PLANNING RUBBER PLANTATIONS: TROPICAL PRODUCTION, MALARIA, AND THE MANAGEMENT OF LABOR IN BRITISH MALAYA, 1900-1942

JIAT-HWEE CHANG
National University of Singapore
e-mail: jiathwee@nus.edu.sg

ABSTRACT
This paper is a preliminary study of the planning and design of rubber plantation estates in British Malaya in early twentieth century. It focuses on design and planning of laborer housing in these rubber plantations. In this study, the planning of rubber plantation estates is understood in relation to various aspects of tropical production in British Malaya, particularly ecological transformations, malaria, estate sanitation and the management of laborers. This paper sees this history as significant because the planning of these rubber plantation estates could be understood as the tropical versions of the model company towns in the metropole. Like these model company towns, the planning and housing in these rubber estates could be regarded as pioneering efforts that preceded the town planning and housing initiatives in the larger public realm.

Introduction: Colonial Plantation and Tropical Production

Plantations are... a form of great landed estate, usually in colonial or semi-colonial countries... with a labouring class kept in economic if not political servitude... Plantations, are intimately bound up with colonial and imperialist conquest and exploitation.¹

As indicated in the above epigraph, the plantation economy was central to the British Imperialism. Robert Home has noted that the British Empire was established through “the ‘planting’ of colonies”² in overseas territories since the 16th century and the predecessor of the Colonial Office was simply called the Board of Plantation. This connection between colonialism and plantation suggests that, at the beginning, the colonies were predominantly involved in a particular mode of production - the plantation system.³

In tandem with the development of industrialization in the Europe and America, the colonial mode of production was subsequently expanded to include other forms of primary produces and raw materials, such as metallic ore and crude oil, for supplying Europe and America. As the colonies were largely located in the

tropics and since agricultural production thrived on the freely available natural resources of the abundant heat, water and light in the tropics, such a mode of production was also known as the tropical production (FIG. 1). According to Leo Amery, the British secretary of state for the colonies in the 1920s,

One of the most striking features of modern industrial development is the marriage of tropical production to the industrial production of the temperate zone. They are essentially complementary regions, and owing to their character and the character of their inhabitants they are likely to remain so.4

Amery articulated the above view to justify British development policy of not encouraging industrialization and diversifying the economy of the colonies, as the British wanted the tropical economy to be complementary, instead of competitive, to their industrial economy.

Fig. 1. Tropical production: A 1930s advertisement on Malaya showing rubber tapping and tin mining “contained” in a pineapple (Source: The Crown Colonist, April 1931)

From the political economic perspective, every mode of production has its own spatial implications, with the attendant social relations. Likewise, it has been argued that each mode of production also entails a specific mode of resource use, i.e. specific social relations to nature. This paper explores both the spatial implications and social relations to nature of tropical production in the context of British Malaya in the early twentieth century. Specifically, this paper examines the planning of rubber plantation estates and the housing of laborers in these estates in relation to issues surrounding environmental transformations, sanitation and the management of labor.

Rubber was British Malaya’s most important agricultural produce in the first half of the twentieth century. The rubber boom started in around 1900 and by 1915, rubber has already overtaken tin as Malaya’s most important export. From 1915 to 1941, the economic value of rubber exported was worth approximately 40% of Malaya’s total export and accounted for 80% of the volume of Malaya’s agricultural produce. While the social and economic history of rubber in Malaya has been extensively researched and written, the architectural and planning aspects of this history remained rather unknown. It is surprising given that rubber plantations covered a large proportion of Malaya’s colonial landscape. Besides the pervasiveness of rubber plantations in colonial Malaya, this study of the planning of rubber plantation estates is also significant for two additional reasons in the scholarship of planning and architectural history.

One, in the scholarship on tropical planning and architecture, tropical nature, in terms of climatic and other environmental conditions, is typically privileged as the prime determinant of the built environment, or at least that which differentiates tropical planning and architecture from the norm in the temperate North. Implicit in such an understanding is the assumption of tropical nature to be both immutable and external. Drawing on the scholarship on environmental history and politics that shows our understanding of tropical nature is contingent upon the social, cultural and political conditions, this paper argues that tropical nature is not immutable. Instead, tropical nature was socially constructed by medical theories and socio-cultural perceptions. Furthermore, this paper also argues that tropical planning and architecture do not just “respond” to external tropical nature in the sense understood in climate-responsive architecture. The interaction between tropical nature and the built environment is a lot more dynamic with the built environment

---

8 Only the planter’s bungalow has received some scholarly attention. See Peter Jenkins and Waveney Jenkins, *The Planter’s Bungalow: A Journey Down the Malay Peninsula* (Singapore: Editions Didier Millet, 2007). The larger design and planning of the estates and the coolie lines and housing have, thus far, been ignored.
transforming, if not producing, tropical nature in its immediate environs. This paper substantiates this point by examining how the clearing of virgin jungle to establish rubber plantation estates in early twentieth century British Malaya led to ecological changes in the landscape that in turn shaped the built environment.

The history of the planning of rubber plantation estates is also significant because some of the companies that established these plantations were the first multinational corporations that introduced advanced production techniques to the tropical world. Among those techniques included those of labor management and welfare, such as sanitary and housing provision. In metropolitan societies, those techniques were translated into pioneering town planning and housing initiatives, as evident in the model company towns and villages such as Lever Brothers’ Port Sunlight, Cadbury’s Bournville and the Town of George Pullman. This paper argues that some of the rubber plantation estates could similarly be understood as tropical version of early town planning and housing exemplars, situated in the context of the aforementioned tropical production. Attending to the history of these town planning and housing initiatives is significant given that very little was done by most British colonial states during the early twentieth century in tropical housing and town planning beyond the enclaves built for the European population in the colonies. The colonial medical expert Ronald Ross made a similar observation with regard to anti-malarial works in early twentieth century:

[T]he government of our tropical dependencies have never been able to allot large enough funds for any of such [anti-malarial] work on general scales. The great successes against malaria, namely, those in the Federated Malay States, in the Panama Canal Zone, and in the Suez Canal Zone, have all been effected by wealthy companies rather than by colonial administrations.

An example of a model plantation estate in the tropics was given in *Conquest of the Tropics*, a book published in the early twentieth century describing the tropical production of United Fruit Company in South and Central America, with

---

10 For a related understanding of architecture-nature relationship, see David Gissen, "Introduction. Territory: Architecture Beyond Environment," *Architectural Design* 80, no. 3 (2010).

11 Tully, *The Devil’s Milk*.


particular reference to their banana plantations. This book also features one of the earliest, if not the earliest, printed appearances of the phrase “tropical architecture”. In the book, “tropical architecture” refers to the company’s employee housing, for both the white managerial class and the colored immigrant laborers. These houses were surrounded by verandah and located in lushly landscaped gardens in the midst of a banana plantation cut out from “virgin tropical nature.” They were described as offering their residents both “vistas of tropical perfection” and “sanitary perfection.” (FIG. 2) The “sanitary perfection” was accomplished through medical and sanitary works undertaken by the Company in early twentieth century “in all of the proven expedients for eliminating tropical menaces to health.” They included draining the swampy grounds, oiling stagnant pools of water, building mosquito-proofed houses, and establishing a medical network of hospitals, dispensaries and sick-camps supported by medical personnel such as physicians, pharmacists and health inspectors. These measures helped to attain a very low mortality rate of less than 3 per cent of the plantations’ population.

![Image of tropical architecture](image.png)

Fig. 2. “Tropical architecture” offering both “vistas of tropical perfection” and “sanitary perfection.” (Source: Adams, Conquest of the Tropics, 1914)

### The Spatial and Ecological Implications of Rubber Boom

As noted earlier, every mode of production has its attendant spatial implications. The rubber boom in early twentieth century Malaya has a few important spatial implications at the macro-scale. First of all, plantation economy required cheap land and these cheap lands were typically located in “isolated frontier areas, far away from towns and mining settlements” in what

---

16 I am grateful to Anthony D. King for pointing this out to me. Ibid., 287.
17 Ibid., 272.
was originally virgin jungle. In order to turn the jungle into land for plantations, the jungle have to be imagined as wild and unproductive nature that should be ordered and converted into exploitable natural resources. That imagining of course has material consequences and in practice, it meant the penetration of state apparatus and colonial capital into the interior. The colonial state surveyed, mapped and turned the jungle into land parcels to be leased to the planters and their companies. There were also large scale ecological and environmental transformations when these plantation companies burnt and cleared the jungle of its original vegetation, and converted the ecologically diverse jungle into monocultural plantation (FIG. 3). Due to the loss of topsoil and the vegetation root systems that absorb rainwater, clearing the jungle increased surface water availability and created new breeding places for particular anopheline species that were vectors of malaria. As a result, there was an increase in the incidence and severity of malaria.

The clearing of jungle and the establishment of rubber plantations also brought about the attendant shifts in settlement patterns and transportation

---


Prior to the growth of rubber plantation economy, the extractive economy of tin mining in the west coast states of Perak, Selangor and Negri Sembilan had led to considerable transformation of Malayan landscape in the nineteenth century through the establishment of tin-mining towns and the supporting network of roads and railways that linked the inland tin mining centers to the coastal ports and administrative centers. The development of this transportation infrastructure, which was essential to Malaya’s tropical production and its integration with the world market, began in the 1870s after the British gained political control of these west coast Malay states. However, the transportation networks built during this phase were localized and disconnected. It was only at the turn of the twentieth century, after the consolidation of British rules in these western states through their federation in 1896 and the rubber boom, that the localized transportation networks were amalgamated and further extended through the construction of the north-south trunk line that linked Singapore to Butterworth. However, the transportation development was uneven – mainly restricted to the west coast of Malaya where the tin mines and rubber estates were concentrated while leaving the east coast states of the Malaya untouched (FIG. 4).

Fig. 4. Railway infrastructure, tin fields and rubber plantations in British Malaya, 1934 (Source: Kaur, “Indian Labour, Labour Standards, and Workers’ Health in Burma and Malaya, 1900-1940,” Modern Asian Studies 40 (2006): 425-75)

---

In his study of colonial India, Gyan Prakash argued that public works, especially railways and irrigation works, was a way to enframe, the Heideggerian word to describe the “setting upon”, and reconfigure the territory of India into a unified and productive colony. 24 Railway and road building in Malaya could be understood in a similar manner. The building of roads, railways and other infrastructure that would facilitate tropical production was also something that colonial development initiatives at that time encouraged. These initiatives were part of Colonial Secretary Joseph Chamberlain’s “constructive imperialism” to develop the “immense estate” of the British Empire in order to strengthen Britain economically and politically in face of imperial competition that prevailed among the great powers at the turn of the century. 25 Besides infrastructural development that had spatial implications at the macro-scale, Chamberlain’s colonial development initiatives also influenced colonial public health policies which in turn have important spatial implications in the planning of rubber plantation estates in Malaya.

Tropical Medicine, Malaria and Space

The other key aspect of Chamberlain’s colonial development initiatives was tropical medicine and the related practice of tropical sanitation. Among other things, Chamberlain established an advisory committee to the Colonial Office on tropical medicine and he helped to set up two schools of tropical medicine at the end of nineteenth century. Chamberlain also directed the various colonial governments to pay more attention to medical and sanitary issues in their respective colonies. 26 Experts in tropical medicine and sanitation such as Patrick Manson, Ronald Ross and William Simpson were also sent to different colonies, especially during the outbreaks of plague or malaria epidemic, to advise the colonial government on how to deal with these medical and sanitary issues. 27 All these contributed to certain advancements in colonial medical and sanitary practices that gradually brought about improvement in public health and the betterment of mortality rates. One of the most celebrated public health achievements in British Malaya was Malcolm Watson’s pioneering anti-malarial work at the turn of twentieth century. 28

---

27 Ronald Ross, Report of the Malaria Expedition to West Coast of Africa 1899 (Liverpool: Liverpool School of Tropical Medicine, 1900); W. J. Simpson, Report on Sanitary Matters in Various West African Colonies and the Outbreak of Plague in the Gold Coast, Presented to Parliament by Command of His Majesty (London: His Majesty's Stationary Office, 1909).
28 Malcolm Watson, Rural Sanitation in the Tropics: Being Notes and Observations in the Malay Archipelago, Panama and Other Lands (London: J. Murray, 1915); Malcolm Watson, “Twenty-Five Years of Malaria Control in the Malay Peninsula,” British Malaya 1, no. 9 (1927).
Watson's anti-malarial work was the first in the world to the anti-malarial methods Ronald Ross favored. Ross was of course the person who discovered the spread of malaria by anopheine mosquitoes. Ross noted during his 1927 trip to Malaya:

> Everybody has heard of the anti-malaria work done by Colonel Gorgas in the Panama Canal. That was a very successful and brilliant scheme but it comes after the similar work started by Sir Malcolm Watson in the F.M.S. [Federated Malay States].

Not only did Ross see Watson’s achievement as preceding that of the much lauded achievement of Gorgas at Panama Canal, Ross even regarded Watson’s achievement as greater than Gorgas’s because Watson succeeded with much less financial backing.

Ross had long considered mosquito reduction through the drainage and filling of the breeding grounds of mosquitoes - swamps, marshes and watercourses - as the most effective anti-malarial measure and he actively advocated the use of these methods in his various malaria expeditions organized by the Liverpool School of Tropical Medicine to Africa and other parts of the British Empire at the turn of the twentieth century. Ross’ recommendations arose from the considerations of a “practical sanitarian” who regarded the other anti-malarial measures - isolation, personal prophylaxis through the use of mosquito nets, the application of mosquito repellent and the use of quinine, and mosquito proofing through the screening of buildings - as too intrusive, prone to resistance, overly prohibitive in cost, or insufficiently effective. For Ross, it was also significant that mosquito reduction initiatives could be imposed top-down and be “effected by only a special organisation” consisting of sanitary experts, and unlike personal prophylaxis, removing the need to depend on the individual initiatives of the “more or less uncivilized” and unreliable natives.

Watson first carried out his anti-malarial works in Klang during 1901-3, when he was the District Surgeon. The works devised included the building of concrete drains, the filling in of swamps, the clearing of vegetation and the falling of trees to eradicate the breeding grounds of the anopheine mosquitoes. Watson subsequently left government service for private practice and advised rubber planters on anti-malarial measures. As Watson worked in different sites and terrains, he discovered that there were different species of carrier mosquitoes with different breeding habitats, ranging from sunlit streams, shade and brackish water of the coastal plains. Watson thus adapted his mosquito

---

29 “Sir Ronald Ross’s Praise,” *British Malaya* 1, no. 9 (1927).
30 “The Liverpool School of Tropical Medicine,” *African Affairs* 47, no. 189 (1948).
32 Words of Ross’ colleagues from the Liverpool School of Tropical Medicine, see H. E. Annett, J. Everett Dutton, and J. H. Elliot, *Report of the Malaria Expedition to Nigeria of the Liverpool School of Tropical Medicine and Medical Parasitology* (Liverpool: Liverpool University Press, 1901), 54.
prevention techniques accordingly, adding subsoil drainage, larvicidal oiling and the promotion of shade to those he devised at Klang.  

The above measures devised by Watson were soon adopted by other medical and sanitary experts, and they soon became the standard practice in the rubber plantations in Malaya and beyond. In terms of planning, Watson’s measures were especially pertinent to the siting of the buildings – mainly the manager bungalows and coolie lines – in a rubber plantation estate. In general, planters were advised to locate their buildings that house the manager(s) and laborers in a clearing far from ravines, swamps, cultivated areas and other places where anopheline mosquitoes breed or hide. These buildings should ideally occupy the middle of a circular clearing and ideally the radius of the circle should be beyond the flying range of the particular species anopheline mosquitoes in the area.  

There were also sanitary experts who argued that maintaining a clearing of certain minimum distance between the buildings and the vegetated areas, i.e. swamps and cultivated areas, would also ensure that the buildings and the laborers that inhabit them receive sufficient light, air and sunshine. It was even reasoned that “[i]n this country anophelines certainly avoid bright daylight and sunlight.” Thus, besides having the clearing to admit light, the buildings should also be well lit and even white-washed as “[i]t has often been noticed that anophelines are difficult to find in white-washed rooms whilst adjoining rooms that have not been white-washed they may be found in numbers.”  

**Estate Sanitation, Laborers’ Health and Space**

Besides mosquito prevention and destruction, which has limited spatial implications, Ross also advocated the building of Anglo-Indian bungalows and the policy of spatial segregation for the Europeans in Africa. During his first malaria expedition to Freetown, Sierra Leone, Ross, who spent much of his life  

---

37 Ibid., 124.  
in India, was surprised to find the Europeans there living in houses that were “small, crowded together, mixed with the houses of the townspeople, and built in the lowest part of the town.” He suggested that the Europeans in Freetown should follow the residential patterns of Europeans in India, who according to Ross “seem to have learnt by long experience how best to live in the tropics.” He further noted:

... their houses are as a rule specially adapted for tropical life - they are generally commodious, well-built, and surrounded by a large open area or “compound.” Undoubtedly this must assist in preserving the occupants from a great deal of fever. Gnats do not like airy, well-lighted rooms; while, if there is a large compound, infection cannot be easily carried from adjacent houses. Moreover, in India there is generally a separate European quarter, which is as a rule built on the most elevated site present.

Ross went on to recommend the relocation of all the Europeans in Freetown to a large plateau 1000 feet above sea-level. As a result of Ross' recommendations, a hill station about six miles away from Freetown was planned with a railway linking it to Freetown. Twenty-two “model bungalows” were built for government officials in 1904 and part of the hill station was also reserved for European merchants' houses.

When William Simpson was in the West Africa in 1909 to provide sanitary advices to deal with the outbreak of plague in the Gold Coast, he observed that many of Ross' anti-malarial recommendations had been adopted, including the policy to provide good bungalows for European officials in specially designated quarters segregated from the natives. It was a policy that was pursued not only in Freetown but also in other West African cities such as Accra, Calabar and Lagos. Simpson also emphasized the importance of the comfortable house. He remarked:

With the exceptions of attacks of malaria there are few things more depressing and irritating to the nervous system and destructive to health than having to reside in a hot and badly ventilated house. Broad verandahs, lofty ceilings, and careful planning of rooms to secure good through ventilation are requisites for a comfortable house in the tropics.

Despite the shift from the miasmatic theories of disease transmission to the germ theories of disease transmission and the discovery of the anopheline mosquito as the vector for malaria transmission, the general design principles for buildings advocated - “airiness" of rooms, openness to ventilation, adequate shading from tropical heat, and elevation from ground - remained largely the same as those designed based on miasmatic theories. Instead of rationalizing

40 Ibid.
41 Annett, Dutton, and Elliot, Report of the Malaria Expedition to Nigeria.
43 For miasmatic theories and how they shaped the design and planning of buildings, see Jiat-Hwee Chang, "Tropicalising Technologies of Environment and Government: The
these design features in terms of the miasmic theories as strategies to secure “pure” air, create an environment unfavorable to putrefaction and thus ensure the health of the inhabitants, they were understood as features to ensure the coolness and comfort of their European inhabitants. Not only was the architecture and urban form shaped by miasmic theories of disease transmission not challenged by the germ theories, they were in some ways in fact reinforced with the medical authority of the new theory.

Given that the bungalow was still regarded as the ideal building type for the tropics, it is perhaps unsurprising that the Anglo-Indian bungalow building type was adopted in the plantation estates to house the estate manager and other members of the management (FIG. 5). Even the laborer housing was quite different, it was also designed and planned with similar emphases. In colonial Asia, these hired native or immigrant laborers were called coolies, “a word of South Dravidian origin that came to have racist overtones.” In the early twentieth century and up until the mid-twentieth century, they were typically in coolie lines (FIG. 6), which was “a large building divided into single-room units,” each room housing three to four coolies. The building was typically rather rudimentary, “often the single room [was] windowless and a veranda the chief sleeping place.”

FIG. 5. An estate bungalow (Source: Wright and Cartwright eds., Twentieth Century Impressions of British Malaya, 1907)

44 Jenkins and Jenkins, The Planter’s Bungalow.
45 Tully, The Devil’s Milk, 246.
Many of the writings on estate sanitation in British Malaya included detailed recommendations on the design and planning of sanitary coolie lines and they mostly stressed the importance of light, air and ventilation. In one of the earliest by P. N. Gerrard, he emphasized the principle of placing as little as possible between the coolies and “God’s good fresh air” in order to secure good ventilation. As the drawings (FIG. 7) show, the coolie lines that Gerrard proposed featured “large expanse of roof,” especially jack roof for large spans, and partitions that have gaps near the floor and the roof, to facilitate cross ventilation. A few of Gerrard’s proposed models were also raised off the ground and featured verandahs. Furthermore, Gerrard proposed that the buildings be located on sites where there were sufficient forest clearing to allow for “proper circulation of air” around the buildings and also to secure enough sunshine, or what Gerrard called “nature’s greatest purifier.” Citing the 1894 Casier
Cities, nations and regions in planning history

Sanitaire of Paris, Gerard emphasized the importance of sunlight, noting that nothing to be “as murderous as the absence of the light of the sun.”

Plantation Economy and the Labor Problem

But the plantation was organised and operated for the benefit of the rubber companies, and workers were costed, not valued in the equation.

How should one understand the anti-malarial and other sanitary measures described above, and the attendant concern with the health of the coolies? One could of course see it as arising out of the colonial state and rubber planters' humanitarian concern for the welfare of the coolies. However, this paper would like to put forward another argument - that the concern with the health of the coolies should be understood as part of the colonial state and capitalists' management of labor.

In reviewing the medical and sanitary works undertaken by the United Fruit Company in their tropical plantations in South and Central America, an American sanitary expert described the underlying rationale as such:

The United Fruit Company realizes that its employees are producers of wealth, and that good health is necessary to enable them to work to the best advantage. Acting on this broad view, the company spends hundreds of thousands of dollars annually to preserve the health of its employees.

Everything is done in a business way.

In other ways, he was arguing that the United Fruit Company's concern for the health of the laborers and the attendant sanitary reforms and housing provision were driven primarily by economic calculations.

This rationale was also likewise reiterated by the sanitary experts dealing with estate sanitation in British Malaya. For example, Gerrard noted that his book was “to deal principally with the conditions of life of the coolie - the pawn upon whom the question of profits must to a large extent depend.” Another sanitary expert, E. N. Graham of the Malacca Rubber Plantations Limited, was even more explicit. He argued, “If [the estate manager] fails to protect the health of his labour force, it will be costly, inefficient and discontented… it is a simple fact that the coolie means cash, and every day in hospital involves a double loss.”

These concerns for the health of the coolies were entirely understandable given the labor problems the rubber plantations in Malaya faced. As it has been noted

50 Cited in Adams, Conquest of the Tropics, 285.
51 For a recent account of how United Fruit Company monopolized the banana market in the early twentieth century through imperialisic practices, see James Wiley, The Banana: Empires, Trade Wars, and Globalization (Lincoln: University of Nebraska Press, 2008), 3-34.
52 Gerrard, On the Hygienic Management of Labour in the Tropics, 1.
53 E. N. Graham, Planter's Medical Guide (Singapore: Kelly & Walsh, 1913), ii.
elsewhere, besides cheap land, plantation economy depended on cheap labor. As the indigenous population of Malaya preferred their subsistence agriculture over toiling in the plantations for very low wages, the colonial plantation economy had to rely on immigrant laborers from India and, to a lesser extent, China. One of the recurring problems in this long history of immigration of laborers was to ensure and maintain a constant supply of cheap healthy laborers. This problem surfaced as early as the nineteenth century. For instance, in 1890, a Commission was appointed to enquire into "the state of labour in the Straits Settlements and Protected Native States, with a view to devising a scheme for encouraging immigration and thereby supplying the demand for labour." That commission, established in response to the shortage of laborers in the European owned plantations, found instead in its inspection of the plantations, the insanitary and overcrowded conditions in which the estate laborers lived. In response, the commission recommended that minimum floor area and cubic space per adult be stipulated to regulate the estate laborers' accommodation, and they also recommended the regular inspection of plantations to curb labor abuse. These recommendations were incorporated into 1891 The Chinese Agricultural Labourers' Protection Ordinance.

The shortage of laborers became especially acute at the turn of the twentieth century with the rubber boom, when there was a sharp increase in demand for cheap laborers. That shortage was further exacerbated in 1906 with the outbreak of cholera that prevented the landing of immigrant laborers. Furthermore, there was apparently intense competition in the recruitment of South Indian laborers from the other developing economies. The 1907 Planters' Association Report was to advise its members: 

... it is to be hoped that every employer of labour in the Federated Malay States will help towards the common sense, by doing all in his power to make this country popular with the cooly, and, once the fact is generally known in India, that this is a country where good money is to be earned, and where individual coolies are well looked after, it is to be trusted that a constant stream of immigrants will set in, which will never stop until all our wants are satisfied.

The crisis also led to the introduction of the Tamil Immigrant Fund Bill in 1907, in which employers of Indian laborers, including the colonial government, were to contribute to a fund that would be used for establishing a recruitment network in India, covering the expenses of transporting the Indian laborers to Malaya, and also taking care of the welfare of the Indian laborers when they were unemployed or when they became decrepit. The prime objective of the

55 Tully, The Devil's Milk.
58 Roles, "Rubber Development in Malaya."
60 "Recruitment and Care of Labourers in Malaya," an address by E. W. F. Gilman, former Controller of Labour, Malaya, in PRO CO888/1, Colonial Labour Committee.
bill was of course to secure a constant supply of Indian coolies for the plantation estates. Due to the shortage of laborers and the extra cost incurred to secure their supply, the health and welfare of the laborers, especially how they affect the laborers’ efficiencies, became much more pertinent concerns of the estates owners. In 1910, a committee that included Watson was formed to look into the question of estate sanitation and a report was submitted in 1911 leading to the passing of the Estate Laborers (Protection of Health) Ordinance. Among other sanitary recommendations, the ordinance specified that coolie lines and hospitals erected in plantation estates should be in accordance to approved type designs issued by the colonial government, and it also provided specific anti-malarial measures in the planning of the estates.

The coolie lines proposed by Gerrard that was discussed earlier is an example that conformed to the requirements of the Ordinance. The 1911 Estate Laborers Ordinance was subsequently modified by replaced by other ordinances that stipulated even more stringent sanitary and space criteria that the planters had to meet. The various ordinances could perhaps account for the emergence of model estates in the 1920s and 1930s. One of them was the Ladang Geddes Estate in the Negri Sembilan state of Malaya. It was owned by Dunlop Rubber, one of the largest rubber companies in Malaya, if not the world. Dunlop also controlled the largest planted area in Malaya. Ladang Geddes Estate was described as “a paradise for Tamils” as its housing for the Indian laborers consisted not of coolie lines but of small detached houses with gardens for the coolies to grow their own crops. By 1940, the “back-to-back room type of [coolie] lines” was almost entirely replaced by cottage houses or the “detached villa type” of housing. The transformation reflected the fact that most plantation workers at that time were unlike before no longer unmarried men. By 1940, more than two-third of an average estate population consisted of families. These improvements in housing provision and welfare could perhaps be also understood as responses to the labor unrests in late 1930s.

---

63 “Full Table of Dunlop Estates,” The Straits Times, 15 December 1933.
64 “Improvement of Estate Coolie Lines: New Type of Family Cottage,” The Straits Times, 27 April 1940.
REFERENCES


“Full Table of Dunlop Estates.” The Straits Times, 15 December 1933.


Gerrard, P. N. “Concerning the Medical Management of Coolies in Malaya, with an Appendix of Plans and Estimates.” Agricultural Bulletin of the Straits and Federated Malay States 6, no. 3 (1907): 71-90.


“Improvement of Estate Coolie Lines: New Type of Family Cottage.” The Straits Times, 27 April 1940.


PRO CO888/1. *Colonial Labour Committee*.


Ross, Ronald. *Report of the Malaria Expedition to West Coast of Africa 1899.* Liverpool: Liverpool School of Tropical Medicine, 1900.


"Sir Ronald Ross's Praise." *British Malaya* 1, no. 9 (1927): 244.


