

ARTICLE

The field-ready tea-box adaptometer: colonial nutrition science and/in imperial economies in Malawi

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Abstract

In the late 1930s, children in three Malawian villages were subjected to a peculiar test for vitamin A deficiency devised by Dr. Benjamin Platt, director of the Nyasaland Nutrition Survey and a leading colonial nutrition scientist. Platt constructed a makeshift adaptometer, appropriate for field conditions, that could be placed over a subject's head to measure retinal adaptation to light. He built this contraption from simple materials, including a five-pound tea-box and sticking plaster. This article takes the curious commingling of commodity objects and scientific materials (where a discarded tea-box finds new life as an experimental technology) as an entry point for examining how scientific practices are woven from semiotic and material threads, demonstrating how heterogeneous social and material elements overlap and influence one another. The article first analyses how Platt's tea-box adaptometer – and the discourses and ambitions framing the Survey – imagined a new kind of nutrition research hinged to the space of the field rather than the laboratory. It then proceeds to consider how the tea-box, an incipient manifestation of 'appropriate technology', points us towards the more tacit ways that *tea* wove itself into the fabric of the Survey and colonial society, as a gustatory discourse steeped in racial anxieties. Attending to the 'stuff' of scientific work cued me to broader imperial circuits and interests that shaped colonial nutrition research.

Keywords: Nutrition; Colonial science; Material culture; Surveys; Africa; Tea

In the late 1930s, children living in three villages in central Nyasaland (contemporary Malawi) were subjected to a peculiar test devised by Dr. Benjamin Platt, a colonial nutrition scientist leading the Nyasaland Nutrition Survey. Platt provided a detailed account of how he constructed an apparatus that 'could be used in the field [to test for vitamin A deficiency] without laboratory services and...with simple natives without causing alarm'.¹ He assembled this device from everyday materials on hand, including a five-pound tea-box, a piece of fabric, round discs cut from magazine advertisements, and sticking plaster. This tea-box assemblage was a modified version of the standard adaptometer ophthalmologists used to measure retinal cone cells' adaptation to light, a marker of vitamin A sufficiency or deficiency.² Such tests are based on the fact that vitamin A is a critical factor in the cure of nutritional night-blindness. Platt recorded in meticulous step-by-step fashion how and from which materials he built this adaptometer ('the main compartment is made out of a five pound tea box...with a sliding lid arranged so as to leave a variable aperture at the edge of the box...'), even specifying the measurements for each component ('a series of small discs of 0.5 centimetres diameter, cut from the background of magazine advertisements and graded according to the amount of white surface showing from untouched paper to a dark grey

¹Veronica Berry and Celia Petty (eds), *The Nyasaland Survey Papers 1938-1943: Agriculture, Food, and Health* (London: Academy Books, 1992), 290.

²D.J. Dow and D.M. Steven, 'An Investigation of Simple Methods for Diagnosing Vitamin A Deficiency by Measurements of Dark Adaptation', *The Journal of Physiology*, 100, 3 (1941), 256–62.

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appearance'). Platt noted that African test subjects were outfitted with the tea-box contraption after emerging from the interior of a dark 'native hut,' the researcher manipulated light exposure levels, using a stopwatch to record the time it took subjects' eyes to adjust and accurately identify the number of discs pasted onto black paper inside the box. While Platt's instructions help us conjure what the apparatus may have looked like, they are sterile and disembodied. They do not give any sense of the research encounter between scientist and participant, nor do they provide insight into how the test subjects interpreted or interacted with the tea-box creation.

Enclosing Africans in this tea-box contraption one after the other produced data points (time of light adaptation), inscription devices that might convincingly conjure an easily remedied problem (vitamin A deficiency).³ Confident that he would discover deficiencies even before he collected any readings with his apparatus, Platt carried British Drug Houses' vitamin A capsules to the field.⁴ Amid international enthusiasm generated by the discovery and isolation of vitamins, capsules were a technical solution that conveniently averted criticisms of structural factors that contributed to malnutrition and narrowly defined success as the achievement of appropriate levels of individual nutrients.⁵ The Survey data, however, indicated caloric consumption deficiencies during some, but not all, months of the year (such as during times of intensive agricultural labour that required high stores of energy). Nonetheless, economic circuits and imperial corporate interests – in tea and medicine capsules, respectively – met when the adaptometer was fitted over Africans' heads (and eyes), making them amenable to measurement, calculation, and improvement. The tea-box test was one of many modes of data collection employed by a Survey team of multidisciplinary researchers (including a botanist, agriculturalist, and anthropologist) who gathered data on health and illness, farming and eating practices, anthropometry, and economies from residents of three villages over about two years.⁶

The image of Africans outfitted with this tea-box contraption in the name of nutrition science speaks, first, to how African populations were and are testing grounds for experimental methods, technologies, and theories.⁷ It also gestures at the difficulties of doing science in the field, an out-of-doors place constructed as fundamentally different from the ideal-type laboratory where the purity of scientific processes and the functionality or availability of technologies and instruments are taken for granted.⁸ Platt, like other field scientists before and after him, grappled with challenges posed by conducting scientific work in a faraway place fraught with unpredictable climatic, geographical, and social conditions that could threaten his experiments, instruments, and data collection.⁹ Platt was invested in

³Bruno Latour and Steve Woolgar, *Laboratory Life: The Construction of Scientific Facts* (Princeton, NJ: Princeton University Press), 51. Indeed, after determining that children in one of the test villages had lower scores (and, thus, poorer vitamin A nutrition) than children in the other two, Platt treated them with vitamin A capsules; three to five days later, he found that their average score on the test doubled, demonstrating the efficacy of this simple treatment. Berry and Petty, *The Nyasaland Survey Papers*, 291.

⁴Berry and Petty, *The Nyasaland Survey Papers*, 291; Cynthia Brantley, *Feeding Families: African Realities and British Ideas of Nutrition and Development in Early Colonial Africa* (Heinemann, 2002), 69.

⁵Diana Wylie, *Starving on a Full Stomach: Hunger and the Triumph of Cultural Racism in Modern South Africa*. (Charlottesville: University of Virginia Press, 2001), 177; John Nott, 'No One May Starve in the British Empire: Kwashiorkor, Protein, and the Politics of Nutrition Between Britain and Africa', *Social History of Medicine*, 34, 2 (2021), 557.

⁶The team also gathered comparative data from two peri-urban areas.

⁷P Wenzel Geissler and Catherine Molyneux (eds), *Evidence, Ethos, and Experiment: The Anthropology and History of Medical Research in Africa* (Berghahn, 2017); Melissa Graboyes, *The Experiment Must Continue: Medical Research and Ethics in East Africa, 1940-2014* (Ohio University Press, 2015).

⁸Lyn Schumaker, *Africanizing Anthropology: Fieldwork, Networks, and the Making of Cultural Knowledge in Central Africa* (Durham, NC: Duke University Press, 2001); Kapil Raj, *Relocating Modern Science: Circulation and the Construction of Knowledge in South Asia and Europe, 1650-1900*. (London: Palgrave Macmillan, 2007); P. Wenzel Geissler and Ann H. Kelly, 'A Home for Science: The Life and Times of Tropical and Polar Field Stations', *Social Studies of Science*, 46, 6 (2016), 797–808; Guillaume Lachenal, 'At Home in the Postcolony: Ecology, Empire, and Domesticity at the Lamto Field Station, Ivory Coast', *Social Studies of Science*, 46, 6 (2016), 877–93; Cal Biruk, *Cooking Data: Culture and Politics in an African Research World* (Durham, NC: Duke University Press, 2018).

⁹Henrietta Kuklick and Robert E. Kohler, 'Introduction [to Science in the Field]', *Osiris*, 11 (1996), 1–14.

devising new techniques and methods that would maintain scientific rigor without ‘elaborate equipment’;¹⁰ the International Institute of African Languages and Cultures that supported the Survey saw it as a testing ground for fieldwork methodologies, ‘an experiment to the methods of research best suited to the African conditions’.¹¹ While it was a humble imitation of standard adaptometers in use at the time (Figure 1),¹² Platt’s meticulous step-by-step assembly instructions mark the tea-box contraption as apparently scientific.¹³ His pride in the field-readiness and efficacy of this device gave his Frankensteinian creation a pre-emptive longevity in its possible re-creation by future field researchers. His orientation to the field – as the new frontier for nutrition science – demonstrates faith in the universal applicability of Western science and its instruments, even if cobbled together from simple materials.¹⁴

This article takes the curious commingling of commodity objects and scientific materials (where a discarded tea-box finds new life as an experimental technology) as an entry point for examining how scientific practices are woven from threads that are semiotic and material and demonstrating how heterogeneous social and material elements overlap and influence one another.¹⁵ Moving outwards from Platt’s tea-box technology, I trace the layered meanings of ‘tea’ that circulated in 1930s Nyasaland to show how racialised anxieties wove their way into the design, implementation, and discourse around the Survey. Attending to the material culture of science permits us to move beyond the textual sources that guide archival research to home in on scientific routines, practices, and relations.¹⁶ I interpret the tea-box’s integration into the Survey not as incidental, but rather as a serendipitous clue. The tea-box reminds us that colonial nutrition research was happening alongside and through imperial circuits and

¹⁰Berry and Petty, *The Nyasaland Survey Papers*, 290; Robert E. Kohler, *Landscapes and Labscapes: Exploring the Lab-Field Border in Biology* (Chicago: University of Chicago Press, 2002), 6.

¹¹International Institute of African Languages and Cultures. September 1936. ‘Proposals for a nutritional survey of an African tribe’. National Archives of Malawi (hereafter, NAM). M2/17/8; Letter from Colonial Office to Governor Kittermaster, June 27, 1938.

¹²There were several adaptometer models in use at the time by ophthalmologists, who were collectively working out how to produce instruments that would be operable with ease, ensure standardisation of scale, and be able to furnish a wide range of variation in levels of brightness. Adaptometers aid in the diagnosis of nutritional deficiencies and macular and retinal diseases, among other eye conditions. A review of adaptometer models published in 1929 contains Figure 1, which represents the elements common to adaptometers (light source, aperture, lenses, something for the subject to try to see) and may aid the reader in imagining the kind of apparatus Platt aimed to construct in the field. George S. Derby, Paul A. Chandler and Louise L. Sloan, ‘A Portable Adaptometer’, *Transactions of the American Ophthalmological Society* 27 (1929), 31–46, 35. The parts of the adaptometers differed. One common adaptometer, manufactured by Crookes’ Laboratories in London, consisted of lightbulbs, a Polaroid screen, and a three-way switch, among other parts. Simon Yudkin, ‘A New Dark Adaptation Tester’, *British Journal of Ophthalmology*, 25, 5 (1941), 232. Another was built from brass tubing, a circuit, a test lamp, and a funnel-shaped mask. Dow and Steven, ‘An Investigation of Simple Methods’, 258–9. Today, the dark adaptometer takes the form of the familiar technology in the eye doctor’s dark room, where a patient sits with their chin on a chin rest and forehead against a cold brace to look into a machine at blinking lights or images.

¹³Platt clearly took a cue from scientific publications at the time, which also featured step-by-step instructions on how to construct various kinds of adaptometers, even if the materials were not as ‘simple’ as those Platt incorporated into his version. For example, Dow and Steven, ‘An Investigation’, 257–8.

¹⁴Several other commodity objects on hand were repurposed for scientific uses by the Team: match boxes held stool samples, tin tobacco boxes housed food specimens, and a ‘pinch of salt’ acted as an incentive for Africans to participate in the Survey. Kelly and Lezaun observe that much of the scientific equipment in a Tanzanian insectary was tailor-made or repurposed by the staff. For instance, empty ice cream tubs served as a container for adult mosquitos. Ann H. Kelly and Javier Lezaun, ‘The Wild Indoors: Room-Spaces of Scientific Inquiry’, *Cultural Anthropology* 32, 3 (2017), 385. It is worth noting that while Platt’s use of the tea box provides one entry point into examining the entanglements of colonial nutrition research, tea plantation economies, and the politics and aesthetics of tea-drinking, other stories could likely be told with other objects that played a role in the Survey, say, tracing connections outward from the tobacco tins.

¹⁵John Law, ‘Material Semiotics’, (January 30, 2019), 3. Accessed at: <https://www.heterogeneities.net/publications/Law2019MaterialSemiotics.pdf>; Andrea Ballesterio and Yesmar Oyarzun, ‘Devices: A Location for Feminist Analytics and Praxis’, *Feminist Anthropology* 3 (2022), 227–33; Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (Routledge, 1989); P. Wenzel Geissler, et al (eds), *Traces of the Future: An Archaeology of Medical Science in Africa* (University of Chicago, 2016).

¹⁶Katja Guenther and Volker Hess, ‘Soul Catchers: The Material Culture of the Mind Sciences’, *Medical History* 60, 3 (2016), 302.

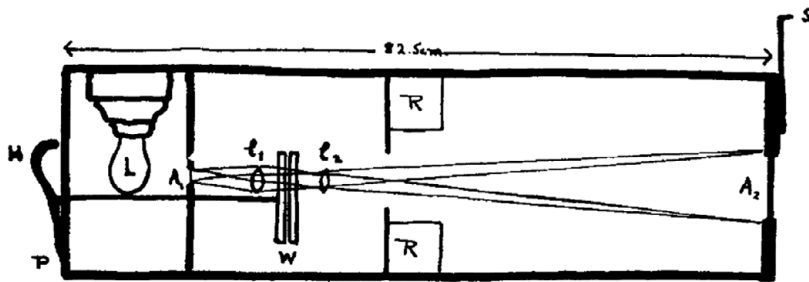


Fig. 1.—Drawing of apparatus. *L*, source of light—15 watt Mazda lamp. *A*₁ circular aperture, diameter 1.3 cm., covered with ground glass; *l*₁, 13 diopter lens, at focal distance from *A*₁; *l*₂ 2 diopter lens, forming magnified image of *A*₁ at *A*₂; *A*₂, circular aperture, diameter 7.5 cm., covered with milk glass; *W*, paired photographic wedges for varying intensity of image at *A*₂; *H*, handle to operate wedges; *P*, pointer to indicate on scale the position of wedges; *S*, shutter for covering aperture *A*₂; *R*, voltage regulator—maintains constant voltage at lamp terminals.

Figure 1. A sketch of an adaptometer and its parts reproduced from George S. Derby, Paul A. Chandler, Louise L. Sloan, 'A Portable Adaptometer', *Transactions of the American Ophthalmological Society* 27 (1929), 35.

towards imperial economic advancement in the register of human capital; science (and a scientific device) 'bears the imprint of its location'.¹⁷ For instance, at the time of data collection, tea was a commodity crop indicative of Nyasaland's health and entangled with economic and labour concerns tied to the problem of African nutrition. Following work such as Robert Kohler's on field biologists,¹⁸ this article first analyses how Platt's tea-box adaptometer – and the discourses and ambitions framing the Survey – imagined a new kind of nutrition research, hinged to the space of the field rather than the laboratory. It then proceeds to consider how the tea-box, an incipient manifestation of 'appropriate technology', points us towards the more tacit ways that *tea* wove itself into the fabric of the Survey and colonial society, as a gustatory discourse steeped in racial anxiety. Throughout, the article models how attending to the 'stuff' of historical scientific work helps us understand how data and the instruments that produce them are constituted by local contexts, discourses, and relations.

The Survey was carried out in the late 1930s, but a final, formal report was never published.¹⁹ In 1992, the wife of a former member of the Survey team published the surviving papers as a collection. Several scholars have engaged the Survey papers in their explorations of colonial nutrition and other questions in Malawi. Luke Messac, for instance, analyses the Survey as a laboratory for cutting-edge research and interventions that aimed to make colonised labour healthier and productive across the British Empire; he demonstrates how concerns about productivity articulated in the register of poor nutrition minimised the possibility that workers were engaging in foot-dragging rooted in resentment of poor working

¹⁷David Livingstone, *Putting Science in its Place: Geographies of Scientific Knowledge* (University of Chicago Press, 2003), 13. In the context of Malawi, the image of Africans with their heads inside a tea box recalls a long history of Africans acting as human infrastructure for transportation of goods; from the late nineteenth century, tens of thousands of Malawians were employed as porters (called *mtengatenga*, from the verb 'to take' or 'to carry') who carried commodities and cargo as loads on their heads in the absence of roads or railways. Elias Mandala, *The End of Chidyerano: A History of Food and Everyday Life in Malawi, 1860-2004* (Bloomsbury, 2005), 510.

¹⁸Kohler, *Landscapes and Labscapes*.

¹⁹The data collected were the basis of Africa's first colonial national income estimate; the Survey's initial efforts to, 'help transform Africans into more effective laborers was repurposed to try to make them into more ambitious capitalists'. Luke Michael Messac, *Dividends of Disquiet: Popular Politics and Economic Thought in the History of Government Medical Services in Malawi, 1914-1983* (unpublished PhD thesis: University of Pennsylvania, 2016), 89.

conditions.²⁰ The London School of Hygiene and Tropical Medicine (LSHTM) Archives have used the Survey papers to build an interactive online exhibit to show how colonial attitudes and beliefs informed the Team's work.²¹ Megan Vaughan is using the Survey to explore the dynamics of what she terms 'colonial metabolism' – the interchanges and transfers of energy and extraction that characterised relationships between human bodies (and gut microbiomes) and colonial political economy.²²

Historian Cynthia Brantley's book-length examination of the Survey illuminates the tensions between researchers and between African livelihoods and European ways of conceiving them.²³ She underscores the limitations of interdisciplinary development work, despite rising enthusiasm at the time, and demonstrates how British misreading of African social life – such as what a 'household' was or assumptions that villages were discrete and autonomous units – inflected the data they collected. While she observes that the Survey team exhibited paternalism and blamed malnutrition on African ignorance rather than colonial disruptions to their social worlds, Brantley does not explicitly consider how data themselves were forged in and through racialised truisms and anxieties that Team members held about the problem of 'African nutrition' and Africans more broadly. Nor does she attend closely to the ins and outs of scientific work and the relations, material culture, and political ecologies in which the Survey was carried out. Towards this end, I referenced the published papers of the Survey and secondary literature cited herein, and correspondence, reports, and other documents pertinent to the planning and implementation of the Survey in the Malawi National Archives in Zomba and the Society of Malawi Reference Library and Archives in Blantyre.

The Nyasaland Nutrition Survey in context

The Nyasaland Nutrition Survey, carried out between 1938 and 1943 in three villages in Nkhosakota district in north-central Malawi,²⁴ came about at a time when the problem of nutrition among the peoples living under the British Empire was a rising concern. In 1936, a circular authored by the Secretary of State for the Colonies indicated that nutrition was 'regarded one of the most important aspects of public health work in all countries'.²⁵ The 'discovery' of malnutrition in the colonies between the wars generated anxieties about the sustainability or reproduction of imperial networks;²⁶ in Malawi, anxieties coalesced specifically around the feasibility of extracting labour from able-bodied males on local plantations or exported to mines or farms in neighbouring southern African locales.²⁷ In the late 1930s, a labour crisis left thousands of pounds of tea in Nyasaland unplucked, for instance, generating significant investment on the part of the colonial government in finding ways to keep Malawian men at home amid what was perceived by colonial officials to be a 'mass exodus' that threatened commodity crop economies; such economies were indicators of Nyasaland's 'health'.²⁸

²⁰Ibid, 92.

²¹LSHTM, 'Nutrition in Nyasaland [online exhibition]', Available at: <https://blogs.lshtm.ac.uk/nutritionnyasaland/>. Accessed 4 September 2024.

²²Megan Vaughan, 'A Colonial metabolism: Food, Nutrition, and Extraction in Malawi', (unpublished talk, delivered 29 January 2024 at UCL, cited with author's permission).

²³Cynthia Brantley, *Feeding Families*.

²⁴In 1940, based on the Survey results, Platt set up the Nutrition Development Unit, which aimed to increase the foods eaten by Africans living in Nyasaland over three years.

²⁵JH Thomas, April 18, 1936, circular to the officer administering the Government of Nyasaland. NAM. S1/138¹/36.

²⁶Michael Worboys, 'The Discovery of Colonial Malnutrition Between the Wars', in David Arnold (ed.), *Imperial Medicine and Indigenous Societies* (Manchester, 1988), 208–25.

²⁷NAM. S1/250/37. 'Letter from Acting Governor to Secretary of State for the Colonies, November 3, 1937'; 'Report on Population Survey, 1937, submitted from Special Commissioner to Chief Secretary, November 7, 1937'.

²⁸NAM. S1/250/37. 'Letter from Acting Governor to Secretary of State for the Colonies, November 3, 1937'; 'Report on Population Survey, 1937, submitted from Special Commissioner to Chief Secretary, November 7, 1937'. The discourse of a 'mass exodus' obscures the dynamics of internal seasonal labour migration, where Africans spent four to six months on estates and returned to their villages during the rest of the year. In some ways, the sensational fears of a depopulation of Nyasaland operated to cover over the fact that European businesses within Nyasaland looked to peasant farmers for both labour and food, often

In 1939, the Committee on Nutrition published the lengthy First Report on Nutrition in the Colonial Empire, which presented summaries of the problem of nutrition across forty-eight territories based on individually submitted reports. The Report argued that improving nutrition was central to the health of the Empire and a sound investment, given widespread concerns about the ‘inefficiency of labour in industry and agriculture’²⁹ and shortages of labour. So, too, would greater consumption of foodstuffs across the Empire ‘increase the local market for local food products’. While the first draft of the Report presented malnutrition as a matter of political economy, the second emphasised ignorance and poor management of agricultural land, a narrative that minimised imperial responsibility for malnutrition.³⁰

The Report was a watershed moment in its call for multidisciplinary field surveys that would take a holistic perspective on the problem of nutrition, encouraging a move away from laboratory-focused research. A 1938 proposed scheme for the survey in Nyasaland explicitly juxtaposed its focus on ‘natives living under tribal conditions’ with prior research on nutrition in Africa, which had been confined to ‘artificially induced conditions such as hospitals, labour camps, and prisons’. The Secretary of State emphasised that the ‘chief need at the present time is not for elaborate laboratory research on such questions as the rates of energy exchange in tropical races... but for field survey work on the diet of both rural and urban people’.³¹ His words gesture at a nascent global shift, beginning in the inter-war years, away from pathological medicine and towards surveillance medicine, whereby apparently healthy individuals are screened, often outside the clinic or laboratory, for hidden abnormalities or conditions.³²

The conjunction of scientific knowledge and British colonial development agendas in the 1930s meant the field sciences like demography or anthropology were conceived as key to producing knowledge and experiments that would enable Britain to better govern and understand its peoples.³³ Indeed, the Nyasaland Survey’s investment in employing multidisciplinary approaches to understand the social and environmental conditions of rural communities in Nyasaland was commendable, and might be read as an early example of the very kinds of interdisciplinary research that are in vogue in global health today, even if they are laden with the very same struggles of meaningful integration and coordination that beleaguered the Survey team.³⁴ The growing infrastructure and councils for colonial research marked the emergence of a ‘heterogeneous system of expertise’ and multidisciplinary approach

feeding their workers by emptying the granaries of workers’ villages. So too did they capitalise on the fact that they could recruit labourers most easily during ‘hunger season’ by paying lower wages than Africans would work for at other times of the year. These dynamics were obscured when colonial officials placed blame for food shortages or famine (and therefore malnutrition) on declining African interest in farming (cast as ‘tradition’) and enlisted deep and paternalist anxieties about how markets (and the materialism and cultural degeneration they portended) would impact village societies. Henrietta Moore and Megan Vaughan, *Cutting Down Trees: Gender, Nutrition, and Agricultural Change in the Northern Province of Zambia, 1890-1990* (Heinemann, 1994); Elias Mandala, *The End of Chidyerano*; Elias Mandala, ‘Feeding and Fleecing the Native: How the Nyasaland Transport System Distorted a New Food Market, 1890s-1920s’, *Journal of Southern African Studies* 32, 6 (2006), 506; John McCracken, ‘Peasants, Planters, and the Colonial State: The Case of Malawi, 1905-1940’, *Journal of Eastern African Research and Development* 12 (1982).

²⁹Committee on Nutrition in the Colonial Empire, *Nutrition in the Colonial Empire—Part 1*, (London, 1939), 12. In Nyasaland, tea planters argued that the African labourer ‘comes and goes as he likes’ and that workers were lazy. Palmer, ‘The Nyasaland Tea Industry’, 109; Jutta Bolt and Erik Green, ‘Was the Wage Burden Too Heavy? Settler Farming, Profitability, and Wage Shares of Settler Agriculture in Nyasaland, c. 1900-60’, *Journal of African History* 56 (2015), 224.

³⁰Worboys, ‘Discovery of Colonial Malnutrition’, 221; John Nott, ‘How Little Progress? A Political Economy of Postcolonial Nutrition’, *Population and Development Review* 44, 4 (2018), 773.

³¹NAM. S1/1381/36. ‘Proposed scheme for a nutritional survey in Nyasaland, 27 April 1938.’ NAM. M2/17/8. ‘Letter from W. Ormsby Gore to Officer administering the government of Nyasaland, 6 May 1938’.

³²David Armstrong, ‘Screening: Mapping Medicine’s Temporal Spaces’, *Sociology of Health & Illness* 34, 2 (2012), 188; David Reubi, ‘A Genealogy of Epidemiological Reason: Saving Lives, Social Surveys, and Global Population’, *BioSocieties* 13, 1 (2017), 81–102.

³³Christopher Bonneuil, ‘Development as Experiment: Science and State Building in Late Colonial and Postcolonial Africa, 1930-1970’ *Osiris* 15 (2000), 258–81; Helen Tilley, *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge, 1870-1950* (University of Chicago Press, 2011), 317–18.

³⁴Platt’s interest in careful quantitative measurement of land held, crops planted, and food eaten, for instance, took precedence over team anthropologist Margaret Read’s slower form of anthropological study, which became an unintegrated

that necessitated new methods for collecting data in field settings;³⁵ it heralded what Bryceson Nkhoma has termed the second colonial occupation of agricultural, veterinary, and nutrition experts.³⁶

Prototyping field research and appropriate technologies: making a tea-box scientific

In a broader imperial discourse around nutrition, the Nyasaland Nutrition Survey, already underway when the Report on Nutrition was published, was seen as a prototype field survey and received outsize support.³⁷ With hubris, Platt envisioned himself as pioneering best practices for the field, evident in his preoccupation with developing functional techniques that could act as templates for future researchers.³⁸ The Team's efforts to quantify and document everything aimed to help a fledgling field-based nutrition science attain credibility.³⁹ The Colonial Office placed great faith in Platt's ability to 'establish the methods to be followed in similar surveys elsewhere'.⁴⁰ Platt even suggested that the area in which the Survey was carried out might be 'developed into an experimental 'Colony' in which almost all of Government's aims for native betterment might be tried out'.⁴¹

It is unsurprising that Nyasaland, one of Britain's poorest dependencies, was deemed an apt site for the field survey. A few years before its initiation, the British Central Africa Company's manager speculated that if left to their own devices, Africans living in Nyasaland would starve to death. Meanwhile, Nyasaland's Governor advocated for the Survey to be carried out there for the positive attention it would draw and the funds it would bring in the wake of the Great Depression,⁴² providing evidence to the Committee that Malawian peasants ate unbalanced diets lacking in protein and adhered to a 'random' or 'irregular' eating schedule.⁴³ But so, too, did the Survey's focus on nutrition – seen as key to efficient and productive labourers – align with the interests of the Nyasaland government and planters.

appendage to Platt's main report; there were many frictions and disagreements between the two researchers. Brantley, *Feeding Families*.

³⁵Sabine Clarke, 'The Research Council System and the Politics of Medical and Agricultural Research for the British Colonial Empire, 1940–1952', *Medical History* 57, 3 (2013), 357; David Mills, 'British Anthropology at the End of Empire: The Rise and Fall of the Colonial Social Science Research Council', *Revue d'histoire des sciences humaines* 1, 6 (2002), 161–88.

³⁶Bryceson Nkhoma, 'We are What we Eat: Nutrition, African Diets, and the State in Colonial Malawi', *Journal of Southern African Studies* 46,6 (2020), 1219–35.

³⁷Committee on Nutrition, *Nutrition—Part 1*, 142. The Survey team relied on infrastructures of imperial commerce and control to carry out their work. Villages participating in the research had their hut tax payments remitted during data collection (what one colonial official termed 'bribery for services rendered'), Platt was granted governmental approval to erect temporary buildings without rent payment and free firewood, and colonial staff posted to nearby areas were compelled to share equipment such as typewriters with Platt's team. NAM. S1/138A/36. 'Provincial Commissioner to BS Platt, October 22, 1938'.

³⁸Brantley notes that Platt wrongly viewed the survey as if it were the first field survey of nutrition in the Empire, ignoring previous work on African nutrition. Dietary surveys were carried out in Nigeria in 1927 and in Kenya in 1926, which the Report acknowledges, even as it also evinces clear enthusiasm about a 'turn' in nutrition science embodied by Platt's Survey. Brantley, *Feeding Families*, 11, 74.

³⁹Kohler, *Landscapes and Labscapes*, 106.

⁴⁰NAM. S1/138A/36. 'Statement issued to press by the Colonial Office announcing the Survey, January 14, 1939'.

⁴¹Ibid. 'Minutes of the 36th meeting of the Native Welfare Committee, December 6, 1939'.

⁴²Brantley, *Feeding Families*, 48.

⁴³Nkhoma, 'We are what we eat', 1223. Notably, in the context of the African Labour Efficiency Survey, commissioned in Kenya in 1947 by the railway administration, the problem of worker productivity and efficiency was closely tied to disciplining the 'irregular' habits of Africans to align them more with Europeans'. Frederick Cooper, *On The African Waterfront: Urban Disorder and the Transformation of Work in Colonial Mombasa*. (Yale University Press, 1987), 75. Before the Nyasaland Survey began, the Native Welfare Committee distributed questionnaires to provide data to inform a scientific investigation. Open-ended questionnaires were sent to agricultural officers, District Commissioners, and 'selected educated Africans'. Questions to be filled out by the latter in Chichewa (some respondents submitted handwritten documents, others typed) asked about the number and times of meals taken per day. Most respondents indicated they ate *kawiri pa tsiku* (twice per day); one respondent added a caveat ('in this time of Europeans, some people eat three times'), revealing that respondents knew what was deemed 'irregular' by Europeans. A 1938 pamphlet on nutrition in Nyasaland aligned three meals a day with 'urbanised natives of the better type' who adopt 'European custom'. NAM. S1/138¹/36. 'Minutes of the native welfare committee held at Zomba, Sept. 2, 1936'; NAM. M2/17/7. Responses by educated natives to questionnaires; NAM. S1/138I/36. Nutritional Review of the Natives of

In a 1939 meeting of the Native Welfare Committee, for instance, the attendees debated whether lack of foodstuffs was responsible for emigration and a shortage of labourers; the Director of Medical Services argued that dams could play a valuable role in ensuring that more permanent crops could be grown, helping ‘to keep natives in this country’. They also noted that one reason why local planters found difficulty in securing labour was because they did not feed their workers as well as South African and Southern Rhodesian employers; the Governor expressed similar sentiments in 1937 when he opined that ‘labourers who return [to Nyasaland] are invariably stronger and healthier than when they went to the Rand [South Africa]’.⁴⁴ One backdrop to these discussions about labour, nutrition, and emigration was the growing success of tea cultivation and the labour needs of planters in 1930s Nyasaland. While the Team was in the field, Nyasaland implemented concerted efforts to create internal markets for its tea.

It is thus no coincidence that the tea-box was on hand, lying around waiting to be transformed into an experimental tool by Platt. The headquarters of the survey party were in a house at a mission station halfway between the survey villages⁴⁵ where white team members likely partook in tea-drinking and socializing on breaks from their work in the field. Tea advertisements in *The Nyasaland Times*, an English-language newspaper, indicate that tea grown on local estates was packed in nets stuffed into wooden cases,⁴⁶ so we might assume that Platt’s five-pound tea-box took this form. The box’s shape, a good ‘fit’ for its intended test subjects and forming a vessel within which the innards of this makeshift technology could be assembled, likely caught Platt’s attention and prompted him to fashion it into the scientific device it became.

Interestingly, however, even as Platt aimed to devise universally applicable methods and best practices that future field surveys elsewhere could copy, his work on the ground required an appreciation of the specific conditions and context of Nyasaland. While histories of ‘appropriate technology’ locate the concept’s origins in a 1960s-era enthusiasm for small and simple technologies deployed to solve problems in the global South,⁴⁷ Platt’s tea-box adaptometer embodied these principles of technical minimalism, a legacy continued by researchers studying dark adaptation in Kenya and Bangladesh today who work to design ‘compact, low cost, and easily operated device[s]’ for use under ‘difficult field conditions’.⁴⁸ Although Platt’s device took shape through his combination of specific objects and materials found in Nyasaland at the time and his detailed instructions for its re-creation encourage a fidelity to design by future researchers, his tea-box adaptometer assumes a certain fluidity in which, say, the tea-box could be replaced by any number of objects, depending on what is on hand, with similar dimensions and qualities.⁴⁹ Notably, Platt’s enthusiasm for his device christens it as a kind of *technology* birthed by white, Western ingenuity, a machine that extends measurable things and experiments into the field, even as it reinforces his flawed assumptions that Africa is ‘technology-poor’ and obscures the fact that Africans have themselves been innovative makers of technological things for generations.⁵⁰

Nyasaland (The Government Printer, Zomba), 1938; Society of Malawi Reference Library and Archives (Box 028, Health). Jessie Williamson. A Handbook for Africans on the Elements of Nutrition with special reference to the foods of Nyasaland, 54).

⁴⁴NAM. M2/17/8. ‘Minutes of the 30th meeting of the Native Welfare Committee, held at Zomba, February 1, 1939;’ NAM. S1/250/37. ‘Letter from Harold Kittermaster to Secretary of State for the Colonies, 13 December 1937’.

⁴⁵Berry and Petty, *The Nyasaland Survey*, 21; Brantley, *Feeding Families*, 50.

⁴⁶‘Thornwood Tea’ (advertisement). June 27, 1918. *The Nyasaland Times*. Blantyre, Malawi.

⁴⁷Heidi Morefield, *Developing to Scale: Technology & the Making of Global Health* (University of Chicago Press, 2023).

⁴⁸Alain B. Labrique, et al, ‘A Novel Device for Assessing Dark Adaptation in Field Settings’, *BMC Ophthalmology* 15, 74 (2015).

⁴⁹Marianne de Laet and Annemarie Mol, ‘The Zimbabwe Bush Pump: Mechanics of a Fluid Technology’, *Social Studies of Science* 30, 2 (2000), 225–63; Peter Redfield, ‘Fluid Technologies: The Bush Pump, the LifeStraw and Microworlds of Humanitarian Design’, *Social Studies of Science* 46, 2 (2016), 159–83. I have tried rebuilding Platt’s adaptometer according to his instructions using a discarded meal delivery kit box instead of a tea box, for instance.

⁵⁰Clapperton Chakanetsa Mavhunga, *What Do Science, Technology and Innovation Mean from Africa?* (MIT Press, 2017). For an account of how colonial entomologists appropriated African technologies and knowledge to build tsetse fly traps, see Clapperton Chakanetsa Mavhunga, *The Mobile Workshop: The Tsetse Fly and African Knowledge Production* (MIT Press, 2018), 103–8. Ironically, perhaps, imaginaries of African technologies are often characterised by the kind of creative repurposing and recycling in resource-poor environments that Platt himself engaged in. John Nott and Anna Harris, ‘Sticky Models: History as Friction in Obstetric Education’, *Medicine Anthropology Theory* 7, 1 (2020), 54.

Colonial sociotechnical systems, including the equipment and instruments of the Survey, embedded racial difference.⁵¹ In Platt's account of the adaptometer and his attempt to craft a technology 'appropriate' for African conditions, the figure of the 'simple native' looms large. The phrase divests individual subjects of personhood and corrals them under the homogenizing logic of racial and intellectual difference, making individuals into interchangeable units of experimentation. Yet, the test subjects are not passive; they are compelled to participate in the experiment by learning to 'appreciate what is required [of them]'. Platt indicates that if a subject fails to cooperate with his role as a research subject, he is 'too stupid to be of any value'. Such characterisations were commonplace in colonial discussions of African patients in biomedical encounters, where Africanness was associated with stupidity, ignorance, unreasonableness, and obstinance.⁵² While Platt celebrates his do-it-yourself (DIY) adaptometer as a portable and easy-to-use scientific device, it is notable that his framings of the Africans whom it would be measuring indicate that a technology is not a bounded off thing comprised only of its mechanical parts; the adaptometer encompasses, as well, the worlds and relations into which it enters. So, too, the data points it produces are not merely replicable measurements but come to entangle and gain meaning with reference to their contexts of production.

Platt, in his thorough laying out of the particulars of his experiment, is clearly invested in its precision, its replicability, and its scientific value.⁵³ Yet, even as the tea-box seems to achieve a certain threshold of scientific validity and authority by virtue of its ability to produce data points in a standardised manner, its numerical outputs did not stand alone as evidence or not of malnutrition or vitamin A deficiency. Rather, they were read through white experts' imaginations of what healthy (and unhealthy) Africans looked like, making the DIY device material cover for those preconceptions. Physician Dr. W.T.C. Berry makes this clear in a letter he wrote to Platt (who was away in London) from the field. His letter expresses alarm over the fact that he used Platt's apparatus in his absence and found some grave inconsistencies in the readings it provided, even after he made adjustments to the device.⁵⁴ Notably, he couches his concerns about the apparatus' function in his sense of which subjects are healthy or not, based on their appearance: 'A series of ten scaly folliculotic brats...gave performances just as good as my healthy clerks!'⁵⁵ he writes. His observation of 'scaly' skin as a symptom of vitamin A deficiency is, of course, aligned with knowledge of clinical symptoms; in the 1930s, researchers studying the condition called attention to the 'dry, scaly, shriveled condition of the skin among infants affected with [deficiency]'.⁵⁶ Yet, even though the readings he collects indicate 'good' performances or vitamin A sufficiency, his preconceived assumptions that African children he pejoratively termed 'brats' must be less 'healthy' than his clerks reveals how numbers or data become entangled with wider discourses. In this case, Berry rejects the data produced by Platt's adaptometer because it seems impossible that African 'brats' could be healthy. Medical forms employed by the Survey were ten pages long and included thirty-three clinical criteria that could show malnutrition; while the Team did not find any cases of classical deficiency diseases like beriberi or pellagra, they did find 'physical signs of malnutrition'.⁵⁷ As Brantley notes, however, 'even when expectations were different from findings, they [the Team] proceeded based...on [their] expectations and preconceived

⁵¹Pauline Kusiak, 'Instrumentalized Rationality, Cross-Cultural Mediators, and Civil Epistemologies of Late Colonialism', *Social Studies of Science* 40, 6 (2010), 871–902.

⁵²Megan Vaughan, *Curing Their Ills: Colonial Power and African Illness* (Stanford University Press, 1991), 166.

⁵³Platt's instructions for building the apparatus are extremely lengthy and precise.

⁵⁴Berry's letter is the only other 'trace' of the tea box I have found in the published survey papers. His anxieties over the tea box's ability to provide accurate and precise readings speak to Shapin and Schaffer's (2011) examination of how experimental success is distinguished from failure in the context of Robert Boyle's employment of the air-pump in his seventeenth-century pneumatics research. However, while there was a lively discourse about how to improve the ease of use, the reproducibility of results, and the portability of adaptometers at the time, the fact that Platt never published his work and his casting of the device as a simplified version of its counterpart in the metropole meant his device – unlike Boyle's – retained a de facto defensibility in his personal circles and in the surviving papers of the Survey.

⁵⁵Berry and Petty, *The Nyasaland Survey*, 287.

⁵⁶George B. Eusterman and Dwight L. Wilbur, 'Clinical Features of Vitamin A Deficiency', *JAMA* 98, 24 (1932), 2058.

⁵⁷Brantley, *Feeding Families*, 107.

notions'.⁵⁸ The reliability and accuracy of Platt's device, then, does not stand outside the investigator's impressions of the health of the subjects being tested.

Indeed, physical symptoms of African research subjects were diagnosed in a broader context of racial anxieties, stereotypes, and tropes. John Nott suggests that dermatological signs of malnutrition – sometimes described as 'crazy-pavement dermatitis' – were made more dramatic by their presentation on black skin, as well as by the white-colonial obsession with blackness.⁵⁹ Rana Hogarth, in her analysis of mid-nineteenth-century concerns about the nutrition and declining vigour of enslaved labourers on Caribbean plantations, shows that plantation physicians were especially attentive to changes in skin colour associated with diet that, in some cases, transformed blackness into lighter complexioned variants.⁶⁰ Elsewhere, I analyse how African hair became, for the Survey researchers, potential evidence of poor nutrition.⁶¹ For example, the Team repeatedly used the term 'staring' to describe those Africans whose hair was deemed to be abnormal, a term that connotes roughness or a bristling nature and whose etymologies lie in livestock science. Hair texture and style have long been important markers of proximity to whiteness.⁶² Berry's worry over the failure of Platt's apparatus betrays the abiding racial taxonomies through which he and other colonial nutrition scientists encountered their research subjects. Scaly skin or 'staring' hair are markers of malnutrition or poor health in the context of the Survey (even when numerical data may have indicated otherwise), but the technology of classification is the colonial order of things, an order that the tea-box's scientific ambitions simultaneously obscure and reproduce. The tea-box contraption and the explicit discussion around its material qualities and efficacy in the Survey's pages reveal how racial hierarchies and imaginaries of African racial difference became attached to and embedded in technologies (and data) themselves, informing the making of colonial nutrition knowledge and assessments of African subjects' health status.⁶³ Yet, the tea-box, emptied of its original cargo and transformed into a scientific apparatus, also points us towards more tacit ways in which *tea* wove itself into the fabric of the Survey and colonial society as a gustatory discourse steeped in racial anxiety.

Gustatory anxieties: 'the cup of tea and scone type of diet'

While the tea industry in Nyasaland initially struggled to produce high quality tea and lacked a local market,⁶⁴ between 1930 and 1940, Nyasaland's white tea planters began to enjoy some prosperity: in this decade, the total acreage of land under tea doubled and tea became the Protectorate's largest export earner and most valuable cash crop in 1938–39.⁶⁵ Amid a 'miniscule white and impoverished black population', the Tea Market Expansion Board, founded in 1937, sought to increase local consumption, including among Black Africans, through propaganda.⁶⁶ A traveling canteen gave demonstrations of tea-

⁵⁸Ibid, 111.

⁵⁹Nott, 'No One May Starve', 565.

⁶⁰Rana Hogarth, *Medicalizing Blackness: Making Racial Difference in the Atlantic World, 1780-1840* (University of North Carolina Press, 2017), 91.

⁶¹Cal Biruk, 'The Datafication of African Health and Bodies, Past and Present,' In Venturini, Tommaso, Amelia Acker, Jean-Christophe Platin, and Tone Walford, eds. *The Sage Handbook of Data & Society* (Sage, 2025).

⁶²Deborah Posel, 'Race as Common Sense: Racial Classification in Twentieth-Century South Africa', *African Studies Review* 44, 2 (2001), 105.

⁶³Lundy Braun, *Breathing Race into the Machine: The Surprising Career of the Spirometer from Plantation to Genetics* (University of Minnesota Press, 2014).

⁶⁴JA Hutson, 'An Outline of the Early History of the Tea Industry in Malawi', *The Society of Malawi Journal* 31, 1 (1978), 40–6; Palmer, 'The Nyasaland Tea Industry', 217.

⁶⁵John McCracken, *A History of Malawi: 1859-1966* (Boydell and Brewer, James Currey, 2012), 195; Bolt and Green, 'Was the Wage Burden Too Heavy?'

⁶⁶Palmer, 'The Nyasaland Tea Industry', 217. The Tea Market Expansion Board launched such campaigns in many other locations, including South Africa, through advertising in the Black press, giving lectures to schoolchildren, and through mobile cinema presentations; campaigns framed tea-drinking women as intelligent, modern good mothers and associated tea with elite

making in Nyasaland markets and kiosks established at railway stations and distributed over one hundred thousand free cups of tea and scones; tea was also issued to African tea pluckers themselves.⁶⁷ Permanent tea shops were erected at railway stations across the country and granted free firewood from the Forestry Department to ease their operations. Tea was added to the diet sheets of institutions such as the King's African Rifles, prisons, and hospitals in the Protectorate; a canteen was erected at a customs post in southern Malawi for the 'convenience of natives passing through'.⁶⁸ Such campaigns to increase African tea consumption appear to have brought success, even if the Chairman of the International Tea Market Expansion Board cautioned Nyasaland's African Tea Association against expecting 'too quick results'.⁶⁹

The rising popularity of tea is evident in the Survey Papers, where it seems to have taken on outsize importance in relation to the question of African nutrition. Margaret Read, the anthropologist employed by the Survey, reported in her fieldnotes that Africans were 'imitating [the British] diet' by buying tea and sugar and making scones.⁷⁰ She hypothesised that Africans eat 'European foods such as tea, sugar, and bread' – 'imitat[e] our diet' – because they admire 'our [British, European] health and energy'. Health and energy were two of the variables that were of central interest to the Survey researchers, measured scientifically using a metric called man equivalent hours (MEH), which assigned men, women, and children to one of three classes of productivity (based on how much work could be completed in one hour), assessed against 'good men in the village who were considered to be equivalent to standard men with a value of unity' or 'top grade man'. The relative labour values of each class were compiled by Platt into a table of 'efficiency coefficients of men, women, and children in agricultural operations'.⁷¹ Such a metric, read alongside the qualitative assessments about the health and energy of Nyasaland Africans made by Survey team members, cloaks colonial notions of African difference in scientific garb. It obscures how imaginaries and definitions of health or energy rely on and mobilise tropes and stereotypes about Africans, evident in the taken-for-granted assumption that the British team members ('standard man') were healthy and energetic, and Africans were not. Food and drink were taken to be variables with the ability to enhance or degrade the energy, vigour, or health of Africans.⁷² Driven by a clear desire to improve African eating habits and preferences, the Team aimed to advise their research subjects about good and bad foods (and drinks). For instance, team dietitian Jessie Barker (later Williamson) authored a lengthy handbook of nutrition (titled *Tiyene Tikadye!*, Come, let's eat!) meant to be used by African teachers. While it was never published, its didactic tone and hand-drawn images reveal much about European imaginaries of African nutrition, decision-making, and morality. In the manual, she suggested, 'there is no nutritive value' in tea unless milk or sugar are added, though she admitted tea was a good way to warm the body on a cold day or to revive the spirits.⁷³

For the Survey team, tea, part and parcel of Britishness, became a site of anxieties documented by scholars working elsewhere in British colonial Africa that Africans might copy them so well as to collapse social, status, and racial differences between them; even as Europeans wished to 'civilise' Africans, they

and aspiring elite African women. Katie Carline, 'Wise Mothers and Wise Buyers: Marketing Tea and Home Improvement in 1930s South Africa', *The Journal of African History* 63, 3 (2022), 295.

⁶⁷Ibid, 231 (footnote 90).

⁶⁸NAM. S1/84/37. 'Letter from Nyasaland Tea Association to Chief Secretary, February 18, 1937'.

⁶⁹NAM. S1/78/35. 'Letter from Alfred D. Pickford, Chairman of International Tea Market Expansion Board, to Secretary of African Tea Association (Nyasaland), January 25, 1937'.

⁷⁰Berry and Petty, *The Nyasaland Survey*, 53.

⁷¹Ibid, 74, 79. This metric gave priority to men's work in the fields and discounted women's domestic labor. Brantley, *Feeding Families*, 90–1, 145.

⁷²Notably, such renderings of 'food as fuel' reduced foodstuffs to mechanical packages of energy, ignoring the aesthetic dimensions (including taste or pleasure) of food and drink. Melissa Graboyes, 'Chappati Complaints and Biriani Cravings: The Aesthetics of Food in Colonial Zanzibari Institutions', *Journal of Eastern African Studies* 5, 2 (2011), 324.

⁷³Correspondence between Williamson and the Northern Rhodesia and Nyasaland Publications Bureau indicates the manuscript was rejected (once in 1950, again in 1955) on grounds it was not simple enough, too long, and focused narrowly on foodstuffs and nutrition in Nyasaland. Society of Malawi Reference Library and Archives (Box 028, Health). Jessie Williamson. A Handbook for Africans on the Elements of Nutrition with special reference to the foods of Nyasaland, 48.

were invested in upholding social hierarchies.⁷⁴ In Nyasaland, such dynamics came to a head during Malawi's violent anti-colonial uprising in 1915, where African minister John Chilembwe led his followers from his church to a cotton plantation where they killed three Europeans. Chilembwe often went about in a three-piece suit and bow tie and critiqued Christian teachers for allowing their wives to dress in simple village clothes. Europeans found Chilembwe's vestimentary aesthetics to be a disturbing mimicry of power by the 'native Christian'. Europeans often debased well-dressed middle-class Africans by asking whose slave they were or insisting Africans greet them on the road by removing their hats. These indignities surfaced as primary agitators of the uprising in Africans' testimonies in the Commission of Inquiry after the event and demonstrate Europeans' simultaneous desire for and fear of Africans' modernisation.⁷⁵ Commodities often played a central role in colonial mimicry or imitation, as we see here, where consumption of scones, tea, and sugar see Africans ingesting foodstuffs coded as British and symbolic of civility and whiteness. Consuming tea and scones, while unremarkable for some, becomes a charged cultural act, a form of ingestion that is racialised in and through the larger political discourse and imperial economies.⁷⁶ Colonial discourse about tea and other commodities like soap, sugar, or clothing reveal the ambivalence and anxiety that the prospect of Africans using the same commodities in the same way as British counterparts generated.⁷⁷ On the one hand, missionaries and colonial officials desired to convert their African subjects into proper British subjects. As Warwick Anderson has shown, the colonial space was one of somatic disciplining, where the colonised body was imagined as a pliable canvas for the designs of the coloniser.⁷⁸ As early as the 1880s, missionary David Clement Scott of Blantyre mission cultivated in his parishioners a desire for afternoon tea rituals and aimed to mould them into proper British subjects: 'Every Saturday afternoon...senior boys or girls were invited to the Manse for tea...he taught the young folk how to behave easily in European company'.⁷⁹ Yet, on the other hand,

⁷⁴Homi Bhabha suggests that colonial mimicry appropriates the Other as it visualises power. The fine line between mimicry and mockery produces ambivalence and anxiety; the conversion of colonised subjects into 'almost the same, but not quite' unsettles the semiotics of (racial) difference that anchor the colonial social order. Homi Bhabha, 'Of Mimicry and Men: The Ambivalence of Colonial Discourse', *October* 28 (1984), 126. On mimicry in the African colonial context see: Timothy Burke, *Lifebuoy Men, Lux Women: Commodification, Consumption, and Cleanliness in Modern Zimbabwe* (Duke University Press, 1996), 195; Randall Packard, 'The "Healthy Reserve" and the "Dressed Native": Discourses on Health and the Language of Legitimation in South Africa', *American Ethnologist* 16,4 (1989), 686–703; Lynn M. Thomas, 'The Modern Girl and Racial Respectability in 1930s South Africa', *The Journal of African History* 47, 3 (2006), 461–90.

⁷⁵Harri Englund, *Visions for Racial Equality: David Clement Scott and the Struggle for Justice in Nineteenth-Century Malawi* (Cambridge University Press, 2022), 261–2; Joey Power, *Political Culture and Nationalism in Malawi: Building Kwacha* (University of Rochester Press, 2010), 17; John McCracken (ed), *Voices from the Chilembwe Rising: Witness Testimonies Made to the Nyasaland Rising Commission of Inquiry, 1915* (Oxford University Press, 2015), 158.

⁷⁶See also Tompkins on 'racial indigestion' in the nineteenth century US. Kyla Wazana Tompkins, *Racial Indigestion: Eating Bodies in the Nineteenth Century* (New York University Press, 2012). Here, the assumption is that the 'tea and scone' type of diet reflects only changes in Africans' tastes or consumption, overlooking that there was likely a European market, including the Survey teams in the villages, for such treats. Lacey Sparks observes that Nigerian women who were the subjects of colonial nutrition education programs taught themselves to bake sweets and treats to sell to Europeans. Lacey Sparks, 'Too Many Cooks Spoil the Soup: Conflicting British Nutrition Education Policy Approaches and African Responses', *Journal of World History* 28, 3–4 (2017), 525–50. So too do the Team's speculations about imitation minimise the fact that tea and scones are just tasty and enjoyable.

⁷⁷Packard, 'The "healthy reserve"', 690. In the 1920s and 1930s, discourses and prohibitions that pathologised native beer making were also rampant. NAM. S1/121/22. 'Letter from District Agricultural Officer to Director of Agriculture, May 6, 1932; "The Intoxicating Liquor Ordinance of 1911, published as Government Notice in 1930'. The moral and semiotic meanings that African beermaking and consumption accrued could be the subject of another paper. Amid such loud discourse, however, Megan Vaughan points out that, paradoxically, the colonial economy was 'parasitical' on fermentation (and beer consumption, which provided calories needed by the 'gendered energetic economy of villages now heavily impacted by the demands of colonialism'). Vaughan, 'A Colonial Metabolism'. Beer was a key ingredient in communal work parties, and the volume of beer brewed for consumption for 'work' purposes was highest during the seasonal preparation and planting of fields. Brantley, *Feeding Families*, 79–81.

⁷⁸Warwick Anderson, 'Excremental Colonialism: Public Health and the Poetics of Pollution', *Critical Inquiry* 21, 3 (1995), 640–69.

⁷⁹Kenneth Ross, *Malawi and Scotland Together in the Talking Place* (Malawi: Mzuni Press, 2013), 43.

the normalisation of tea consumption among Africans was a source of colonial handwringing. Even as creating a local market for and popularizing tea (and milk and sugar) among Africans was a key interest of tea companies restricted by export quotas,⁸⁰ the Survey Team's notes and reflections frame tea consumption among Africans as threatening to their nutrition and well-being, as faddish, and as incongruent with British assumptions of fundamental African dietary difference, which they linked to rural and agricultural spaces. As Lynn Thomas shows, reactions to African uptake of mannerisms, behaviours, and commodities were highly ambivalent; in South Africa, the figure of the 'modern girl', for instance, was vexed, seen as a sign of racial uplift or a poor imitation of white, coloured, or Indian women.⁸¹

Yet, even as colonial figures fixated on Africans' supposed desire to *copy* them, commodities and other material culture imagined as having originated with Europeans were semiotic shapeshifters in the relations, meaning making, and hands of Africans, producing worlds, stories, and possibilities for self-fashioning that transgressed or escaped the confines of colonial assumptions about such objects.⁸² On the colonial Zambian Copperbelt, for instance, young girls who adopted modern and stylish apparel turned these garments into expressions of Christian modernity and respectability, despite missionaries' vexation about such sartorial choices that, for them, signified immorality, cultural degeneration, and a renunciation of Christianity.⁸³ So, too, is it worth noting that the 'invention' of commodity objects like soap or tea were not 'Houdini acts of white people' but, rather, the results of a long history of translation and mobility of African (and other) knowledge and practices via the circuits of imperial domination and extraction.⁸⁴ Given the overwhelming weight of apprehensions about Africans and their engagements with tea, their mobility (for labour), their supposed disinterest in farming, and their ideas about nutrition that are well-preserved in colonial discourse on these topics, we are reminded of the difficulty of knowing how the interventions and discourse that characterised the Survey were interpreted by Africans themselves, as Meghan Vaughan has also noted for colonial biomedicine.⁸⁵

In the Survey papers, tea (and the risks of Africans mimicking European diets) figures prominently into discussions about African health and nutrition.⁸⁶ The Team observed that the rise of the canteen – a new 'fashion in food' (sponsored by the Government, as discussed above) – was 'popularising *the cup of tea and scone type of diet*' [my emphasis]. Data collected in the context of household goods inventories documented a growing number of 'teapots...appearing in the villages'.⁸⁷ The drinking of tea and purchasing of teapots – among other gustatory ingestions and forms of commodity consumption –

⁸⁰In a 1938 report on native nutrition in Nyasaland, mimicry of Europeans sat alongside the economic benefits to the protectorate that might come with increasing demand for tea: 'tea is being used more and more by the urbanised native who has copied the European in this respect. A universal demand will improve the prospects of the local tea industry and necessitate the use of more milk and sugar'. The Director of Medical Services speculated that 'with all the propaganda going on at present on 'drink more tea,' I think it is possible that milk might be consumed more than it has been in the past'. NAM. S1/138/36. 'Nutritional Review of the Natives of Nyasaland, 1938,' NAM. M2/17/8. 'Letter from Director of Medical Services to Chief Secretary, February 20, 1939'.

⁸¹Thomas, 'The Modern Girl', 464.

⁸²Nancy Rose Hunt, *A Colonial Lexicon: Of Birth Ritual, Medicalization, and Mobility in the Congo* (Duke University Press, 1999).

⁸³Walima T. Kalusa, 'Educated Girls, Clothes and Christianity: Subverting Mabel Shaw's Sartorial Agenda on the Colonial Zambian Copperbelt, 1925-1964', *Journal of Southern African Studies* 48, 1 (2022), 61–80.

⁸⁴Clapperton Chakanetsa Mavhunga, 'Introduction', in Mavhunga, Clapperton Chakanetsa (ed.), *What Do Science, Technology, and Innovation Mean From Africa?* (MIT Press, 2017), 2.

⁸⁵Vaughan, *Curing Their Ills*, 2. Indeed, one fascinating avenue for further research would be the material-semiotic entanglements of nutrition, the tea economy, labour mobility, and farming as seen and known by Africans. These threads intertwine what could take shape as an African history of the nutrition survey or even the tea box adaptometer.

⁸⁶The submission from Nyasaland included in the Colonial Nutrition Report cast the African uptake of European clothing as worrisome, suggesting it posed health risks. It speculated that 'the tendency for natives to adopt European attire is to be regretted since it is bound to limit the synthesis of Vitamin D'. Committee on Nutrition in the Colonial Empire, *Nutrition in the Colonial Empire—Part 2* (London, 1939), 29.

⁸⁷Berry and Petty, *The Nyasaland Survey*, 51.

were seen as harbingers of change in African society that would lead to poor health and malnutrition. Such trends were blamed on Africans' exposure to European sensibilities and commodities through work as cooks or house help, which indicated their desire to 'progress in the direction of European foods' and portended a loss of interest in 'village resources and how to make the best use of them'.⁸⁸ Because European foods required cash, money figured into the Team's assessments of shifts in African diet. Team members worried about the growing tendency of Africans with money earned abroad to purchase rather than grow their own food, even if, ironically, the Survey's presence (via their need for local labour and the remitted hut taxes) increased the money circulating in the area. 'If this practice [buying food] spreads', they hypothesised, 'the reduced crops consequent on the reduced acreage under cultivation will lead to a shortage and...famine'.⁸⁹ In her manual, Williamson advised Africans that although 'there are many kinds of European foods in the stores and some of these, such as condensed milk and sardines, you like very much... they are expensive to buy and you should only buy them as a treat on very special occasions'.⁹⁰ She adds a cautionary note: 'Many [South Africans] have lived in towns for so long that they have forgotten many of their old good foods and prefer to eat less nourishing European kinds'.⁹¹

Despite their anxieties about African uptake of European food and habits, the Team did not hesitate to employ commodities as incentives to induce participation in their data collection activities.⁹² Common salt, then produced on the East African coast and imported from Portuguese East Africa,⁹³ facilitated the collection of anthropomorphic data at households: 'A pinch of salt helps in winning the co-operation of a fractious child and the mother is usually rewarded for her help with a small amount of salt', Platt wrote.⁹⁴ The Survey clinician observed, 'for salt, the children come up, have their gums examined'.⁹⁵ Salt as payment for research cooperation reprises a history of commodities like calico cloth, salt, and soap being paid as barter goods in exchange for African labour, including on Nyasaland's tea plantations.⁹⁶ In the early twentieth century, Malawian missionary Harry Kambwiri Matecheta distributed salt to those who attended his church services.⁹⁷ Whereas local salts and potashes made from ash from organic materials were produced by women to season and soften food during cooking, commodity salt (*mchere wa chizungu*, white people's salt, common salt) was a distinct colonial commodity purchased in penny-worths from Indian stores.⁹⁸ Dietitian Jessie Williamson noted that 'when an [African] man buys a bag of common salt for sale in the village, he will give all the villagers a pinch to taste before he starts to sell it'.⁹⁹ So too did anthropologists and colonial officials fixate on the less savoury cultural superstitions around salt, which continues to be seen as a dangerous vehicle for transmission of various sicknesses if used improperly or added to foods by a woman who is menstruating. Salt, like tea, was at once a commodity to be sold to Africans, a product through which discourses of racial anxiety manifested, and a dietary component to be measured and converted into data. As Platt instructed, 'Descriptions of cooking methods should include the nature of components in the preparation of a dish, the use of *common salt* and native 'pot ashes' ...'¹⁰⁰

⁸⁸Ibid, 51.

⁸⁹Ibid, 74.

⁹⁰Society of Malawi Reference Library and Archives (Box 028, Health). Jessie Williamson. A Handbook for Africans on the Elements of Nutrition with special reference to the foods of Nyasaland, 49.

⁹¹Ibid, 52.

⁹²Commodities like soap or sugar remain common incentives, gifts, or tokens of appreciation in field research projects carried out in present-day Malawi. C. Biruk, 'Ethical Gifts: An Analysis of Soap-for-Data Transactions in Malawian Survey Research Worlds,' *Medical Anthropology Quarterly* 31, 3 (2017), 365–384.

⁹³Ernest Gray, 'Notes on the Salt-Making Industry of the Nyanja People Near Lake Shirwa', *South African Journal of Science* XLI (1944), 471.

⁹⁴Berry and Petty, *The Nyasaland Survey*, 33.

⁹⁵Ibid, 287.

⁹⁶Hutson, 'Outline of the Early History', 42.

⁹⁷Harry Kambwiri Matecheta, *Blantyre Mission: Stories of its Beginnings* (Luviri Press, 2020), 13.

⁹⁸Jessie Williamson, 'Salt and Potashes in the Life of the Cewa', *The Nyasaland Journal* 9, 1 (1956), 82–7; NAM. M2/17/7. 'Responses by educated natives to questionnaires'.

⁹⁹Williamson, 'Salt and Potashes', 87.

¹⁰⁰Berry and Petty, *The Nyasaland Survey*, 26 (my emphasis).

Much as European commodities and foodstuffs captured the Team's attention, researchers were also preoccupied with backwards dietary practices they deemed to be of little nutritive value. Barker and Platt worried over earth eating, especially by African women and children, who allegedly ate mud from hut walls and ant hills in 'bits about the size of a lump of sugar', prompting them to request information from the Department of Agriculture about the composition of earths eaten by Africans.¹⁰¹ Earth or dirt eating has long been a preoccupation on the part of white people about Black people. Plantation physicians in the Caribbean feared it would weaken slaves on plantations, casting it as a racial pathology called *Cachexia Africana* (dirt eating). *Cachexia Africana* 'reinforced white fantasies of black bodily potential for slaves suffering from this complaint failed to meet the standard expectation of an idealised productive black body'.¹⁰² Coding the practice as backwards or pathological, given that it was observed to occur mostly in women and children, reinforced narratives like those in the Report on Colonial Nutrition about the inability of Black women to properly feed themselves or their children.¹⁰³ In the antebellum American south or in colonial Malawi, discourses about dirt-eating, which scholars have suggested was a sensationalised practice that occurred much less frequently than experts suggested, affirmed that Black people's bodies were peculiar, pathological, and in need of white care and intervention. In this regard, dirt and tea alike become gustatory idioms of difference, the former anchored in imaginaries of African backwardness and the latter hinged to a too-modern African.

Conclusion

'All that is needed is the desire on your part to be well fed and the will to carry out the necessary thought and work. If you have this desire and the necessary will power then you can feed yourself and your family well and help to breed a fine healthy race of Africans in Nyasaland'.¹⁰⁴

In her manual, Jessie Williamson encouraged Africans to find the willpower to feed themselves well. Her advice reduced nutrition to a bounded phenomenon, a set of processes of energy exchange contained in the body proper that an individual might manage well or poorly. Mind over matter, she emphasises. Such body-centric renderings of nutrition underpinned the entire Survey, which presumed that poor nutrition was a problem of Africans' ignorance, poor food choices, or inadequate farming practices. These assumptions rhetorically abstracted bodies, food, labour, and farming practices from their political, cultural, and economic surroundings. While metabolism was a central concern of the Survey Team, Megan Vaughan notes that the data they left behind inadvertently reveal that 'metabolism was more than calories in, calories out', more than a calculation of daily protein and energy expenditure.¹⁰⁵ Confining metabolism to the body overlooks how nutrition, calorie counts, or energy expenditure are

¹⁰¹Berry and Petty, *The Nyasaland Survey*, 292; David Silkenat, in his environmental history of slavery in the US South, notes that plantation owners were horrified by dirt-eating. He observes that the practice could have been a way for enslaved people to replace nutrients lost due to anemia caused by hookworm or provide calcium, magnesium, and iron deficient in the diets of enslaved people. David Silkenat, *Scars on the Land: An Environmental History of Slavery in the American South* (Oxford, 2022), 17–18. Williamson acknowledged that the practice could carry nutritional benefits: 'The reason that women and young children often like to chew ant earth is probably because they need the minerals, especially calcium, that they get from it'. She goes on to defend the practice, suggesting, 'it is very foolish to laugh at them when they do this'. Williamson's framing of the practice in these sentences reveals the complexity of team members' views on African nutrition; it is clear that while Williamson was confident that Africans would benefit from education in how and what to eat and, at times, trafficked in racialised idioms of difference, she also explicitly acknowledged that practices such as dirt eating and 'buying European foods', were 'not really their fault'. (Indeed, in the case of her discussion of Africans purchasing food from stores, Williamson seems at great pains not to blame them from this practice; the typed section of the manual contains penciled-in edits that appear to be an effort to ensure her words are not misread and taken to indict Africans without attending to the fact, for instance, that crowding in big towns disallows them to cultivate gardens). Society of Malawi Reference Library and Archives (Box 028, Health). Jessie Williamson. A Handbook for Africans on the Elements of Nutrition with special reference to the foods of Nyasaland.

¹⁰²Hogarth, *Medicalizing Blackness*, 85.

¹⁰³Committee, *Nutrition in the Colonial Empire—Part 1*, 98.

¹⁰⁴Society of Malawi Reference Library and Archives (Box 028, Health). Jessie Williamson. A Handbook for Africans on the Elements of Nutrition with special reference to the foods of Nyasaland, 57.

¹⁰⁵Vaughan, 'A colonial metabolism'.

entangled in larger colonial economies and exploitations and racial capitalism.¹⁰⁶ Hannah Landecker reminds us that human historical events and processes, including colonialism, materialise as biological events, processes, and ecologies.¹⁰⁷ Neither biology nor metabolism is contained in bodily packages.¹⁰⁸ Yet, the Survey's data practices reveal a preoccupation with bounding off the problem of African nutrition from its larger contexts, as apparent in their presumptions that the villages themselves were viable and comparable units of production and consumption.¹⁰⁹ They operated to isolate the African body as an object of study. Platt's makeshift tea-box adaptometer, for example, housed Africans in a dark experimental chamber, closing them off from the wider worlds to which they belonged, making them amenable to measurement and datafication. Likewise, the Survey aimed to reduce the complex determinants of good or bad nutrition into a dataset. Yet, the problem of African nutrition was not fully captured by the tools the Survey team devised or the data they collected.¹¹⁰ Further, as this article has shown, the team members brought their assumptions, racial taxonomies, and hierarchies of knowledge to their research encounters in the field, and those assumptions constituted the data points amassed (as with Berry's dismissal of performance data that indicated the health of children who, to the clinician's gaze, *looked unhealthy*). The fact that Platt built his device using a tea-box, rather than something else, shows how colonial science was an endeavour entangled with Nyasaland's imperial economies, the tea industry, in this case. As Science and Technology Studies (STS) scholars argue, attending to the *location* and situatedness of science is crucial to understanding how it comes to be.¹¹¹ Tea planters in Nyasaland, in concert with the colonial government, were busy promoting tea-drinking among Africans, the effects of which seeped into the Team's data about food and drink (wherein, e.g. they documented increasing numbers of teapots and scones in native households). Tea drinking was a semiotically rich practice; while it was natural that the British Survey team members would drink tea in the field, Africans drinking tea caused great alarm.

When I encountered Platt's peculiar DIY tea-box adaptometer in the Survey papers, I was struck by the care he took in constructing it and his dedication to recording, step-by-step, how future researchers might reconstruct it; in this way, the tea-box is a trace of a historical moment when nutrition research was transitioning from the laboratory to the field, and its practitioners' efforts to validate its status and data as scientific. Yet, the makeshift tea-box technology also points us towards the broader discursive universe of tea and tea drinking and the imperial economies in which colonial nutrition research took shape. This article contends that attending to the 'stuff' of scientific work has a methodological payoff: the makeshift adaptometer fashioned from a tea-box cued me to broader imperial and economic circuits, interests, discourses, and hierarchies that infused the data the Survey Team collected and the instruments they used in the field. This seemingly insignificant discarded tea-box that became part of the Survey's data collection infrastructure helps us home in on discourses, practices, and contexts crucial to the making of 'African nutrition' as a scientific problem 'steeped' in *tea*, as anxious discourse and commodity crop.

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¹⁰⁶ Abigail H. Neely, *Reimagining Social Medicine from the South* (Duke, 2021), 61–4.

¹⁰⁷ Hannah Landecker, 'Antibiotic resistance and the biology of history', *Body & Society* 22, 4 (2016), 21.

¹⁰⁸ M. Murphy, 'What can't a body do?' *Catalyst* 3, 1 (2017), 1–15.

¹⁰⁹ Brantley, *Feeding Families*, 110.

¹¹⁰ Brantley, *Feeding Families*.

¹¹¹ Livingstone, *Putting Science in its Place*; Haraway, *Primate Visions*; Raj, *Relocating Modern Science*; Schumaker, *Africanizing Anthropology*.

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