wide scale, it would have threatened Lemco’s very existence in Tanganyika by driving cattle prices upward. Nor was an export industry in refrigerated beef easily attainable. In 1952 the UK embargoed chilled beef from Tanganyika owing to the continued presence of Rinderpest and other livestock diseases, and Germany followed suit when shipments of frozen beef from Kenya were suspected of harboring Rinderpest.<sup>150</sup> The inability to master international standards for dressed beef meant that the Tanzanian colonial periphery would remain primarily a producer of corned beef and meat extract for the foreseeable future. Finally, the urgency for ranches as outlets for surplus and destocked cattle was lessened by the ability of TPL to absorb tens of thousands of animals annually. Ranching would be an aspiration that would carry over into the post-colonial period.

## Conclusion

The overall impact of Lemco on the Tanzanian environment and cattle keeping fell far short of the ‘revolution’ anticipated by colonial planners. It is true that Liebig’s made possible steady pressure to cull cattle for most of the 1950s, enabling the Veterinary Department to pursue destocking with certainty that an outlet for cattle was available. Initially the extra demand created by TPL – about 25% of all cattle purchased during the 1950s – pushed average cattle prices up substantially, from 82/- in 1950 to 144/- in 1951. But Liebig’s structural constraints on paying high prices for its beef meant that in the long run it acted as a drag on cattle prices, which averaged only 132/- per head until 1957. These low prices frustrated rather than encouraged Africans to part with, or improve, their cattle. Nor did Lemco transform the environment appreciably by relieving pressure on the grasslands. In part this was because TPL resisted buying female cattle because of their lower weights and

<sup>137</sup> A.E. Hinds, Imperial policy and colonial sterling balances, 1943–56, *Journal of Imperial and Commonwealth History* 19 (1991) 24–44.

<sup>138</sup> Governor Twining to Crech Jones, 14 November 1949, TNA 37545 (note 126).

<sup>139</sup> Reid to MANR, 8 April 1949, TNA 37545. For an overview of British wildlife protection policy during this period see R. Neumann, The Postwar Conservation Boom in British Colonial Africa, *Environmental History* 7 (2002) 22–47.

<sup>140</sup> MANR to Reid, 17 March 1949, TNA 37545. The post-war history of Maasai land alienation to settlers is discussed in Hodgson, Taking stock (note 10).

<sup>141</sup> Director of Tsetse Survey and Reclamation to Director of Veterinary Services, 17 November 1948, TNA 37545.

<sup>142</sup> Extract from C.D.C. Quarterly Report No. 10 on Schemes under Active Investigation, Oct.–Dec. 1950; Tanganyika Land Settlement: Ranching in the North, BNA/CO 691/206/3.

<sup>143</sup> Minute by J.H.W., 27 March 1950, BNA/CO 691/206/3 (note 135); Hodgson, *Once Intrepid Warriors* (note 9), 111–116.

<sup>144</sup> Hodge, *Triumph of the Expert* (note 8), 209–214; M. Rizzo, What was left of the groundnut scheme? Development disaster and labour market in southern Tanganyika 1946–1952, *Journal of Agrarian Change* 6 (2006) 205–238.

<sup>145</sup> Reid to Mellor, 28 September 1947, TNA 36722 (note 99).

<sup>146</sup> Conclusions of a meeting of the cabinet, 28 September 1950, BNA/Cabinet 62, 55–56; C.P. (50) 208, Ministry of Food, East African Groundnut Scheme – Report of the Kongwa Working Party, 15 September 1950, 2; *Annual Report*, 1958 (note 96), 21–22.

<sup>147</sup> Amboni Estates to Member for Land and Mines, 16 May 1951, TNA 41547; M. Tobler, R. Cochard, and P. Edwards, The impact of cattle ranching on large-scale vegetation patterns in a coastal savanna in Tanzania, *Journal of Applied Ecology* 40 (2003) 430–444.

<sup>148</sup> P. Raikes, *Livestock Development and Policy in East Africa*, Uppsala, 1981, 143–144.

<sup>149</sup> In early 1951 94% of TPL’s output was corned beef, followed by meat extract. Tangombe Factory, 2 June 1951, TNA 36841/II.

<sup>150</sup> Note on Ranching Potentialities and Economics, TNA 40906 (note 127), 7; Bundesministerium für Ernährung, Landwirtschaft und Forsten an die für das Veterinärwesen zuständigen obersten Landesbehörden, 29 January 1955, Bayerisches Hauptstaatsarchiv, M Inn 87670.

greater attrition on the long treks and transport from inland districts to Dar es Salaam.<sup>151</sup> And because Africans also resisted selling female cattle, the overall result was that cattle numbers rose steadily every year, reaching about eight million in the national herd by independence in 1961 – an increase of perhaps two million during the decade of national destocking.<sup>152</sup> Lemco's greatest value to the culling campaign was that it was willing to accept marginal and 'famine' cattle – 'the mature bullock, the old bull and the barren cow' – providing some payment for otherwise unmarketable animals during desperate times.

Lemco was a niche industry that sought out savanna cattle of the global periphery for its main raw material. Unable to compete with fresh or refrigerated beef companies for cattle in the same market, Lemco could take advantage of environments of endemic livestock diseases, arid conditions, frequent drought, pasture and water shortages, and poor transport to manufacture products valued on the world market. However, it is also clear that in East Africa Liebig's was dependent on state support to bring cattle to its factories. Despite rising cattle numbers throughout the 1950s, and regular state pressure and market incentives brought to bear on African cattle keepers, overall numbers of cattle sold on primary markets in 1961 – about 234,000 – were not much different than the 217,000 sold in 1949, a drought year, before the destocking campaigns began, and before Tanganyika Packers opened its factories.<sup>153</sup> This was in large part because Lemco, the main cattle buyer in Tanganyika in the 1950s (taking 40% of all cattle sold in 1960) paid consistently low prices. This did not inspire a revolution in African cattle economies or substantial market participation. Even under these circumstances, Lemco's directors fretted continuously about rising cattle prices in Tanganyika – and rising industrial wages in the River Plate countries – that threatened to drive the corporation into other global cattle peripheries. In the 1950s the company worked to develop new beef factories in the Sahel regions of Nigeria and Sudan.<sup>154</sup>

Lemco's structural limitations should not obscure that corned beef and meat extract were products well suited to a minimally developed colonial cattle economy because they did not mandate intrusive pastoral betterment. Cattle bound for TPL's factories did not require the capital, expensive labor inputs, and landscape engineering of ranching. TPL allowed for a limited beef export industry in a developing region, even though its products, like those of modern ranches, were too expensive for most Tanzanians.<sup>155</sup> TPL's political ecology of beef also meshed better with an emerging environmental vision for East Africa that saw 'traditional' pastoralism as more symbiotic with wildlife conservation than was modern ranching.<sup>156</sup> Following independence in 1961, Lemco was subordinated to the interests of the Tanzanian state, and was fully nationalized in the 1970s. TPL's survival as a corned beef factory allowed the state to occasionally use the company to buy up tens of thousands of 'famine' cattle during periods of national drought, creating value out of starving cattle, while providing some payment to desperate stock owners.<sup>157</sup>

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<sup>151</sup> W. MacKenzie, *The Livestock Economy of Tanzania: A Study of the Beef Industry*, Kampala, 1977, 47–48.

<sup>152</sup> Raikes, *Livestock Development and Policy in East Africa* (note 148), 144.

<sup>153</sup> *Annual Report*, 1950 (note 96), 15; *Annual Report*, 1961 (note 96), 1.

<sup>154</sup> Liebig's Extract of Meat Co., Directors' Report and Accounts, 31 August 1960; LEB 3/2 (1), Liebig's Report and Statement of Accounts for the Year ended 31st August 1961, UA.

<sup>155</sup> J.R. Oforo, Tanganyika Packers: a location study, *Journal of the Geographical Association of Tanzania* 12 (1975) 45–69; Raikes, *Livestock Development and Policy in East Africa*, 143–144.

<sup>156</sup> M. Borner, The increasing isolation of Tarangire National Park, *Oryx* 19 (1985) 91–96; H. Prins, Nature conservation as an integral part of optimal land use in East Africa: the case of the Masai ecosystem of northern Tanzania, *Biological Conservation* 40 (1987) 141–161.

<sup>157</sup> Oforo, Tanganyika Packers (note 155), 56.