

**A MEDICAL HISTORY OF PULAU PINANG, 1900-1957, WITH  
SPECIAL ATTENTION TO MALARIA, TUBERCULOSIS AND  
LEPROSY**

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**FACULTY OF ARTS AND SOCIAL SCIENCES  
UNIVERSITY OF MALAYA  
KUALA LUMPUR**

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LEPROSY**

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**THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS  
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## ABSTRACT

This study has been analysed against the broad historical framework of British Colonial Administration period from 1900-1957. The purpose of this research is to examine the medical history in the state of Pulau Pinang, which consist of Penang Island and Seberang Perai. This research will focus mainly on three infectious diseases, namely malaria, tuberculosis and leprosy during the British Colonial Administration period. This research defines the role of the British Colonial Administration and the Department of Health in providing healthcare services and helping to resolve problems caused by infectious diseases, mainly malaria, tuberculosis and leprosy in Pulau Pinang during that period. This study uses the historical research method. The discussion in the thesis will be based on qualitative research in which a thematic and descriptive/analytical approach will be used. For primary data, all data that compatible with this study was assimilated with the other primary data to form a new stronger fact. Secondary resources used as support to the existing data after selecting the compatible secondary material. This research shows that the British Colonial Administration faced many challenges in the prevention, treatment and cure of infectious diseases such as malaria, tuberculosis and leprosy in Pulau Pinang from 1900 to 1957. Despite this, the Colonial Government reduced the death rates and cured the patients who were affected by those diseases. This success was attributed to the good working relationship and coordination that existed between the Colonial Government, the local authorities and the non-profit organisations which helped towards the prevention and eradication of these diseases in Pulau Pinang.

## ABSTRAK

Kajian ini membincangkan sejarah kesihatan di Pulau Pinang sewaktu era pentadbiran Inggeris antara tahun 1900 hingga 1957 iaitu dengan memfokuskan kepada tiga jenis penyakit berjangkit utama iaitu penyakit malaria, batuk kering dan kusta. Kajian ini cuba meneliti peranan yang dimainkan oleh pihak Inggeris dan Jabatan Kesihatan dalam usaha menyediakan perkhidmatan kesihatan dan menyelesaikan masalah kesihatan yang berpunca daripada penyakit berjangkit yang terdiri daripada penyakit malaria, batuk kering dan kusta khususnya di Pulau Pinang. Dalam kajian ini, kaedah kajian yang dilakukan adalah menggunakan pendekatan penyelidikan sejarah. Perbincangan dalam kajian ini adalah berdasarkan kaedah penyelidikan kualitatif dengan mengguna pakai kaedah *thematic* dan diskriptif/analitikal. Bagi data-data yang menggunakan sumber primer pula, setiap data yang sesuai dengan kajian diambil dan disesuaikan dengan data-data primer yang lain bagi membentuk satu fakta yang lebih kukuh. Sumber-sumber sekunder turut digunakan bagi menyokong data-data yang sedia ada. Secara keseluruhannya, kajian mendapati bahawa pentadbiran Kolonial Inggeris telah menghadapi pelbagai dalam usaha pencegahan, rawatan dan penyembuhan penyakit berjangkit seperti malaria, batuk kering dan kusta di Pulau Pinang antara tahun 1900 hingga 1957. Namun begitu pihak Inggeris telah berjaya menurunkan kadar kematian akibat penyakit berjangkit tersebut melalui rawatan yang dilakukan ke atas para pesakit. Kejayaan ini disebabkan hubungan dan koordinasi yang baik antara pentadbir Kolonial Inggeris dengan kerajaan tempatan dan organisasi sukarelawan yang banyak membantu dalam usaha pencegahan, rawatan dan menghapuskan penyakit malaria, batuk kering dan kusta di Pulau Pinang.

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## LIST OF SYMBOLS AND ABBREVIATIONS

BCG	-	Bacillus Calmette–Guérin
BCA	-	British Colonial Administration
BHT	-	Benzene hexachloride
BM	-	Bukit Mertajam
BRCS	-	British Red Cross Society
CO	-	Colonial Office
CMO	-	Chief Medical Officer
DC	-	District Council
DO	-	District Officer
DDT	-	Dichloro-diphenyltrichloroethane
EIC	-	East India Company
E & O	-	Eastern and Oriental
MRC	-	Medical Research Council
FMS	-	Federated Malay States
GH	-	General Hospital
IMR	-	Institute for Medical Research
LMS	-	Licentiate in Medicine and Surgery
MAPTB	-	Malayan Association for the Prevention of Tuberculosis
MCA	-	Malayan Chinese Association
MO	-	Medical Officer
NPO	-	Non-Profit Organisation
PAS	-	Para-animosalicylic acid

PJ	-	Pulau Jerejak
PMC	-	Penang Municipal Council
PMP	-	Penang Medical Practitioner
PPWPTB	-	Penang and Province of Wellesley for the Prevention of Tuberculosis
SEA	-	Southeast Asia
SS	-	Straits Settlements
TB	-	Tuberculosis
UNICEF	-	The United Nations Children's Fund
WW1	-	First World War
WW2	-	Second World War
WO	-	War Office
WHO	-	World Health Organisation
YMCA	-	Young Men's Christian Association
YWCA	-	Young Women's Christian Association



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# CHAPTER 1

## INTRODUCTION

### Introduction

Penang Island (Pulau Pinang) was founded by the East India Company in 1786 by Francis Light after negotiation with the Kedah government to allow Britons to stay in Pulau Pinang and to develop Pulau Pinang as a trading port.<sup>1</sup> According to Nordin Hussin, Pulau Pinang was vital for the East India Company, and was used as a port for English trading ships to trade tea from China and India.<sup>2</sup> The establishment of the port in Pulau Pinang allowed the British to dominate and control the straits of Malacca which is one of the world's busiest trading routes between the east and the west.<sup>3</sup>

Many a time, historians working on the colonial history of Malaysia have had a tendency to look at political and social aspects, leaving studies like medical history in the lurch. One general statement, which is undebatable, given by historians, is the lack of sources that has caused this line of enquiry to be understudied. However, it is noticeable that even when sources are abundantly available, historians have difficulty in moving out of their comfort zone.<sup>4</sup>

Understanding the history of medicine involves many challenges. Over the years, medicine has undergone many changes owing to its nature and causes, and the meaning that it embodies.<sup>5</sup> As a result of human development in ideas and practices, medicine has undergone immense changes, and diseases have been conceptualised disparately.<sup>6</sup>

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<sup>1</sup> Barbara Andaya Watson dan Leonard Y. Andaya, *A History of Malaysia*, New York: Macmillan Press limited, 1982, p.107.

<sup>2</sup> Nordin Hussin, *Trade and Society in the Straits of Melaka, Dutch Melaka and English Penang, 1780-1830*, Singapore: NUS Press, 2007, p.69.

<sup>3</sup> Ibid. p.5.

<sup>4</sup> Ibid.

<sup>5</sup> Roy Porter, "Hospitals and Surgery", in Roy Porter (Ed.), *The Cambridge History of Medicine*, England: Cambridge University Press, 2006, pp. 11-13.

<sup>6</sup> Ibid. p.69.

Since the time of human beings first congregating in large numbers, we have been fighting against diseases. Evidential reports on such strategies have been found in the Egyptian and Mesopotamian records of 1000 BC, Indian records of 750 BC, Greek records of 500 BC and Chinese of 100 BC.<sup>7</sup> Regarding the Egyptians, many of their papyrus<sup>8</sup> records dating back to 1600-1500 BC talk of the making and usage of medicine and drugs.<sup>9</sup> But the Swiss physician Theodore Zwinger<sup>10</sup>(1533 – 1588) asserts that the earliest medicine for treating diseases can be traced right back to the ancient Greeks.<sup>11</sup>

Although his assertions, based on historical fictions (Greek gods healing diseases), is debatable, it is nevertheless accepted that the origin of medicine in Greece remains essentially true.<sup>12</sup> Discussion on medicine has been found in the *Hippocratic Corpus*<sup>13</sup> written by Hippocrates (460-375 BC) in 410 BC. The text shows that Greek medicine developed independently from that of other neighbouring civilisations. Other civilisations such as the Babylonian, Macedonia, Indian and Chinese were making their own mark in developing medicine in ancient times. Before modern medicine emerged, humans survived by battling communicable or venereal diseases or succumbing to them, and those who did survive waited for the next visitation or remained immune to it.<sup>14</sup> In many cases, the pathogens causing the disease normally searched for the next host, passing on the diseases.<sup>15</sup>

Medicines were administered to lessen the suffering of the patients, and to lessen the violence of their diseases. Medicinal administrations were stopped when patients were overcome by their diseases and when medicine thus becomes powerless against that disease.<sup>16</sup> Modern medicine has now become more developed and is unrivalled in treating

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<sup>7</sup> Vivian Nuton, "The Rise of Medicine", in Roy Porter (Ed.), *The Cambridge History of Medicine*, p. 122.

<sup>8</sup> Papyrus is a material prepared in ancient Egypt from the pithy stem of a water plant, used in sheets throughout the ancient Mediterranean world for writing or painting on and also for making articles such as rope.

<sup>9</sup> Miles Weatherall, "Drug Treatment and the Rise of Pharmacology", in Roy Porter (Ed.), *The Cambridge History of Medicine*, England: Cambridge University Press, 2006, p.84.

<sup>10</sup> Theodore Zwinger the Elder, (2 August 1533 – 10 March 1588) was a Swiss physician and humanist scholar. He made significant contributions to the emerging genres of reference and travel literature. He was the first distinguished representative of a prominent early modern Basel academic family.

<sup>11</sup> *Ibid.*

<sup>12</sup> CO 927/446, Medical Research Malaya: Brief for Visit of Mr Manson, Colonial Office to South East Asia, the National Archives, UK, 1956, p. 16.

<sup>13</sup> *Ibid.* p. 8.

<sup>14</sup> Kenneth F. Kiple, "The History of Disease," in Roy Porter (Ed.), *The Cambridge History of Medicine*, p. 14.

<sup>15</sup> RCP/ RC/ 591/ 47, Infectious Disease, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 18.

<sup>16</sup> *Ibid.*

diseases because of massive scientific advancement. "Illnesses once incurable, symptoms once unmanageable and conditions once untreatable have succumbed to the application of knowledge about the body and its workings".<sup>17</sup>

When the British first arrived in Pulau Pinang, the administrators realised that there were no modern facilities in terms of administration, technology and medical amenities. Thus, along with the development of administration and technological facilities like railways, the British also took on the responsibility for establishing modern medical services in Pulau Pinang.<sup>18</sup> Malaria was the largest cause of death in Pulau Pinang. This was obvious from 1900 to 1942, during which time one third of all deaths before the Second World War were caused by malaria. Tuberculosis was recorded as the second largest cause of death in Pulau Pinang during that period. Besides that, malaria and tuberculosis had a significant social and economic impact on the peoples in Pulau Pinang from 1900 to 1957.<sup>19</sup>

Tuberculosis was the most serious disease in the Federation of Malaya after the Second World War until the end of British colonisation, and it increased vehemently in towns due to overcrowded living. Many of the tuberculosis patients were reported to have been admitted to sanatoria, and by the end of colonialism, tuberculosis was the largest cause of mortality.<sup>20</sup> In particular, by 1957, there were as many as 25% cases of tuberculosis among children below the age of 5 years; 50% were children between the age of 6 to 10 years; and 75% among children from 11 to 15 years. Tuberculosis is seen as an urban disease as it was related to the epidemic case during the industrial revolution in England. However, tuberculosis had equally affected those in the rural areas of Pulau Pinang as well. All rich and poor, and all ethnic races like the Malays, Chinese, Indians, and aboriginals were affected by tuberculosis.<sup>21</sup>

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<sup>17</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Arkib Negara Malaysia, Kuala Lumpur, p.14.

<sup>18</sup> Arnold Wright and H. A. Cartwright, *Twentieth Century Impressions of British Malaya: Its History, People, Commerce, Industries, and Resources*, London: Lloyd's Greater Britain Publishing Company Limited, 1908, p. 36.

<sup>19</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.8.

<sup>20</sup> *Ibid.* p. 10A.

<sup>21</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p. 10A.

Table 1.1 illustrates the number of Tuberculosis cases, number of deaths and comparative mortality indices from 1947 to 1957 registered in the Federation of Malaya. Based on the table, 7,608 new cases of tuberculosis were reported, out of which 3,818 succumbed to the disease in 1947. The number of new cases gradually rose to 9,196 in 1957, but the number of deaths gradually reduced to 1,257 during the same year.<sup>22</sup>

**Table 1.1** Number of Tuberculosis Cases, Number of Deaths and the Comparative Mortality Indices, 1947 to 1957.

Year	Cases Notified	Number of Deaths	Death rate per 100,000 population
1947	7,608	3,818	77
1948	7,434	3,515	70
1949	7,512	3,305	65
1950	8,246	3,109	59
1951	9,761	2,873	54
1952	6,929	2,252	41
1953	7,921	1,780	31
1954	6,929	2,252	41
1955	8,653	1,526	25
1956	8,528	1,297	21
1957	9,196	1,257	20

Source: A.A. Cameron, *Federation of Malaya, Annual Report for the Medical Department for the year of 1957*, Medical and Health Department, Kuala Lumpur, 1957, p.31.

Regarding leprosy, it has become obvious that research on this disease in Pulau Pinang has been only minimally undertaken as not many historians have researched the problems of leprosy in Pulau Pinang during British colonial administration, even though Pulau Jerejak Leper Camp hospital was once a regional treatment centre for leprosy patients in the Straits Settlements.<sup>23</sup>

Finally, we cannot say that these three diseases are not relevant to our current society. There are evidences of cases of these diseases until the present day, and a study of successes and failures of the prevention and treatment for these diseases can certainly be useful, even

<sup>22</sup> Ibid.

<sup>23</sup> MED/PG/601/55, Rural District Council Province Wellesley North, Perubatan dan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p. 7.

now. Such diseases were addressed by financing research activities to find cures, setting up infrastructures and transports, and other approaches. Research funding came in the form of 'Medical Research Grants to Malaya from Colonial Welfare and Development Funds'<sup>24</sup> during the last part of the British colonial rule in Malay federation states.<sup>25</sup>

The first Hospital in Pulau Pinang was built in 1812 in Farquhar Street (currently Hotel E & O) by the East Indian Company. Initially, treatments were only given to British officials.<sup>26</sup> The General Hospital building dates back to 1882 and cost \$90,997, which was donated by rich Chinese merchants - among them both the Ghee Hin and Tua Pek Kong Kongsis in 1879. The Ghee Hin Society further donated the land on which the hospital stands. During this period, the hospital was recorded to have treated 300 patients a year.<sup>27</sup> At that time, there was racial segregation. As a result, Europeans and non-Europeans had separate wards.<sup>28</sup>

This was followed by the setting up of Lock Hospital, Pauper Hospital, Leper Hospital, Gaol Hospital, Butterworth Hospital, Bertam Hospital, Bukit Minyak Hospital, Sungei Bakap Hospital, etc. After the Second World War, the Medical Department Annual Report for the year of 1947 suggested that health facilities and services were extended to the population of Pulau Pinang. This is evidenced by ten general and district hospitals in Penang Island and Seberang Perai.<sup>29</sup>

A Rural District Council was established to work on Penang Island and Seberang Perai; and the body which was responsible for health and medical issues was the Pulau Pinang Health Department that operated in states. In the process, authority was distributed between the Federal Government and the State. Pulau Pinang Health Department, Hospital Besar, Maternity Hospital and Pathology Department were under the authority of the Federal

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<sup>24</sup> Provided £5M for development and £500,000 for research in 1941. The financing was increased in 1946 to £120 million for all purposes to be spent between 1946 and 1951.

<sup>25</sup> CO 953/2/1, Penang and Singapore municipalities: position of London agents, Colonial Office, the National Archives, p. 13.

<sup>26</sup> T. G. Yeoh, *Penang through old postcards*, Georgetown: the Phoenix Press Sdn Bhd, 1986, hlm. 45.

<sup>27</sup> Ong Hein Teik, *To Heal the Sick: The story of healthcare & Doctors in Penang 1786-2004*, The Penang Medical Practitioners' Society, Georgetown: Diamond Jubilee Magazine, 2004, p. 2.

<sup>28</sup> Ibid.

<sup>29</sup> INF.P144, List of Health Centres in Penang & Province Wellesley, Jabatan Penerangan, Arkib Negara Malaysia, Cawangan Pulau Pinang, p.19.

Government, while the District Hospital, Health Clinic and other Organisations or Health Institutions were under authority of the State Government.<sup>30</sup>

Welfare organisations and non-government health care providers like the British Red Cross Federation and the Christian Missionary Societies (the Seventh-day Adventist Church, the Methodists, and the Catholic Federation) helped to eradicate dangerous diseases and to improve Pulau Pinang residents' health standards as a whole.<sup>31</sup> By the close of colonialism in the 1950s, the colonial administrators also started to give attention to mother and child healthcare facilities. Although a Maternity Hospital through the instigation of Dr. Park was opened in 1915 in Pulau Pinang, there was not much interest in these facilities until the 1950s.<sup>32</sup>

According to Lenore Manderson,<sup>33</sup> the neglect of women and child healthcare facilities in the colonial period in Pulau Pinang was not something new.<sup>34</sup> In fact, during the colonial days across the world in the 19th and early 20th century, women and children received little attention from colonial government since they played no obvious economic role to the colonialists.<sup>35</sup> But by the turn of the 20th century and by the time the World Wars broke out, saving children's lives and their mothers' was seen as necessity since repopulating the man-force was seen as indispensable to the country as well as to the colonialists.<sup>36</sup>

During the late 18th century, a well know historian, A. D. Frederickson, in his book *To the Orient* reported that the Malays make up the majority of the population in Pulau Pinang. As proof, in 1788, two years after the British East India Company established Pulau Pinang in 1786; there were only 1,000 people living in Pulau Pinang, and Malays were the majority.<sup>37</sup> However, the huge influx of immigrants into Pulau Pinang from the end of 19th

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<sup>30</sup> Margaret Adams, *Penang Illustrated Guide*, Penang: The Municipal Council of Georgetown, 1952, p.15.

<sup>31</sup> MED/PG/601/55, Rural District Council Province Wellesley North, Perubatan dan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p. 6.

<sup>32</sup> Ibid.

<sup>33</sup> Lenore Manderson is an Australian medical anthropologist. She is Professor of Medical Anthropology in the Faculty of Medicine, Nursing and Health Sciences, and the School of Political and Social Inquiry, Faculty of Arts, at Monash University, Australia

<sup>34</sup> Lenore Manderson, *Sickness and the State: Health and Illness in Colonial Malaya, 1870-1940*, Cambridge: Cambridge University Press, 1996, p.12.

<sup>35</sup> Ibid. p.29.

<sup>36</sup> Ibid. p.30.

<sup>37</sup> James Low, *the British Settlement of Penang*, London: Oxford University Press, 1972, p. 186.



until middle of the 20th century not only changed the demographic and race structure in Pulau Pinang but also had a significant impact on healthcare and health services there too. The research below will focus on the medical history of Pulau Pinang with particular reference to three infectious diseases, namely malaria, tuberculosis and leprosy, from 1900 to 1957 during British Colonial Administration.

### **Research Questions**

1. What was the role of the British colonial administration and the Department of Health in providing healthcare services and resolving problems of infectious diseases such as malaria, tuberculosis and leprosy in Penang Island and Seberang Perai between between 1900 to 1957?
2. How effective were the prevention measures taken to overcome cases of malaria, tuberculosis and leprosy in Penang Island and Seberang Perai from 1900 to 1957?
3. What was the role of non-profit organisations in the process of treatment and prevention of malaria, tuberculosis and leprosy in Penang Island and Seberang Perai during British colonial administration period from 1900 to 1957?
4. How important was the isolation and treatment of tuberculosis and leprosy patients in quarantine camps in Pulau Jerejak Island and what were the conditions and the nature of the hospital treatment received in the quarantine camps?

## **Research Objectives**

1. This research analyses the role of the British colonial administration and the Department of Health in providing healthcare services and resolving the problems of infectious diseases such as malaria, tuberculosis and leprosy in Penang Island and Seberang Perai between 1900 and 1957. This research will reveal the role of the British colonial administration and the Department of Health in providing healthcare services and helping to resolve problems presented by infectious diseases, specifically malaria, tuberculosis and leprosy.

2. This research will investigate the effectiveness of the prevention measures taken to overcome malaria, tuberculosis and leprosy in Penang Island and Seberang Perai. There were many measures carried out by the British colonial administration, the local authorities and non-government organisations, to prevent the spread of malaria, tuberculosis and leprosy in Penang Island and Seberang Perai during the British colonial administration from 1900 to 1957.

3. This research identify the role of the non-profit organisations in the process of treatment and prevention of malaria, tuberculosis and leprosy in Penang Island and Seberang Perai during British colonial administration period from 1900 to 1957. The importance of non-profit organisations such as the British Red Cross Society, the Association for the Prevention of Tuberculosis (Penang Island and Seberang Perai) and other non-profit organisations involved in the prevention, treatment and cure of malaria, tuberculosis and leprosy will be analyses in this research.

4. This research will also analyses the isolation and treatment of tuberculosis and leprosy patients in quarantine camps in Pulau Jerejak Island. This research will explain the

importance of two quarantine camps for tuberculosis and leprosy patients on the island of Pulau Jerejak and discuss their roles as a treatment centres for these patients.

### **Importance of Research**

With the lack of attention previously given to the history of medicine in Pulau Pinang, this research is expected to be an important source of reference and should provide information for researchers, academics and students concerning leprosy, malaria and tuberculosis in Pulau Pinang during the British Colonial Administration from 1900 to 1957.

The focus of this research is taken from a broad perspective and includes reference to many government documents and books written about healthcare and infectious diseases during the British Colonial Administration. Seldom did they acknowledge the role played by non-profit organisations, local doctors, native leaders and local people in contributing to medicine and healthcare in Penang Island and Seberang Perai. References to their roles, efforts, sacrifices and dedication to serving and helping their people in their community and nation, aimed at solving health problems have been very limited in historical records.

This research will reveal the contribution of every party, including the government hospitals, non-profit organisations, Malay Kampong Chief (Ketua Kampong), Islamic leaders, Malay district officers, and the role of women in overcoming the problems of health in Pulau Pinang. This research will be fair and will investigate the problems of malaria, tuberculosis and leprosy in Pulau Pinang from a broad perspective.

Finally, this study is the first research concerning infectious diseases in Pulau Pinang during British Colonial Administration from 1900 to 1957, and will provide guidance for researchers and ideas for new directions of investigation concerning the history of medicine in Pulau Pinang during this period. This study will contribute to a better understanding of health problems and infectious diseases such as malaria, tuberculosis and leprosy in Penang Island and Seberang Perai under British Colonial Administration from 1900 to 1957. This

research is expected to add on to the reading sources and be an important reference source for historians, scholars, government officials and members of the public concerning the medical history of Malaysia during British Colonial Administration from 1900 to 1957.

### **Scope and Limitation of Study**

With regards to its scope, focus will be given to the medical history of Pulau Pinang with particular reference to three infectious diseases, namely malaria, tuberculosis and leprosy, from 1900 to 1957 during British Colonial Administration. Pulau Pinang was an important leper treatment centre when Pulau Jerejak Leper Camp was established in 1871, as it became the major treatment centre for leper patients from the Straits Settlements until 1930, when Sungai Buloh Leper Settlement was opened. In addition, the establishment of the Tuberculosis Hospital in Pulau Jerejak made it the main treatment centre for tuberculosis patients in the north of the Malay Peninsula from 1930s to 1942.

Consequently this research will have a time period from 1900 to 1957. In this case on the medical history of Pulau Pinang with particular reference to three infectious diseases, namely malaria, tuberculosis and leprosy and will concern itself with the period after the beginning of the 20<sup>th</sup> Century (1900) until independence of the Federation of Malaya on the 31<sup>st</sup> August, 1957.

This research will focus on Pulau Pinang, one of the northern states of the Malaya Peninsula which includes the island of Penang and Seberang Perai in the north of Malaysia today. During the Japanese Occupation of Pulau Pinang (19th December 1941 to 12th September 1945), since there was a lack of government documents in English concerning medical history of Pulau Pinang during this period, any attempt to evaluate the problems of health and infectious diseases will depend on the limited content and availability of such documents.

## Literature Review

The majority of the books and publications concerning the medical history of Malaysia were obtained from the research writings of both local and foreign writers. Such research writings were published as books, articles and journals. As well as these, there were non-published writings on the subject in the form of numerous academic theses. However, publications on the medical history of Pulau Pinang are very limited and a lack of research was identified about infectious diseases such as malaria, tuberculosis and leprosy during the period covered by this study.

The dearth of academic literature on the medical history of Pulau Pinang, 1900 to 1957 triggered the establishment of this thesis. However, there are numerous researches on the medical history in other parts of the world which are recorded in three internationally well-known books pertaining to the history of medicine. These books were published by the University of Cambridge Press and are available for reference, to any researcher or academician who wants to do a study on the 'history of medicine'. These books are *The Cambridge Illustrated History of the British Empire, Part of Cambridge Illustrated Histories*, of which the editor was P. J. Marshall, and published in 1996 by the Cambridge University Press,<sup>38</sup> *The Cambridge Illustrated History of Medicine, Part of Cambridge Illustrated Histories*, edited by Roy Porter, published by University of Cambridge Press in 2001<sup>39</sup> and *The Cambridge History of Medicine*, also edited by Roy Porter and published in 2006 by Cambridge University Press. These books focus on the history of medicine in the United Kingdom, Europe and its colonies, during the British empire and its occupation of commonwealth nations. The subject matter of books focuses mainly on the history of medicine, healthcare, disease, doctors, hospitals, treatment and patients confined in the areas

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<sup>38</sup> P. J. Marshall, *The Cambridge Illustrated History of the British Empire, Part of Cambridge Illustrated Histories*, Cambridge: Cambridge University Press, 1996.

<sup>39</sup> Roy Porter(ed), *The Cambridge Illustrated History of Medicine, Part of Cambridge Illustrated Histories*, Cambridge: University of Cambridge Press, 2001.

of United Kingdom, Europe and its colonies. The books were good sources of information and provided extensive and broad knowledge on the medical history of other countries but did not include Malay States and Pulau Pinang. However, some of the ideas and input from these books were used in this thesis.<sup>40</sup>

In addition, there are other popular books about the history of medicine which provided a general knowledge of medical history and these books were written by western scholars. Such books are *The Greatest Benefit to Mankind: A Medical History of Humanity, 1st Edition*, edited by Roy Porter<sup>41</sup> and *Blood and Guts: A Short History of Medicine*, also edited by Roy Porter.<sup>42</sup> These are two popular books written by British authors and published by Cambridge University Press in 1997. These books provide historical knowledge pertaining to the origins of medicine in United Kingdom and Europe, and also explain about the origins of healthcare, medicines, diseases, treatments and cures.

Three other books which focus on the importance of Western medicine, research and new technology are *The Rise and Fall of Modern Medicine* by James Le Fanu, *The Western Medical Tradition, 1800-2000*,<sup>43</sup> and *Medicine in Society, Historical Essays, Medical Services and the Hospital in Britain, 1860-1939*, part of some New Studies in Economic and Social History, written by Steven Cherry and published in 1996.<sup>44</sup> Three books which provide information pertaining to medical history on diseases, medicines, hospitals and treatment of patients in the United Kingdom are *The History of Medicine: A Very Short Introduction 1st Edition* by William Bynum,<sup>45</sup> *A Short History of Medicine* by Erwin H. Ackerknecht<sup>46</sup> and *Exploring the History of Medicine* by John Hudson Tiner.<sup>47</sup>

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<sup>40</sup> Roy Porter(ed), *The Cambridge History of Medicine*, Cambridge: Cambridge University Press, 2006.

<sup>41</sup> Roy Porter (ed), *The Greatest Benefit to Mankind: A Medical History of Humanity, 1st Edition*, Cambridge: Cambridge University Press, 1997.

<sup>42</sup> Roy Porter (ed), *Blood and Guts: A Short History of Medicine*, Cambridge: Cambridge University Press, 1997.

<sup>43</sup> James Le Fanu, *the Rise and Fall of Modern Medicine* by James Le Fanu, *The Western Medical Tradition, 1800-2000*, London: Abacus Software, 2011.

<sup>44</sup> Steven Cherry, *Medicine in Society, Historical Essays, Medical Services and the Hospital in Britain, 1860-1939*, Cambridge: Cambridge University Press, 1996.

<sup>45</sup> William Bynum, *The History of Medicine: A Very Short Introduction, 1st Edition*, Oxford: Oxford University Press, 2008.

<sup>46</sup> Erwin Ackerknecht, *A Short History of Medicine*, Maryland: JHU Press, 1982.

<sup>47</sup> John Hudson Tiner, *Exploring the History of Medicine*, New York: Master Book, 1999.

There were several books written based on research done on the history of medicine in Malaysia. An Australian scholar and researcher wrote two books which became popular internationally. These books provide information about the history of medicine in Malaya and were written by Lenore Manderson, titled *This is a History of Health and Disease in Colonial Malaya from Colonization to the Outbreak of World War 2*<sup>48</sup> and *Sickness and the State: Health and Illness in Colonial Malaya, 1870-1940*.<sup>49</sup> These books researched on the medical history of Malaya, prevalent diseases, and the health facilities available during the British Colonial Administration. These writings explain about the background and role of the British Colonial Administration in preventing the spread of disease in Malaya. These books argue that growth of economy and population are the main reasons for the change of the mode of transmission and spreading of diseases.

One of the popular history books is entitled *History of Medicine in Malaysia: The Foundation Years* was written by Khoo Kay Kim and Selvamany Gabriel and was published by the Academy of Medicine of Malaysia in August, 2005.<sup>50</sup> This book has 11 chapters and has a broad scope from Malay traditional medicine, to the way they coped with infectious epidemic like beri-beri and malaria, to the introduction of western medicine and healthcare by the British in Malaya and Singapore during the 19<sup>th</sup> and 20<sup>th</sup> century. This book discusses the history of medicine in Malaya, Singapore and the Straits Settlements and is an important reference book for scholars and researchers who desire to study this subject-matter.<sup>51</sup>

In addition to that, Abdul Majid Ismail also conducted a research project on the history of medicine in Malaysia before and after independence, entitled *Sejarah Perkembangan Perkhidmatan Kesihatan di Malaysia Sebelum and Selepas Merdeka* which was published by the Ministry of Health of Malaysia in 1971.<sup>52</sup> This book elaborates in detail

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<sup>48</sup> Lenore Manderson, *This is a history of health and disease in colonial Malaya from colonization to the outbreak of World War 2*, Cambridge: Cambridge University Press, 1996.

<sup>49</sup> Lenore Manderson, *Sickness and the state: health and illness in colonial Malaya, 1870-1940*.

<sup>50</sup> Khoo Kay Kim & Selvamany Gabriel, *History of Medicine in Malaysia: The foundation years*, Kuala Lumpur: Academy of Medicine of Malaysia, 2005.

<sup>51</sup> Ibid.

<sup>52</sup> Abdul Majid Ismail, *Sejarah Perkembangan Perkhidmatan Kesihatan di Malaysia Sebelum dan Selepas Merdeka*, Kuala Lumpur: Ministry of Health of Malaysia, 1971.

about the history of medicine in Malaysia, development, challenges and healthcare services and hospitals before and after the independence of Malaysia.<sup>53</sup>

Other publications are derived from Masters and PhD theses which contained research on the history of medicine during British Colonial Administration in Malay Peninsula. One such thesis is *Medicine and Imperialism: A Study of the British Colonial Medical Establishment, Health Policy and Medical Research in the Malay Peninsula, 1786-1918* by Hairudin bin Harun. His writing elaborates in detail about the British Colonial medical establishment, health policy, government hospitals and how they coped with epidemic diseases.<sup>54</sup> Also, Kai Hong Phua, wrote a PhD thesis titled “The Development of Health Services in Malaya and Singapore 1867-1960” and submitted it to the London School of Economics and Political Science, University of London, England in 1987. In his thesis he bases his research on the development of health care and services in Malaya and Singapore, 1867 to 1960, during British Colonial Administration.<sup>55</sup> In his writings, he explains about the origins of the system of health services in Malaysia and Singapore and also discusses the influence of socio-economic development towards the health services in Malaya and Singapore.<sup>56</sup>

Another publication from other research which focuses on the history of medicine in Malaysia, in particular the area in Malay Peninsula, is the PhD thesis by Noraini Mohamed Hassan who wrote on the “*Kesihatan dan Perubatan di Negeri-Negeri Melayu Bersekutu, 1896-1941*” and submitted to the University of Malaya in 2013.<sup>57</sup> Her writings emphasise the roles played by British local administrators in implementing health policies and development of medial services, the establishment of medical departments and institutions

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<sup>53</sup> Ibid.

<sup>54</sup> Hairudin bin Harun, *Medicine and imperialism: a study of the British colonial medical establishment, health policy and medical research in the Malay Peninsula, 1786-1918*, thesis(Ph.d), London School of Economics and Political Science, University of London, London, 1988.

<sup>55</sup> Kai Hong Phua, *The Development of Health Services in Malaya and Singapore 1867-1960*, thesis(Ph.d), London School of Economics and Political Science, University of London, 1987.

<sup>56</sup> Ibid.

<sup>57</sup> Noraini Mohamed Hassan, *Kesihatan dan perubatan di Negeri-Negeri Melayu Bersekutu, 1896-1941*, thesis (Ph.d), History Department, faculty of arts and Social Sciences, University of Malaya, Kuala Lumpur, 2013.



in the Federated Malay States between 1896 and 1941.<sup>58</sup> In another Masters thesis by Julia Meredith Raja, “Development of the Medical Services in the Malay States, 1881-1911: From Death Houses to Hospital” was submitted to the History Department, Faculty of Arts & Social Sciences, University Malaya, Kuala Lumpur in 1982.<sup>59</sup> Her writings discuss medical services offered by hospitals and health centres in the Federated Malay States (Selangor, Perak, Negeri Sembilan and Pahang) and a comparison with Unfederated Malay States (Kedah, Perlis, Kelantan and Terengganu). She also discusses the effectiveness of hospitals and health services prior to the First World War during British Colonial Administration.<sup>60</sup> Other research such as “Sejarah Perubatan dan Kesihatan di Terengganu dalam Tahun 1930an: Kajian Kes Daerah Besut” by Yuszah Akmal Binti Yusoff, was submitted to Universiti Sains Malaysia in 1985. She explained about the medical history, healthcare and problems of infectious diseases in the state of Terengganu.<sup>61</sup> As well as these, there was research on the history of medicine for the state of Malacca conducted by Lourdes Pitchaimuthu, who wrote *Sejarah Perubatan dan Penubuhan Hospital-hospital di Melaka*. Her writings elaborated in detail about the medical history of Malacca and the formation of the general hospitals in the state of Malacca.<sup>62</sup>

Interestingly, numerous authors wrote in their research of the history of medicine in Malaysia, focusing on traditional medicine, especially the Chinese and Malay medicine. They are David Hooper, *On Chinese Medicine: Drugs of Chinese Pharmacies in Malaya*,<sup>63</sup> *Malay Poisons and Charm cures*, written by John Desmond Gimlettee,<sup>64</sup> *Malay Village Medicine* by I.H. Burkill and Mohamed Haniff,<sup>65</sup> and *The Medical Natural History of Malayan Aborigines*, by Polunin Ivan.<sup>66</sup> His writings explain the importance of the traditional

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<sup>58</sup> Ibid.

<sup>59</sup> Julia Meredith Raja, *Development of the Medical Services in the Malay States, 1881-1911: From Death Houses to Hospital*, thesis (MA), History Department, Faculty of arts and Social Sciences, University of Malaya, Kuala Lumpur in 1982.

<sup>60</sup> Ibid.

<sup>61</sup> Yusah Akmal binti Yusoff, *Sejarah Perubatan dan Kesihatan dalam tahun 1930an: Kajian Kes Daerah Besut*, Final Year Dissertation (BA), School of Humanities, Universiti Sains Malaysia, Penang, 1985.

<sup>62</sup> Lourdes Pitchaimuthu, *Sejarah Perubatan dan Penubuhan hospital-hospital di Melaka*, Kuala Lumpur, Persatuan Sejarah Malaysia, 1997.

<sup>63</sup> David Hooper, *Chinese medicine: drugs of Chinese pharmacies in Malaya*, Singapore: Botanic Gardens, 1929.

<sup>64</sup> John Desmond Gimlettee, *Malay poisons and charm*, London: J.&A. Churchill, 1929.

<sup>65</sup> I.H. Burkill & Mohamed Haniff, *Malay village medicine*, Singapore : Botanic Gardens, 1930.

<sup>66</sup> Polunin Ivan, *the medical natural history of Malayan aborigines*, Singapore: Malay Branch of the British Medical Association, 1953.

medication and remedies for cures, and the supernatural beliefs held about curing diseases in the Malay Peninsula during the British colonial administration, which served as evidence that there were two approaches to medicine and treatment – the traditional method and the western method- employed during the British colonial administration.<sup>67</sup>

Several local authors who conducted research on medical education and doctors in Malaya, had also authored books on that subject matter. One of them, Faridah Abdul Rashid piloted some interesting research on Malay doctors in her book *Biography on the Early Malay Doctors 1900-1957, Malaya and Singapore*. She explained about the first few Malay doctors in Malaya and Singapore and the challenges they faced in providing healthcare services and treatment during British Colonial Administration.<sup>68</sup> In addition to that, another author T. J. Danaraj wrote his research on medical and health services during the Japanese Occupation in Malaya, in his book *Japanese Invasion of Malaya & Singapore: Memoirs of a Doctor*. His book also elaborates in detail on the problems faced by doctors and healthcare services during the Japanese Occupation of Malaya.<sup>69</sup> As well as this, research on history of medical education such as *Fifty Years of Medical Education in Malaya, 1905-1955* was published by Faculty of Medicine University of Malaya in 1955. This book examines the medical practitioners and healthcare workers in Malaya during the British Colonial Administration.<sup>70</sup>

Since my research is on the history of malaria, tuberculosis and leprosy in Pulau Pinang during British Colonial Administration from 1900 to 1957, I have conducted extensive studies on the history of malaria, tuberculosis and leprosy in Malaya during this period by examining various books and publications (besides the ones mentioned above) which will be further explained in the following paragraphs. Based on my findings, there are more publications which contain research on the history of malaria in Malaysia than there

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<sup>67</sup> Ibid.

<sup>68</sup> Faridah Abdul Rashid, *Biography on the early Malay doctors 1900-1957, Malaya and Singapore*, Melbourne: Xlibis Corporation, 2012.

<sup>69</sup> T. J. Danaraj, *Japanese invasion of Malaya & Singapore: memoirs of a doctor*, Kuala Lumpur: T.J.Danaraj, 1990.

<sup>70</sup> *Fifty years of medical education in Malaya, 1905-1955*, Singapore: Faculty of Medicine, University of Malaya, 1955.

are about tuberculosis or leprosy. Some of the early and most promising books concerning the history of malaria in Malaysia, written by British scholars, are discussed in the next paragraph.

Firstly, at the beginning of 20<sup>th</sup> century, Hamilton Wright published *The Malarial Fevers of British Malaya* in 1901.<sup>71</sup> Secondly, A. G. H. Smart published *A Study of Malaria and Its Prevention, under Certain Conditions, with Special Reference to Malaya* published in 1938.<sup>72</sup> Finally, B. A. R. Gater in 1935 published a book entitled *Aids to the Identification of Anopheline Imagines in Malaya*.<sup>73</sup> These early books, published in the early 20<sup>th</sup> century, were good references concerning the history and problems of malaria in Malaya during British Colonial Administration.

In addition to that, the Institute for Medical Research had made significant research and investigation on malaria which was reported in ‘The Transmission of Malaria in Malaya’ by Ernest P. Hodgkin, published by the Institute for Medical Research in Kuala Lumpur 1956. The publication by IMR was another important reference for my research as it provided explanation of the problems of malaria, mosquito species and the effort to abolish their breeding zones in rural areas in Malaya from year 1900 to 1956.<sup>74</sup>

As for my research on history of tuberculosis, in similar way to malaria, there are many books concerning the subject matter. The latest book published recently, by a British scholar named Helen Bynum, titled *Spitting Blood: The History of Tuberculosis* published by Oxford University Press in 2015,<sup>75</sup> explains the disease in a few words. In addition to that, Katherine Byrne published a book about the history of tuberculosis in United Kingdom titled *Tuberculosis and the Victorian Literary Imagination, Part of Cambridge Studies in Nineteenth-Century Literature and Culture* in 2013.<sup>76</sup>

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<sup>71</sup> Hamilton Wright, *The malarial fevers of British Malaya*, Singapore: Kelly & Walsh, 1901.

<sup>72</sup> A. G. H. Smart, *A study of malaria and its prevention, under certain conditions, with special reference to Malaya*, Scotland: University of Edinburgh, 1938.

<sup>73</sup> B. A. R. Gater, *Aids to the Identification of Anopheline Imagines in Malaya*, Singapore: the Government of the Straits Settlements and the Malaria Advisory Board, Federated Malay States, 1935.

<sup>74</sup> Ernest P. Hodgkin, *The Transmission of Malaria in Malaya*, Kuala Lumpur: Institute of Medical Research, 1956.

<sup>75</sup> Helen Bynum, *Spitting blood: the history of tuberculosis*, Oxford : Oxford University Press, 2015.

<sup>76</sup> Katherine Byrne, *Tuberculosis and the Victorian Literary Imagination, Part of Cambridge Studies in Nineteenth-Century Literature and Culture*, Northern Island: University of Ulster, 2013.

Tuberculosis was a major health problem in Pulau Pinang during the 1900 to 1957, so there was quite extensive research being conducted on the history of tuberculosis in Malaysia. Firstly, *History of Tuberculosis in Malaysia: Problems and Prospect of Treatment and Control*, by K. Iyawoo,<sup>77</sup> Secondly, *Some Observations on the Problems of Tuberculosis in Malaya* written by Lim Sian Lok in 1956.<sup>78</sup> Also *A report to the MAPTB Executive Committee by the Special Purposes Committee appointed on January 27, 1953*, published in 1953 by Malayan Association for the Prevention of Tuberculosis (MALAYA), Kuala Lumpur<sup>79</sup> provided insight into the problems of the tuberculosis diseases, and the prevention and treatment of tuberculosis patients during British Colonial Administration.

As for leprosy, which is a unique disease that can be traced back to 100 years ago, the disease was also a health concern during 19<sup>th</sup> and 20<sup>th</sup> century in Malaysia. As such, I have conducted a thorough research on the history of leprosy in Malaysia by referring to these various books and publications as follows *Leprosy, The Valley of Hope* was the latest book, published in 2015 concerning the hope of lepers was focused on Sungai Buloh Leper Settlement.<sup>80</sup> Secondly, Tan Ean Nee & Joshua Wong wrote a book titled *The Way Home: The Isolated Emotional World of Former Leprosy Patients and Their Descendants*, which was published in 2012.<sup>81</sup> This book discusses the emotional aspects of leper patients in Pulau Pinang. Also, J. J. Raj wrote a book titled *Struggle to Overcome Prejudice Against Leprosy: A Malaysian Success Story*, which was published in 2010.<sup>82</sup>

A book which gave a broad and comprehensive reference concerning the history of leprosy in Malaysia, written by Joshua-Raghavar, is entitled *Leprosy in Malaysia: Past, Present and*

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<sup>77</sup> K Lyawoo, *History of tuberculosis in Malaysia: problems and prospect of treatment and control*, Kuala Lumpur: Malaysian Association for the Prevention of Tuberculosis, 2004.

<sup>78</sup> Lim Sina Lok, *Some observations on the problems of tuberculosis in Malaya*, Kuala Lumpur: Malayan Association for the Prevention of Tuberculosis, 1956.

<sup>79</sup> A report to the MAPTB Executive Committee by the Special Purposes Committee appointed on January 27, 1953, Kuala Lumpur: Malayan Association for the Prevention of Tuberculosis (MALAYA), 1953.

<sup>80</sup> *The Valley of hope: pictorial history book*: Subang Jaya, Selangor: Care & Share Circle, 2015.

<sup>81</sup> Tan Ean Nee & Joshua Wong, *The way home: the isolated emotional world of former leprosy patients and their descendants*, Georgetown: Tan Ean Nee & Joshua Wong, 2012.

<sup>82</sup> J. J. Raj, *Struggle to overcome prejudice against leprosy: a Malaysian success story*, Kuala Lumpur: Malaysian Leprosy Relief Association, 2010.

*Future* and was published in 1983.<sup>83</sup> This book discusses of the early history of leprosy in the Malay Peninsula, quarantine hospitals and camps, treatments, research and development in Malaysia. In addition to this, the Medical and Health Service of the Federated Malay States also published a written document titled *The Leper Settlement at Sungei Buloh in the Federated Malay States*, in 1933.<sup>84</sup>

There were also authors who conducted research on the history of leprosy in Malaysia and Singapore, such as *Making and Unmaking the Asylum: Leprosy and Modernity in Singapore and Malaysia* by Loh Kah Seng, which was published on 2009.<sup>85</sup> Prior to this book, Loh Kah Seng had conducted a research on the history of leprosy in Singapore and wrote an article entitled “Our Lives are Bad but Our Luck is Good: A Social History of Leprosy in Singapore” which was published in the *Social History of Medicine Journal*, Oxford University Press, in 2008.<sup>86</sup> Later on, he published another article, “No More Road to Walk: Cultures of Heritage and Leprosaria in Singapore and Malaysia” in the *International Journal of heritage studies*, 2011.<sup>87</sup>

Based on my findings, there seems to be a tendency for researchers and academicians who conducted research on the history of Pulau Pinang, to omit the medical aspect of the history. This is evident in many books and publications on the early history of Pulau Pinang which speak of the administration and economy of Pulau Pinang but hardly mention the medical conditions in Pulau Pinang.

Some of the popular books and publications concerning the medical history of Pulau Pinang are *To Heal the Sick: The Story of Healthcare and Doctors in Penang 1786-2004*, written by Hean Teik Ong in the year 2004, which discusses the history relating to healthcare of the residents of Pulau Pinang, with interesting drawings and pictures. His writings

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<sup>83</sup> A. Joshua-Raghavar, *Leprosy in Malaysia: past, present and future*, Selangor: A. Joshua-Raghavar, 1983.

<sup>84</sup> *The Leper Settlement at Sungei Buloh in the Federated Malay States*, Singapore: Govt. of F.M.S., 1933.

<sup>85</sup> Loh Kah Seng, *Making and Unmaking the Asylum: Leprosy and Modernity in Singapore and Malaysia*, Singapore: Oxford University Press, 2009.

<sup>86</sup> Loh Kah Seng, ‘Our Lives Are Bad but our Luck is Good’: Social History of Leprosy in Singapore,’ in *Social History of Medicine 21*, Oxford: Oxford University Press, 2008.

<sup>87</sup> Loh Kah Seng, *No more road to walk’: cultures of heritage and leprosariums in Singapore and Malaysia*, Singapore: Taylor & Francis, 2011.

emphasise the role of the doctor, private hospital and other labours concerned with handling the spreading of diseases from year 1786 to 2004.<sup>88</sup> However, this book does not particularly focus on health during the British colonial administration. Another of a similar nature is a chapter in a book with a title, “Oddly Hybrid: Childbearing and Childrearing Practices in Colonial Penang, 1850-1875,” which was written by Christine Doran. This chapter discusses about the childbearing and child health practices in Pulau Pinang from 1850 to 1875.<sup>89</sup>

*The Penang Past and Present 1786-1963, A Historical Account of the City of Georgetown since 1786*, which was published by the City Council, Georgetown, is another interesting publication, which not only explains about the early history of Pulau Pinang including the administration, trade and economy before the year of 1963, but also the medical history of Pulau Pinang.<sup>90</sup> In the health section of the publication, it highlights the role of the British Colonial Administration and their efforts in establishing health systems and dealing with problems of health in Pulau Pinang.

In most books and publications concerning the early history of Pulau Pinang, the authors have a tendency to focus their research on administration and economy of Pulau Pinang. However, there are some books which have a small portion informing us about the medical history of Pulau Pinang. Firstly, the book by James Low, titled *The British Settlement of Penang* which was republished in 1972 by Oxford University Press, Oxford, focuses on the historical background of Pulau Pinang.<sup>91</sup> Secondly, E.G. Cullin and W. F. Zehnder published a book in 1905 book entitled *Early History of Penang, 1592-1827*.<sup>92</sup> And finally, Sarnia Hayes Hoyt published a book in 1991 titled *Old Penang*.<sup>93</sup> These books focused on the history of the establishment of the British Administration in Pulau Pinang, The books

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<sup>88</sup> Hean Teik Ong, *To Heal the Sick: The Story of Healthcare and Doctors in Penang 1786-2004*, Penang: Penang Medical Practitioner's society. 2004.

<sup>89</sup> Christine Doran, 'Oddly Hybrid: childbearing and childrearing practices in colonial Penang, 1850-1875' in *Women's history review*, VOL 6; NUMB 1, New York: Triangle Journals Ltd, 1997.

<sup>90</sup> *The Penang, Past and Present, 1786-1963: A Historical Account of the City of Georgetown since 1786*, Georgetown: the City Council, 1966.

<sup>91</sup> James Low, *the British Settlement of Penang*, Singapore: Oxford University Press, 1972.

<sup>92</sup> E.G. Cullin and W. F. Zehnder, *Early History of Penang*, London: Criterion Press, 1905.

<sup>93</sup> Sarnia Hayes Hoyt, *Old Penang*, Singapore: Oxford University Press, 1991.

explore the early history of Pulau Pinang, the administration of Pulau Pinang, the development of trade and how Pulau Pinang became an important entreport.

Also, some books written by local scholars concerning the history of Pulau Pinang are *Early History of Penang* published in 2012 by Muhammad Haji Salleh<sup>94</sup> and *A History of early Penang, 1786 to 1867: Important Events and Developments* by Salleh Bin Hussain.<sup>95</sup> These books discuss the early history of Pulau Pinang and the British early settlement and historical development of Pulau Pinang. Another scholar, Neil Khor Jin Keong also wrote a book on the history of Pulau Pinang, titled *Glimpses of Old Penang*, which was published in 2002.<sup>96</sup>

Apart from the above-mentioned books on the early history of Pulau Pinang, there are also books and publications which contain research on the history of administration and governance. The following four books discuss the administration, governance and politics in Pulau Pinang. Firstly, *The Governors of Penang*, which was published by State Secretariat Penang in 1968.<sup>97</sup> Secondly, Ander Barber written a book entitled *Penang under the East India Company 1786-1858* which was published in 2009.<sup>98</sup> Finally, Jeyaraj C. Rajarao wrote a book called *Public Administration in Penang, 1786-1832*, which was published on 1985.<sup>99</sup>

Pulau Pinang was a famous Asian entreport during the pre-colonial and colonial periods. Thus, it is not surprising that many history books on Pulau Pinang focus on the economy, trade and commerce of Pulau Pinang. One of such books is *The Trade of Penang, 1786-1823*, written by Khoo Hock Cheng in 1985, which depicts the commerce and trading during the early days of British settlement in Pulau Pinang.<sup>100</sup> Author Khoo Salma Nasution also wrote a book titled *More Than Merchants: A History of the German-speaking*

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<sup>94</sup>Muhammad Haji Salleh, *Early history of Penang*, Penang: Penerbit Universiti Sains Malaysia, 2012.

<sup>95</sup> Salleh bin Hussain, *A history of early Penang, 1786 to 1867: important events and developments*, Pulau Pinang: Pertubuhan Malaysia Jerman, 1990.

<sup>96</sup> Neil Khor Jin Keong, *Glimpses of old Penang*, Petaling Jaya: Star Publications, 2002.

<sup>97</sup> *The Governors of Penang*, State Secretariat Penang, Penang: Album Publication Committee, 1968.

<sup>98</sup> Ander Barber, *Penang under the East India Company 1786-1858*, London: AB & A, 2009.

<sup>99</sup> Jeyaraj C. Rajarao, *Public administration in Penang, 1786-1832*, Singapore: National University of Singapore, 1985.

<sup>100</sup> Khoo Hock Cheng, *The trade of Penang, 1786-1823*, Singapore: NUS Press, 1985.

*Community in Penang, 1800s-1940s* which was published in 2006.<sup>101</sup> This book discusses a German merchant in Pulau Pinang during that period. Another writer, Wu Xiao An wrote his research entitled *Chinese Business in the Making of a Malay State, 1882-1941: Kedah and Penang* in 2003.<sup>102</sup>

Other publications of similar research were used: one entitled *The Mercantile Community of Penang and the Changing Pattern of Trade, 1890-1941* written by Chuleeporn Pongsupath, published in 1990.<sup>103</sup> Also writer Tan Kim Hong wrote articles for 'Malaysia in History', 'Chinese Sugar Planting and Social Mobility in 19th century Province Wellesley,' which was published in 1981. His writing focuses on the Chinese living in Province Wellesley (Seberang Perai). He writes about the role of the Teochiew (Chaozhou people) who owned over 20,000 hectares of land in Pulau Pinang. According to him, the Teochiew were actively involved in growing sugar cane and hired more than 3, 000 workers to work in their sugar cane field.<sup>104</sup>

Further publications contained research on the history of Pulau Pinang, but focusing on the Japanese Occupation there. One such research paper was written by Jaafar bin Hamzah in 1978, entitled 'The Malays in Tasek Gelugur during the Japanese Occupation', which was published in *Malaysia in History*.<sup>105</sup> Another researcher, Lim Beng Kooi also published his research on *The Japanese Occupation in Penang, 1941 to 1945* in 1974.<sup>106</sup> Both of these publications discuss the conditions of the populace during the Japanese Occupation and challenges faced by the Malays under the Japanese Military Administration, the problems of food shortages and issues of malnutrition among the population during Japanese Occupation in Pulau Pinang.

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<sup>101</sup> Salma Nasution Khoo, *More than merchants: a history of the German-speaking community in Penang, 1800s-1940*, Penang: Areca Books, 2006.

<sup>102</sup> Wu Xiao An, *Chinese business in the making of a Malay state, 1882-1941: Kedah and Penang* in 2003, New York: Routledge, 2003.

<sup>103</sup> Chuleeporn Pongsupath, *The mercantile community of Penang and the changing pattern of trade, 1890-1941*, London: University of London, 1990.

<sup>104</sup> Tan Kim Hong, "Chinese Sugar Planting and Social Mobility in 19th century Province Wellesley," in *Malaysia in History*, Volume 24, Kuala Lumpur: Malaysian Historical Society, 1981.

<sup>105</sup> Jaafar bin Hamzah, 'The Malays in Tasek Gelugur during the Japanese Occupation' in *Malaysia in History*, Volume 71, Issue 2, Kuala Lumpur: Journal of the Malaysian Branch of the Royal Asiatic Society, 1998.

<sup>106</sup> Lim Beng Kooi, *Japanese occupation in Penang, 1941-45*, Singapore: National University of Singapore, 1974.



The literature review above is evidence, in the form of books and publications, of the research that has been performed concerning the history of medicine, malaria, tuberculosis and leprosy in this region during the British colonial administration. It is crystal clear that most researchers and writers were broad and not specific to the topic of this thesis title “A Medical History of Pulau Pinang, 1900-1957, with Special Attention to Malaria, Tuberculosis and Leprosy.” With the lack of attention previously given to the history of medicine in Pulau Pinang, this research is expected to be an important source of reference and should provide information for researchers, academicians and all those interested in medical history concerning malaria, tuberculosis and leprosy in Pulau Pinang during the British Colonial Administration from 1900 to 1957.

### **Research Methodology**

This study uses the historical research method. The discussion in the thesis will be based on qualitative research in which a thematic and descriptive/analytical approach will be used. In this dissertation there are seven chapters including an introduction (Chapter 1) and a conclusion (Chapter 7). From chapter two to chapter six, all of the discussion, analysis and explanation will be based on the thematic analysis approach where each section of a chapter is divided into several themes and research will be done on those specific themes.

The initial research was to find sources from libraries. There were several libraries, including University of Malaya Library, Kuala Lumpur; T. J. Danaraj Medical of Library, University of Malaya, Kuala Lumpur; Library for the Institute of Medical Research, Kuala Lumpur; Hamzah Sendut Library, University Sains Malaysia, Pulau Pinang; The British Library, London; Wellcome Library, London; National Library, Singapore and National University of Singapore central and medical libraries in Singapore. The objective of the initial research is to view sources which were related to this investigation. Later, these sources could be used to support the research if suitable.

The research mainly uses original sources or first sources taken from archives in United Kingdom and Malaysia between 2010 and 2016. Sources from the National Archives in United Kingdom like CO (Colonial Office), FD (Medical Research Council), FO (Foreign Office), and WO (War Office) have been used through this thesis. All of the documentary materials and sources from the National Archives have not been used or seen by earlier researchers. Whereas, Arkib Negara Malaysia, Kuala Lumpur was also referenced for files from departments such as Jabatan Perubatan dan Kesihatan Pulau Pinang, Institut Penyelidikan Perubatan, Kementerian Kesihatan Malaysia and Resident Commissioner Penang. In addition, sources from Arkib Negara Malaysia, Cawangan Pulau Pinang were used, employing files from the relevant departments such as Pejabat Penerangan Pulau Pinang, Jabatan Penerangan and Pejabat Daerah Barat Daya Pulau Pinang. Other original source or first source documents such as annual reports and microfilm were also widely used in the development of this thesis. Most of the documentary materials and sources from the National Archives has been used and seen by earlier researchers focusing on medical history in Malaysia.

Selective secondary sources have been used to support this research. There were books, journals and newspapers to prove and evaluate the accuracy of the original source material. These secondary sources were used to compare and so provide accuracy and proof of the research. Besides that, other considerations such as the knowledge of the writer, time the writer made his research, motives of the writer, sources he used, consistency of date etc. were used to ensure the quality of the secondary sources.

### **Thesis Organisation**

This thesis is divided into seven chapters including an introduction (chapter 1) and a conclusion (Chapter 7). Chapter one will focus on the background to the research. This chapter begins with the history of the region, explaining the colonial rule which started when a naval officer and trader Francis Light acquired the grant of the island of Penang from the

Sultan of Kedah in 1785. After the grant was acquired, Pulau Pinang emerged as an important trade area of the British East India Company.

Chapter two will focus on the Straits Settlements, which united the peninsular territories of Malacca, Pulau Pinang, Dindings and Singapore under a single administration. This chapter will also explore the important events and changes that took place in the Pulau Pinang region during the colonial era, the two World Wars and the Japanese invasion in 1941. These events have extraordinarily shaped the social, economic and political discourse of the present era. In addition to this, a discussion of the demography and the multiracial society in Pulau Pinang will also be the focus of this chapter. Finally, an examination of the early history of trade and the economy of Pulau Pinang will also be presented.

Chapter three discusses the medical history of Pulau Pinang during British Colonial Administration from 1900 to 1957. This chapter will focus on the basic medical needs, healthcare and medical services available for the general populace in Penang Island and Seberang Perai. The first part of this chapter will focus on the administration of medical services, water supplies and sanitation, and also on education and training for nurses and health workers. Moreover, focus on the medical education and training imparted to nurses and hospital assistants will be discussed in this chapter. The second part of the chapter will focus on Government and private hospitals, travelling dispensaries and the role of non-profit organisations in Penang Island and Seberang Perai. In the final section of this chapter, the research will focus on the provision of women's and children's healthcare in Penang Island and Seberang Perai. This section will focus on hospitals, childcare, mortality rates and vaccination. The problems of malnutrition and dental issues among children will all be discussed in this part.

Chapter four will focus on the history of malaria in Penang Island and Seberang Perai during British Colonial Administration from 1900 to 1957. The first part of this chapter will investigate the historical background of the disease, understanding the disease and the mosquito nuisance causing malaria. The second part of the chapter will expose the

importance of research and investigation of the Institute of Medical Research, Kuala Lumpur in finding effective ways for the prevention of malaria, for malaria control, finding the best ways to eradicate mosquito breeding areas and experiments to find effective drugs for the treatment of malaria. In addition, this chapter will look at the importance of education and training to educate the public to keep their surrounding areas free from mosquito breeding places. The training of health officers and workers in malaria control and using DDT spraying will also be highlighted in this chapter. Finally, this part will focus on the prevention measures for malaria and on malaria control in rural areas before and after the Second World War. In this last section, the research will centre on the treatment of malaria patients in government hospitals in Penang Island and Seberang Perai.

Chapter five will examine the history of tuberculosis in Penang Island and Seberang Perai during British Colonial Administration from 1900 to 1957. The first part this chapter will focus on the historical background of the disease, the nature of the disease, and tuberculosis problems and cases in Penang Island and Seberang Perai. The second part will address the role of non-profit organisations, the importance of the B.C.G. campaign and vaccinations and the significant modern technology from the West such as X-rays. Non-profit organisations such as the Malayan Association for the Prevention of Tuberculosis, the Penang and Province Wellesley Association for the Prevention of Tuberculosis, the British Red Cross, the Turf Club, Women's Service League and Young Women's Christian Association (YWCA) and their role in the prevention, treatment and reduction of tuberculosis cases in Penang Island and Seberang Perai will be examined.

Finally, the research in this section will also make reference to the significance of western technology such as X-rays. As well as this, the inoculation of Bacillus Calmette-Guérin (BCG) among infants and school children in Penang Island and Seberang Perai will be covered in this section. In the final section of this chapter, the research will focus on the treatment and its challenges faced by government hospitals as well as safeguarding the welfare and well-being of the patients. In this section, the research focus will also be on

modern treatment facilities, and on techniques applied in government hospitals such as the Penang General Hospital and Pulau Jerejak Tuberculosis Hospital. The importance of separation and isolation of Tuberculosis patients in Pulau Jerejak Tuberculosis Hospital in containing the spread of tuberculosis in Penang Island and Seberang Perai will also be discussed in this chapter.

Chapter six centres on the history of leprosy in Penang Island and Seberang Perai during British Colonial Administration from 1900 to 1957. The first part of this chapter will focus on the origin of the disease and the history of the disease in the region. The second part of this chapter will examine the importance of the Pulau Jerejak Leper Settlement as a treatment centre in the region and the education, employment, problems and limitations experienced at that Settlement. In the last section of this chapter, the research will highlight the treatment of leper patients in the Pulau Jerejak Leper Settlement and the rehabilitation of ex-leper patients who were released from the Settlement. This part examines the idea behind rehabilitation and how the person affected by leprosy should be restored back to normal social life, or as near to that as possible. There was a new rehabilitation camp for former leper patients who were discharged from the Pulau Jerejak Leper Settlement, called Jawi New Village, located in Seberang Perai, and this will also be discussed in this chapter.

Chapter seven will be the conclusion section of the thesis. The section will summarise the discussion of the thesis on medical history of Pulau Pinang, the history of malaria, tuberculosis and leprosy in Penang Island and Seberang Perai during British Colonial Administration from 1900 to 1957. This portion will acknowledge the contributions and challenges faced by the British Colonial Administration towards providing healthcare and medical services to the people in Penang Island and Seberang without compromise in finances and effort. It will show how the coordination and relationship of the British Colonial Administration, the local authorities and the non-profit organisations was important and benefited prevention, treatment and eradication of malaria, tuberculosis and leprosy. The role of non-profit organisations in the process of prevention, treatment and cure of malaria,

tuberculosis and leprosy will also be discussed in this section. Finally, this part will also evaluate those parties who were responsible and who played an important role in the prevention, treatment and cure for malaria, tuberculosis and leprosy cases in Penang Island and Seberang Perai from 1900 to 1957 during British colonial administration.

University of Malaya

## CHAPTER 2

### HISTORICAL BACKGROUND OF PULAU PINANG

#### Introduction

The history Pulau Pinang (Pulo Pinang)<sup>1</sup> goes back to the first few centuries after the birth of Christ. It was the result of international trade between China, India and the Middle-East, along the Straits of Malacca, although there are disagreements among scholars regarding such a proposal. The island witnessed the dominance of various kingdoms, from the early kingdom of Srivijaya in the 7<sup>th</sup> century A.D. to the rise of the Muslim dynasty in the fifteenth century, giving the island an Islamic identity. Besides dynastic rule, the region also witnessed colonial intrusion by European powers such as the Portuguese, the Dutch and lastly, the British.<sup>2</sup>

This chapter will also explore the important events and changes that took place in the Pulau Pinang region during the colonial era, the two World Wars and the Japanese invasion in 1941. These events have remarkably shaped the social, economic and political discourse of the present era. Demography also plays a crucial role in Pulau Pinang. It was observed that a mixed racial trend had emerged with the influx of immigrants from nearby Asian countries, causing a post-transition of Pulau Pinang into becoming a vital entrepot of the British. Ethnic Chinese and Indians formed the largest immigrant populations in the region with the Chinese surpassing both the local Malay inhabitants and the Indian population.<sup>3</sup>

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<sup>1</sup> The history of "Pulau Pinang" traces back to the name given to the island by the Portuguese sailors in the sixteenth century. Originally, the Portuguese named the island Pulo Pinaom, as "Pinang" or areca nut tree cultivated in the region. Later the term Pinaom transformed into Pinang (Malay pronunciation) or Penang (English pronunciation). Refer Khoo Salma Nasution: *More than Merchants: A History of the German-Speaking Community in Penang, 1800s-1940s*, p. 10.

<sup>2</sup> James Low, *the British Settlement of Penang*, London: Oxford University Press, 1972, p. 32.

<sup>3</sup> C. M. Turnbull, *the Straits Settlements 1826-67: Indian Presidency to Crown Colony*, Singapore: Oxford University Press, 1972, p. 48.

In addition, this chapter will also discuss the demographic, the emergence of multiracial society and trade and economy of Pulau Pinang.<sup>4</sup> The researcher aims to impart a broad understanding about the background of Pulau Pinang and a clear insight regarding the history and ethnic composition of the region through this study, and to provide its readers and future researchers with a clear and an in-depth knowledge about the realm upon which the research is based.<sup>5</sup>

## Early History

Originally a part of Kedah,<sup>6</sup> Pulau Pinang underwent a change in its administration, demography, economy, and politically after its transition into a British Colony (initially East India Company) trading port with China in 1786.<sup>7</sup> Situated off the coast of Kedah in the northern region of the straits, the island of Penang is approximately fifteen miles long and nine miles across, with an area of one hundred and eight square miles. It is positioned at the western coast of the Malay Peninsula, five degrees north in latitude, exactly at the northern extremity or entrance into the Straits of Malacca.<sup>8</sup>

The isle was granted to Francis Light,<sup>9</sup> a naval officer and private trader who acted on behalf of the East India Company, by the Sultan of Kedah in 1786.<sup>10</sup> The strategic position Pulau Pinang held was the main reason behind the acquisition of the island, in which the British East India Company, and later, the British Government, aimed to establish the island as a component of their main trading route, replacing Bencoolen. Nordin Hussin observed

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<sup>4</sup> Ibid.

<sup>5</sup> John Bastin, *A Short Account of Prince of Wales's Island or Pulo Pinang in the East-Indies given to Capt. Light by the King of kedah*. Singapore: Eastern Universities Press Ltd, 1962, p. 142

<sup>6</sup> Kedah used to be the busiest trading port in the region from the 17<sup>th</sup> and 18<sup>th</sup> century. Most historians declared that Kedah was the oldest state in the Malay Peninsula. This was based on the unearthing of archeological artifacts in certain localities in Kedah which bear proof of the existence of an organized civilization in the area which was estimated to have existed as early as the fourth century A.D. Refer to Mohd Sukki Othman and Adi Yasran Abdul Aziz, 'Kedah Port Law from the History and Cultural Perspective', in *Humanity*, Vol. 19, No. 1, 2012, p. 2.

<sup>7</sup> Khoo Salma Nasution, *More than Merchants: A History of the German-Speaking Community in Penang, 1800s-1940s*, Penang, Areca Books, 2006, p.39.

<sup>8</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, London: Archives Edition, 1998, p. 319.

<sup>9</sup> Born in a small village named Dallinghoo, Suffolk, UK, Francis Light came from a modest background. He was adopted by a local gentleman named William Negus, through whose support Light received sufficient education, which helped him in acquiring a post of junior officer in the Royal Navy. Refer to Andrew Barber, *Penang under the East India Company, 1786-1858*, Kuala Lumpur: AB&A, 2009, p.6 and p.7.

<sup>10</sup> Abdullah Zakaria Ghazali, 'Malaysian History: Yesterday, Today and Tomorrow', in *Malaysia in History*, Vol. 36, No. 1, Kuala Lumpur: Malaysia Historical Society, 2008, p.5.



that by the end of the eighteenth century, increasing trade with China led the British to acquire a strip of land from Kedah, renaming it to be known as Prince of Wales Island. This land is situated mid-route between China and India to serve as an entrepot.<sup>11</sup> This acquisition, along with the purchase of some land adjacent to Penang Island, was later named Province Wellesley (Seberang Perai), in 1800. The acquisition of Province Wellesley strengthened the position of the British imperialists.<sup>12</sup>

Since the onset of European colonisation, South East Asia and the other parts of the Continent had witnessed an influx of Portuguese and Dutch traders,<sup>13</sup> especially during the sixteenth century.<sup>14</sup> However, Hoyt opined that early maps of the region showed the presence of Portuguese and Dutch traders. Also, there were Indian, Arabians, Chinese, Danish and French vessels along with those from the Malay Archipelago. The region was deployed by these traders to protect their vessels, especially during the monsoons. The foremost British presence was recorded in 1592, when James Lancaster, captain of the ship *Edward Bonaventure*, anchored in Penang Island. He and his sailors (most of whom were sick with scurvy), stayed in the region for a considerable period. They were enjoying the place and the fresh oysters.<sup>15</sup>

Since the formation of the British East India Company in South East Asia, the company had its eye on the SouthEast Asia region. The Dutch colonists had banned the entry of the Company from the Spice Islands and Java. However, “the company from time to time made attempts to secure a port which might break the Dutch monopoly in the archipelago and serve as a maritime refuge for ships trading between India and China”.<sup>16</sup> Scholars have pointed out several reasons behind the acquisition of the island, besides ship trading, such as to procure an easy access to the Malay mainland, to acquire control over the Indian Ocean

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<sup>11</sup> Nordin Hussin, *Trade and Society in the Straits of Melaka: Dutch Melaka and English Penang 1780-1830*, Singapore: NUS Press, 2007, p.4.

<sup>12</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p.46.

<sup>13</sup> Shamkhal Abilov, “Industrial Revolution and the Great Divergence Between the East and the West.” in *The Washington Review of Turkish and Eurasian Affairs*, July, 2011, p.122.

<sup>14</sup> Sarnia Hayes Hoyt, *Old Penang*, p.4.

<sup>15</sup> Ibid. p.5.

<sup>16</sup> Margaret Adams, *Penang Illustrated Guide, the Municipal Council of Georgetown*, Penang: Tillotsons(Bolton) Limited, 1952, p.48.

through creating a naval base for securing its position against French rivalry and to check the Dutch monopoly in the Malay Peninsula.<sup>17</sup>

Pearn pointed out that although a need for a port for repairing of ships was indeed a fact, strategic considerations were also involved. The duration of the 18<sup>th</sup> century was marked by Anglo-French wars, which led the British to secure control over the Indian Ocean so as to gain an advantageous position over the French by developing a naval base at the east of the Indian Ocean.<sup>18</sup> Trade was also one obvious reason behind the acquisition, as pointed out by Hussin. Trade with China for tea assumed a position of significance by the end of the eighteenth century which led the British traders to acquire a port situated mid-way between the India-China route where they could take a break from their long voyages.<sup>19</sup>

### **Administration in Pulau Pinang**

Prince of Wales Island (Pulau Pinang) is the oldest British Settlement in the Far East. The Colony was established in 1786 by Captain Francis Light. The founding of the British East India Company's settlement at Penang Island can be viewed from three different angles, first from that of the Sultan of Kedah, who was the hereditary ruler of the island of Penang before 1786; secondly, from that of the British East India Company, with its eastern headquarters first in Madras, later in Calcutta, and its home office in London; and thirdly, some attempt should be made to assess the aims and ideas of Francis Light, who saw the possibilities of Penang Island and worked to bring the other two interested parties together.<sup>20</sup>

Light was in Kedah in 1771, and it was to him that the Sultan made his proposal for protection.<sup>21</sup> Light advised the Sultan to write to the British East India Company, and at the time wrote letters to his own firm in Madras, suggesting that Penang Island might suit the British East India Company better than it suited his employers. Two months later, in January

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<sup>17</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 218.

<sup>18</sup> *The Straits Times*, 17<sup>th</sup> July, 1934, p.8.

<sup>19</sup> Nordin Hussin, *Trade and Society in the Straits of Melaka: Dutch Melaka and English Penang, 1780-1830*, p. 46.

<sup>20</sup> John Bastin, *A Short Account of Prince of Wales's Island or Pulo Pinang in the East-Indies given to Capt. Light by the King of kedah*, p. 142

<sup>21</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 46.

1772, he wrote directly to Warren Hastings, urging that the Kedah Sultan's offer should be accepted.<sup>22</sup>

The British East India Company was in close touch at that time with private firms which might be able to give them useful information, and Light must have known of the Company's interest in securing a new settlement. In fact, the Company wanted to find a suitable harbour near the Malacca Straits.<sup>23</sup> The Sultan's offer was merely concerned with a trade-base on the Kedah River. It was Light who mentioned Penang Island, because he had observed its possibilities. These included, according to Light, an excellent harbour, with facilities for refuelling ships bound for China, together with the likelihood of a useful local trade in tin, pepper, rattans, and other jungle produce.<sup>24</sup>

In 1786, Light obtained draft proposals from the Sultan of Kedah, and these he took to Calcutta. The acting Governor-General, Macpherson, agreed to Light's scheme and persuaded the Company to make a 'factory' at Penang Island with Light as its Superintendent. The Company accepted Penang for commercial reasons but the question of its suitability for a naval base was still left undecided.<sup>25</sup> Light returned from Calcutta to Kedah with three ships, a small garrison of troops, and stocks and stores for the base camp which would mark the beginning of the new settlement. He had an audience with the Sultan, and some days later proceeded, with the Sultan's consent, to procure Penang Island.<sup>26</sup>

After Francis Light had acquired Penang Island on behalf of the British East India Company on 11<sup>th</sup> August, 1786, the formal flag-raising ceremony was held by the orders of the Governor-General of India. The flag-raising ceremony was performed on behalf of the British East India Company. The ceremony took place on the eve of the birthday of the Prince of Wales, George IV, after whom the newly acquired company would be named. This early scenario of the settlement arranged by Francis Light has been described by Elisha Trapaud.<sup>27</sup>

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<sup>22</sup> CO 865/66, Penang Municipality: administration, staff, etc, Colonial Office, the National Archives, UK, 1948, p.26.

<sup>23</sup> INF. P144, Penang- Its History etc, Jabatan Penerangan, p.13

<sup>24</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 217.

<sup>25</sup> Margaret Adams, *Penang: Illustrated Guide*, p.69.

<sup>26</sup> *Ibid.* p.206.

<sup>27</sup> *The Malay Mail*, 12<sup>th</sup> February, 1935, p.4.

She had accompanied the former during the acquisition of the settlement and was a first-hand witness to the historical occurrence. She wrote:

The man with paper in his hand, in a maritime uniform, is Captain Light, reading the Governor-General of Bengal's instructions: the rest around him, captains of ships, passengers, etc. The troops under arms in the back-ground and the cannon ready to salute the new flag. The ships on the road: the Valentine and Vansittart, the Soldier on duty, under the tree, is a Bengal marine; and the two men sitting under the trees— Malay men; the woman with the pot on her head— a Malay woman, the Governor's tent, officers' tents, etc.<sup>28</sup>

Thus, Light's occupation of Pulau Pinang took place while the vital issue, as the Sultan saw it, remained in the balance. The Company, in fact, never committed itself beyond protection of the island and the opposite coastline. Light did his best to impress on Calcutta the importance of sending at least a token force to Kedah which would probably be sufficient to deter enemies from attacking.<sup>29</sup> In January 1788, the Governor-General in Council informed Light of a decision against any measures which might involve the Company in military operations 'against any of the Eastern princes', though in any other way Light could use the influence of the Company for the security of the King of Kedah.<sup>30</sup>

This, of course, placed Light in an extremely uncomfortable position; no one was more aware than he of the Sultan's views. He was now paying the price for having taken the initiative, and for having hoped that at least sufficient promises of military support would be given to satisfy the Sultan and discourage his enemies. An attitude of growing mistrust developed between the Sultan and Light, and the Sultan refused to reply to offers of annual payments in return for lost trade.<sup>31</sup>

In 1800, Sir George Leith, then Lieutenant-Governor of Pulau Pinang, negotiated a further treaty with the Sultan for the cession of a part of mainland Kedah, which was renamed Province Wellesley after the Governor-General of India. The Company's purpose was to give

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<sup>28</sup> James Low, *The British Settlement of Penang*, London: Oxford University Press, 1972, p.78.

<sup>29</sup> CO 953/2/1, Penang and Singapore municipalities: position of London agents, Colonial Office, p.24.

<sup>30</sup> Cecilia Tan and Philip Little, *Penang*, Singapore: Times Edition, 1986, p. 7.

<sup>31</sup> Margaret Adams, *Penang: Illustrated Guide*, p.69

greater protection to Pulau Pinang by having command of both sides of the straits which divided the island from the mainland, and also to develop food-producing areas, especially for rice, which could supply Pulau Pinang and make it largely self-sufficient.<sup>32</sup>

Light remained Superintendent of Pulau Pinang until his death in 1794. His was largely a one-man government; he was short of trained assistants and he himself had no training in administration. He did what seemed best in a situation full of problems and difficulties, but there were many administrative mistakes.<sup>33</sup> To make things worse, the Company gave Light only half-hearted support. No decision was taken at this stage about a naval base at Pulau Pinang; in fact, the permanence of the settlement itself was by no means assured. Light's own salary was small, and he was told to practise the strictest economy; no trade taxes were to be levied, and Pulau Pinang was to be a free port.<sup>34</sup>

As head of the administration, Light was succeeded by Major Macdonald from 1795 to 1799, Sir George Leith from 1799 to 1804 and Mr. R. T. Farquhar from 1804 to 1805. Until 1805 the Government was still largely a one-man affair, though the leader's title had been changed from Superintendent to Lieutenant-Governor. In the latter years, the Company showed a complete change of heart and endowed Pulau Pinang with a lavish administration of more than fifty officials, a Governor, and the name of 'Presidency'. This placed Pulau Pinang on an equal footing with the three great Presidencies in India Calcutta, Madras and Bombay. Mr. Philip Dundas was the head of this new government, which soon occupied itself with schemes of road-making and drainage.<sup>35</sup>

Pulau Pinang mostly served as a dependent outstation of the company's Bengal Presidency. It was essentially treated as a commercial station, without the provision of any governance. No administrators were appointed on behalf of the East India Company to lay

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<sup>32</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 27.

<sup>33</sup> CO 1047/949, Penang Island and Province Wellesley, Colonial office, p. 19.

<sup>34</sup> Ric Francis and Colin Ganley, *Penang Trams, Trolleybuses & Railways: Municipal Transport History, 1880s-1963*, Georgetown: Arca Books, 2006, p.3.

<sup>35</sup> Cecilia Tan and Philip Little, *Penang*, Singapore: Times Edition, 1986, p. 4.

down the civic, political or legal policies on the settlement.<sup>36</sup> The Bengal Presidency provided minimal support with little in the way of monetary grants, all the while ignoring repeated pleas made by Light to improve the conditions in the settlement. From 1805 onwards there was a change in the company's policy towards the administration of Pulau Pinang.<sup>37</sup>

Among the new officials who arrived in Pulau Pinang in 1805 was a young assistant secretary, Thomas Raffles by name. At the age of twenty-four he was just beginning his career in the East after serving in the Company's London office from the age of fourteen. His appointment at Pulau Pinang was part of the scheme for its expansion. This new administration in itself was a top heavy burden on Pulau Pinang's economy.<sup>38</sup>

After the formation of the Straits Settlements in 1826,<sup>39</sup> Pulau Pinang was ceded from the control of the Governor-General of India. An individual Governor was vested in the colony by the Letters Patent, "passed under the Great Seal of the United Kingdom".<sup>40</sup> The appointed Governor was assisted by an Executive and a Legislative Council. The members of the Executive Council constituted the Governor himself, acting as the *ex-officio* President, along with the senior Military Officer who also commanded the Army, the Colonial Secretary, the Attorney General, and other heads of departments and external individuals who were appointed according to the instructions passed by the Royal Sign Manual and Signet.<sup>41</sup>

The Legislative Council, on the other hand, consisted of eleven *ex officio* members, two official members, two elected unofficial members and eleven nominated unofficial members.<sup>42</sup> In ordinary affairs, the different personnel who carried out the administrative functions were the Colonial Secretary in Singapore, Resident Councillors (each based in Pulau Pinang and Malacca), who were also assisted by the District Officers and by the

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<sup>36</sup> CO 537/1556, Policy: Local Reactions to White Paper Statement of Policy: Penang, Colonial Office, 1949, The National Archives, UK, p.16.

<sup>37</sup> Andrew Barber, *Penang under the East India Company, 1786-1858*, pg. 36.

<sup>38</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 117.

<sup>39</sup> Zainal Abidin Abdul Wahid et al., *Malaysia: Heritage and Advancement*, Kuala Lumpur: Dewan Bahasa dan Pustaka, 1996, p. 116.

<sup>40</sup> Ralph Lionel German, *Handbook to British Malaya*, London: Malay States Information Agency, 1935, p. 51.

<sup>41</sup> *Ibid.*

<sup>42</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 227.

Residents in Labuan and Brunei.<sup>43</sup> Pertaining to law and order, local ordinances, which were formulated, were based on the English and Indian Acts and Orders. The local ordinances were passed by the Legislative Council based on their usefulness to the Settlement.<sup>44</sup> As for the Penal Code and the Criminal Procedural Code, these were formulated based on the Indian counterparts, with slight variations according to the requirements of the Settlement.<sup>45</sup>

A Civil Procedure Code was also formulated and this code was focused on the English Judicature Acts. Then the Supreme Court was also established. This court held Assizes in Pulau Pinang and Singapore every two months, and quarterly in Malacca. Civil sittings were conducted every month in Pulau Pinang and quarterly in Singapore.<sup>46</sup> Other specialist departments such as Public Works, Marine, Chinese Affairs, Land, Education etc. were governed on behalf of the Governor by the respective Heads of Departments, under the direction of the Colonial Secretary.<sup>47</sup>

Municipalities were also established in the Straits Settlements under Ordinance No. 135, and administered by Municipal Commissioners who were generally appointed by the Governor. In later years, a certain number of Commissioners were also nominated by veritable public organisations such as the British or Chinese Chambers of Commerce (though the Governor had the discretion to nullify such nominations, which had no legal basis, whatsoever).<sup>48</sup> The Municipal Commissioners tended to matters pertaining to construction and maintenance of streets, drains, canals and bridges along with the control of the water supply, electricity and gas, endowment of sewers and disposal of garbage and other such sectors.<sup>49</sup>

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<sup>43</sup> Ibid. p.216.

<sup>44</sup> CO 865/66, Penang Municipality: administration, staff, etc, Colonial Office, the National Archives, UK, 1948, p.29.

<sup>45</sup> Ibid.

<sup>46</sup> INF.P144, Penang- Its History etc, Jabatan Penerangan, Arkib Negara Malaysia, Cawangan Pulau Pinang, 1951, p.17.

<sup>47</sup> German, Ralph Lionel, *Handbook to British Malaya*, Kuala Lumpur: Malayan Information Agency, 1930, p. 51.

<sup>48</sup> INF. P144, Penang- Its History etc, Jabatan Penerangan, p.24.

<sup>49</sup> Ralph Lionel German, *Handbook to British Malaya*, p. 52.

## Colonial Era: Straits Settlements

In 1819 following the signing of a treaty between Sir Stamford Raffles, Sultan Hussein Shah of Johor and the Temenggong, the British had allowed the East India Company to set a trading post in Singapore.<sup>50</sup> British intervention in the Malay Peninsula began to develop through Tengku Hussain who was a contender to the throne of Malacca. This had allowed the Company to further its presence in the territory of Malacca and Indonesia in 1824, through the Anglo-Dutch Treaty.<sup>51</sup>

After the acquisition of the three outposts which were collectively called the Straits Settlements, the region came under the direct reign of the British Crown in 1867 and was administered by the British Colonial Office in London.<sup>52</sup> After the formation of the Straits Settlements, three colonies namely, Pulau Pinang, Malacca and Singapore all located on the eastern shores of the Straits of Malacca, came under the one roof of British Colonial Administration.<sup>53</sup> Earlier, after Pulau Pinang was made a separate Presidency like Bombay and Madras in 1805, it had been brought under the aegis of the Bengal Presidency. It continued to remain the seat of the Government, even after the formation of the Straits Settlement in 1826, until the customs duties were abolished in 1827.<sup>54</sup>

In 1830, the seat of government was transferred to Singapore. Though it was holding a significant position for British colonial rule, the colonies under the Straits Settlements had a somewhat similar kind of administration to the other colonies. Emerson noted an advantage the colonies achieved through the formation of the Settlement.<sup>55</sup> According to him, the indirect rule initiated through the historic change led to certain individualisation and differentiation of the administration of the Malay states.<sup>56</sup>

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<sup>50</sup> CO 953/2/1, Penang and Singapore municipalities: position of London agents, Colonial Office, 1953, p.16.

<sup>51</sup> *The Straits Times*, 9<sup>th</sup> May, 1941, p.3.

<sup>52</sup> INF. P144, Penang- Its History etc, Jabatan Penerangan, p.13.

<sup>53</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941, Volume 8: 1922-1926*, p. 169.

<sup>54</sup> *The Straits Times*, 18<sup>th</sup> August, 1954, p.18.

<sup>55</sup> Rupert Emerson, *Malaysia: A Study in Direct and Indirect Rule*. Kuala Lumpur: University of Malaya Press, 1964, p.129.

<sup>56</sup> *Ibid.* p. 269.



The Straits Settlement proved to be an important influence in shaping the administration and polity of Pulau Pinang and the Malay Peninsula in the wider context.<sup>57</sup> Firstly, the society of Pulau Pinang and later, the Malay Peninsula, became multi-racial due to a greater influx of immigrants from the nearby countries of China, India and Indonesia.<sup>58</sup> Population-wise, the region of Malacca had a Malay predominance by a slight margin of 51% as compared to the other inhabitants. Despite their majority, they were economically inferior caused by their indifferent attitude towards education and professional development.<sup>59</sup>

The conditions of the other two colonies of the Settlements, Singapore and Pulau Pinang were, relatively, better as they were essentially built by the British. Thus, most of the inhabitants (who were generally non-Malays) were engaged in non-traditional activities such as shipping and trade. The colonies of the Straits Settlements developed economically with the considerable presence of Chinese immigrants, who numbered 390,948 out of the total 525,228 in Singapore and who were engaged in a variety of different occupations.<sup>60</sup>

As Emerson had pointed out, “it is the Chinese who lend both the city, and the remainder of the island, its distinctive flavour”.<sup>61</sup> There was also a strong presence of Malays as well who stayed in scattered groups and continued with their traditional way of livelihood or who occupied the lower ranks of the rising urban economy.<sup>62</sup> In Pulau Pinang, the Chinese had less predominance compared with those in Singapore, with 162,878 of them out of the total 339,292 inhabitants, where Malays numbered 121,916 and Indians accounted for 47,962 in 1953.<sup>63</sup>

After the transformation of Pulau Pinang into a British entrepot, there was a rise in the employment of labourers which attracted denizens of the neighboring countries to settle down in the region and fulfilled the demand for cheap labour. Furthermore, a conjuncture of

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<sup>57</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 143.

<sup>58</sup> Abdillah Noh, *Small Steps, Big Outcome: A Historical Institutional Analysis of Malaysia's Political Economy*, Working Paper 164, Murdoch University, Perth, Western Australia, June 2010, p.87.

<sup>59</sup> *The Straits Times*, 18th August, 1954, p.18.

<sup>60</sup> Rupert Emerson, *Malaysia: A Study in Direct and Indirect Rule*, p. 270.

<sup>61</sup> *Ibid.* p.219.

<sup>62</sup> PENPP819A, *Penang Today*, English (pamphlet), Jabatan Penerangan, p.14.

<sup>63</sup> Rupert Emerson, *Malaysia: A Study in Direct and Indirect Rule*, p. 270.

events including Britain's Peel's Reform Act, 1842<sup>64</sup> and the end of the Opium War, also in 1842,<sup>65</sup> aggravated the immigration of large quantities of organised Chinese labour to the Straits Settlements.<sup>66</sup> This immigration, along with the European Industrial Revolution and the resulting expansion of trade, marked the beginning of a decisive demographic and economic break.<sup>67</sup> This demographic and economic transformation led to an increase in the participation of non-Malay players in the political economy and incorporation of these performers in the state's political and legislative structures by the British and Malay authorities, thus increasing the dominance and strength of these non-Malay actors in the polity and economy of Pulau Pinang, compared with the Malays.<sup>68</sup>

It is noted that most of the Chinese enterprises were owned and controlled by individuals from the community who were staying in the Settlement itself and the enterprises owned by the European community were mostly based in Great Britain. Emerson reasoned that the situation had obstructed the understanding of the actual financial accumulation by the European community. Also, the Chinese were held to be more prosperous than the other residents, even the Europeans or any other community. This is because the former would take up any job to earn their livelihood, whereas, the latter community were restricted to the higher echelons of the administration or commercial enterprises or to some specific occupation.<sup>69</sup>

Revenue incursion under the Straits Settlements increased rapidly due to the existence of varied types of occupation. The influx of immigrants, especially the Chinese, led to the emergence of many enterprises and trade which earned the bulk of the revenue in the region.<sup>70</sup> A substantial percentage of the revenue came from the entrepot trade as most of the workforce as well as economic investments were engaged in this sector, that is, in the

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<sup>64</sup> The Peel's Reform Act of Britain in 1842 reduced the tariff on imported tin, resulting in the growth of interest in exploring tin in the Malay States by international traders as global prices of the metal was higher.

<sup>65</sup> First Opium War carried out between Britain and China ended in 1842, and resulted in freeing the major ports of Southern China, encouraging Chinese laborers to migrate in South-East Asia for employment as laborers.

<sup>66</sup> Abdillah Noh, *Small Steps, Big Outcome: A Historical Institutional Analysis of Malaysia's Political Economy*, Kuala Lumpur: University of Oxford, 2012, p.48.

<sup>67</sup> Charles Hirschman, "The Meaning and Measurement of Ethnicity in Malaysia: An Analysis of Census Classifications", in *Journal of Asian Studies* 46 (3), 1987, hlm. 559.

<sup>68</sup> Abdillah Noh, *Small Steps, Big Outcome: A Historical Institutional Analysis of Malaysia's Political Economy*, p. 8.

<sup>69</sup> Rupert Emerson, *Malaysia: A Study in Direct and Indirect Rule*, p.38.

<sup>70</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 153.

“receiving, processing, and trans-shipping of produce of the hinterland and the surrounding regions.”<sup>71</sup>

Also, agricultural products, especially rubber and coconuts, played a significant role in terms of economic contributions. Such a gradual increase in the revenue led to the social development of the region with the government undertaking various public developmental jobs in sectors of health, education, sanitation and public facilities, such as water supply, irrigation, roads, electricity etc.<sup>72</sup>

The revenue collected in the Settlements, including Pulau Pinang, not only came from the income taxes and sales taxes acquired from the working forces and the enterprises but also from the duties levied on items like tobacco, petroleum and liquor, which amounted to a larger portion of the revenue totalling more than \$10,000,000 in 1934 and surpassing the opium revenue of \$8,723,428. Most of the revenue collected was spent on expenses belonging the Defence Contribution and Public Works Extraordinary.<sup>73</sup>

The expenses belonging to the Defence Contribution varied with the size of the budget. For example, in 1930, the spending of the said sector was \$4,239,729, whereas in 1932, it was \$3,947,143.<sup>74</sup> The spending of the Public Works Extraordinary also varied with the size of the budget. This could be as high as \$579,150 as in 1930 and as low as \$330,522 as recorded in 1934. Other expenses such as education, health and other medical facilities also varied according to the revenue collected and the budget formed.<sup>75</sup> These are further illustrated through Table 2.1:

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<sup>71</sup> Rupert Emerson, *Malaysia: A Study in Direct and Indirect Rule*, p. 271.

<sup>72</sup> *The Straits Times*, 10<sup>th</sup> April, 1954, p.19.

<sup>73</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941, Volume 8: 1922-1926*, p. 217.

<sup>74</sup> INF. P144, Penang- Its History etc, Jabatan Penerangan, p.21.

<sup>75</sup> Chai Hon Chan, *the Development of British Malaya 1896-1909*, Kuala Lumpur: Oxford University Press, Second Edition, 1969, p.47 and p.49.

**Table 2.1** The Development of Expenditures in  
Two Social Service Sectors – Education and Health, 1913, 1929 and 1935

Sectors of expenditure	1913 (\$)	1929 (\$)	1935 (\$)
Education	304,879	1,427,988	3,002,648
Medical	252,370	348,582	369,731
Medical, Health Branch	—	627,620	539,753
Medical, Hospitals and Dispensaries	365,746	2,248,418	2,242,751
Medical, Social Hygiene Branch	—	99,033	91,658

Source: Rupert Emerson, *Malaysia: A Study in Direct and Indirect Rule*. Kuala Lumpur: University of Malaysia Press, 1964, p. 306.

According to Table 2.1 above, the spending of the social sectors of education and health-related matters, included that of sanitation and hygiene, which were also extended in school education so as to spread awareness on the importance of a hygienic way of living.<sup>76</sup> These methods included the broadcasting of films and advertisements concerning various diseases such as malaria, and highlighting the harmful effects of an unhygienic lifestyle. Besides this, individual drives to spread awareness and to cure diseases through camps were carried out as well as various vaccination campaigns.<sup>77</sup>

The Table 2.1 also provides evidence that provisions for education and medical facilities had existed since 1913. However, there was a lack of dispensaries, social hygiene and other such things. Gradually with time, dispensaries, social hygiene etc. were introduced after the formation of the Straits Settlements and they developed gradually over time.<sup>78</sup>

<sup>76</sup> Rupert Emerson, *Malaysia: A Study in Direct and Indirect Rule*, p. 306.

<sup>77</sup> CO 927/446, Medical research Malaya: brief for visit of Mr. Manson, Colonial Office to South East Asia, Colonial Office, the National Archives, UK, p.18.

<sup>78</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 195.

**Table 2.2** Annual Consumption of Water and Electricity in the Colonies of the Straits Settlements, 1934-1938

Year	Avg. consumption of water daily in 1000 gallons			Units of Electricity sold (1000)	
	<i>Singapore</i>	<i>P.P</i>	<i>Malacca</i>	<i>Singapore</i>	<i>P.P</i>
1934	14,588	6,539	930	31,635	12,153
1935	15,952	6,637	920	34,176	11,557
1936	17,020	6,562	1,070	37,918	11,578
1937	18,938	6,790	1,150	41,878	13,561
1938	20,984	6,724	1,189	45,442	11,611

Source: *Malaya and Its Civil Administration Prior to Japanese Occupation*, London: War Office, Great Britain, 1944, p. 136.

Table 2.2 above illustrates the annual consumption of electricity and water by the residents of Pulau Pinang, Singapore and Malacca<sup>79</sup> from the year 1934 to 1938. It shows a gradual rise in the amount of water and electricity consumption. Besides, there was a considerable difference between the amount of water and electricity consumed in Singapore and Pulau Pinang. The reason was because Singapore had a larger population.<sup>80</sup>

Besides the vicissitudes in the ethnicity and political economy of Pulau Pinang, the formation of the Straits Settlements also contributed to a clear understanding of the Judicial Administration practised by the British colonial government. The administrative setup carved out by the Imperialist government was an excellent model of governance as explained by Adam. It had caused the urbanisation of the region, especially George Town. However, prior to the formation of the Straits Settlements, there was no separation of powers between the judiciary and the executive.<sup>81</sup>

The Governor and the Executive Council acted as lay judges along with the professional judges. However, after the establishment of the Straits Settlements, a separate wing of the judiciary came into existence. Ahmad, Leong and Andrews, on behalf of the

<sup>79</sup> Data regarding electricity consumption in Malacca were lacking.

<sup>80</sup> *Malaya and Its Civil Administration Prior to Japanese Occupation*, London: War Office, Great Britain, 1944, p. 136.

<sup>81</sup> Margaret Adams, *Penang: Illustrated Guide*, p.69.

Asean Law Association, projected that the Charters of Justice,<sup>82</sup> practised in the judicial administration of the Settlements, were significant for they heralded the reception of the English common law and equity into the Malay Peninsula.<sup>83</sup>

## **World Wars**

Under colonial rule, Pulau Pinang experienced the brunt of the two World Wars, just like other colonies of the Crown such as India, Burma, Egypt, Sri Lanka, Iraq, Kenya, Namibia, etc. Britain's participation in the war brought millions of its colonial subjects into war with the Central Powers, comprising of Germany, Austria-Hungary and Turkey. The inhabitants of Pulau Pinang, devoid of any information regarding the on-going war, witnessed the solitary raiding mission carried out by the German light cruiser SMS Emden, with the mission to destroy the global trade managed by the Imperial Power and to terrorise the sea lanes upon which secure imperial communications and the transit of troops rested.<sup>84</sup> Pulau Pinang was sandwiched in a position between the Allied and Central powers. Its harbour became the platform for the destruction of French and Russian warships and for the rebellion of the Indian soldiers who were disturbed by the thought of fighting against the Ottoman Empire, and consequently this brought about suppression by the Japanese sailors.<sup>85</sup>

The Second World War brought a new beginning into the society of Pulau Pinang which witnessed the brunt of Japan's aim in becoming an Imperial power in Asia, through its invasion of Pulau Pinang along with other territories comprising present day Malaya. On December 8<sup>th</sup> 1941, the 25<sup>th</sup> Army of Yamashita Tomoyuki landed on the north-eastern coast of Malaya and advanced towards Singapore. In the battle between the British, Australian and

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<sup>82</sup> See Asmida Ahmad, Fork Yow Leong and Paul Linus Andrews, "Tracing The Development of The Legal System", in *Legal System in Malaysia*, Kuala Lumpur: ASEAN Law Association, 2005, pp. 18-19.

<sup>83</sup> *Ibid.* p. 3.

<sup>84</sup> *Ibid.* p. 5.

<sup>85</sup> Nicholas Tarling, "The Japanese Occupation of South-east Asia", in *History, Journal of the History Department of the University of Malaya*, Fakulti Sains Sosial, Universiti Malaya, Kuala Lumpur, No. 9, 2001, p.78.

Indian troops, and the Japanese power, the former surrendered, fearing loss of lives of the inhabitants and thus, Pulau Pinang came under Japanese rule in 1942.<sup>86</sup>

The Second World War had a more devastating effect on Pulau Pinang than the first. After the invasion by, and consequent occupation by, the Japanese troops in 1942, Pulau Pinang witnessed a chaotic situation, not only on the political front, but in social and economic spheres as well. The Japanese army, unlike the British Colonial government, did not come to rule and establish themselves; rather they were more aimed towards plundering the area and thus projected less willingness to develop the region. In fact, all the initiatives conducted by the British to urbanise the island and to develop it into a social and economic sector went into disarray during this brief period.<sup>87</sup>

All schemes introduced in the health sector, such as medical facilities and surveys conducted to ensure a healthy lifestyle among the urban and rural residents, immediately ceased to exist after the invasion. Also, initiatives such as vaccination and cleanliness drives through an effective sewage system to ward off fatal diseases like malaria, dengue and other such contagious diseases came to a halt, and were discontinued under the Japanese regime. After the fall of Pulau Pinang on 17<sup>th</sup> December, 1941, Pulau Pinang was bombed and raided by the Japanese troops. Since the British Colonists had already evacuated the area a day prior to the invasion, lawlessness prevailed on the island with overwhelming looting and massacres with corpses left to rot on the streets.<sup>88</sup>

Children were also attacked and massacred mercilessly- nearly 250 students of Chung Ling High School, along with thousands of villagers of Pulau Pinang were killed by the Japanese Army.<sup>89</sup> Narayanan provided accounts to the killings undertaken by the Japanese army which devastated the population and affected the lives of survivors immensely in the colonies of the Straits Settlements:

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<sup>86</sup> Ibid.

<sup>87</sup> Paul H. Kratoska, *The Japanese Occupation of Malaya: A Social and Economic History*, Hawaii: University of Hawaii Press, 1997, p.49.

<sup>88</sup> INF.P144, Penang- Its History etc, Jabatan Penerangan, p.28.

<sup>89</sup> K. K. Beri, *History and Culture of Southeast Asia*, New Delhi: Sterling Publishers private limited, 1994, p.48.

Among the worst atrocities in British colonial territories were the massacre of the Chinese in Singapore, the slaughter of surrendered Australian and Indian soldiers at Parit Sulong and Muar in Johore [...] the massacre of wounded soldiers, patients, civilian and military medical staff at Alexandra Military Hospital in Singapore [...] the massacre of 160 Chinese in a village about one mile from Batu Caves for not giving information on Colonel Chapman's camp, the massacre of 40 civilians at Junjong, Kulim, Kedah, the massacre of about 250 students at the Chung Ling High School in Penang [...]. There were also massacres of the local populations in Ipoh (December 1941), Langkap (Perak), Penang, Katonga (January 1942), Singapore (February-March 1942), Panjang (February 1942), Ulu Tiram (Johore), Malacca (July 1945)....<sup>90</sup>

Thus, there were immense massacres across the colonies of the Straits Settlements, including Pulau Pinang, and these killings were not directed towards any specific group or community. Rather, those killed comprised of residents of all ages and walks of life, including women and children.<sup>91</sup> Besides the huge killings of residents, there were devastations of infrastructures as well. Huge bombings in Pulau Pinang, Malacca and Singapore led to the destruction of the transport systems. Also, the lack of plans on the part of the Japanese troops to maintain and revive the destroyed means of transport resulted in the gradual deterioration of the whole transport system. Vehicles, like the trolleybuses that were built by the British for means of communication, urbanising the region, were destroyed.<sup>92</sup>

Thus, after the surrender of the Japanese troops three years later, Pulau Pinang was devoid of any serviceable public means of conveyance, especially the trolleybuses.<sup>93</sup> Hence, the effects of the Second World War had far more devastating effects onto Pulau Pinang, in every sphere of human existence, be it health and security as well as other aspects. The British government together with the residents took between the next three to four years to neutralise the repercussions of the occupation.<sup>94</sup>

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<sup>90</sup> Ibid. p. 3

<sup>91</sup> SUK/412/2311, Annual Report Settlement of Penang, 1948, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p. 24.

p. 13.

<sup>92</sup> Ric Francis and Colin Ganley, *Penang Trams, Trolleybuses & Railways: Municipal Transport History, 1880s-1963*, 2006, p.6.

<sup>93</sup> Ibid.

<sup>94</sup> PENPP819A, Penang Today, English (pamphlet), Jabatan Penerangan, Arkib Negara Malaysia, Cawangan Pulau Pinang, p. 29.



## Demographic Profile of Residents

The demography in Pulau Pinang underwent major changes after the acquisition of the island by the British East India Company and most significantly, after the unification of Pulau Pinang, Malacca and Singapore under a central administration in the form of the Straits Settlements, in 1826. In 1952, the Federation of Malaya consisted of approximately 6.5 million people categorised under four major divisions: Bumiputera,<sup>95</sup> Chinese,<sup>96</sup> Indian,<sup>97</sup> and others.<sup>98</sup> Bumiputera, or the sons of the soil, consist of ethnic Malay and non-Malay indigenous groups and formed 65% of the total population of the peninsula, followed by Chinese (26%), Indians (8%) and others (1%).<sup>99</sup> Out of the total population of Malaya, Pulau Pinang was recorded to consist of the highest density with 6,696 people, on average, per square kilometre according to the report of the Department of Statistics.<sup>100</sup>

The present demographics, composition and categorisation of the different racial groups on the island traces its origin back to 1786 and 1826 – the formation of the British entrepot and the Straits Settlements, respectively. In 1786, when Francis Light acquired the region, the population was only 58, consisting of men, women and children.<sup>101</sup> Gradually, Light conducted the settlement through the clearance of forest land and the erecting of tents and hutments and the laying down of tracks up to the Penang Hill, a steady stream of independent merchants began to arrive to make the island their home.<sup>102</sup>

The region soon developed into a multi-ethnic society with Arabs, Persians, Indians and Chinese along with Burmese, Siamese and Sumatran traders settling down and forming the earliest populations of the archipelago as per the data recorded by the British officials.

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<sup>95</sup> Bumiputera consists of Malay, Indonesian, Negrito, Jakun, Semai, Semelai, Temiar, other Orang Asli and other Malaysians.

<sup>96</sup> Chinese consists of Hokkien, Cantonese, Khek (Hakka), Teochew, Hainanese, Kwongsai, Hokchiu, Henghua, Hokchia and other Chinese.

<sup>97</sup> Indian consists of Indian Tamil, Telegu, Malayali, Punjabi, other Indian, Pakistani, Ceylon, Tamil and Ceylonese.

<sup>98</sup> Dorothy Z. Fernandez, Amos, H. Holey and Silvia Predaza, *The Population of Malaysia*, Kuala Lumpur: Department of Statistics, 1974, p.123.

<sup>99</sup> PRP100/50, Estimates, Jabatan Penerangan, p. 27.

<sup>100</sup> Ibid. p. 65.

<sup>101</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, London: archives Edition, 1998, p. 163.

<sup>102</sup> Cecilia Tan and Philip Little, *Penang*, Singapore: Times Edition, 1986, p. 7.

Furthermore, after the formation of the Straits Settlements and the growth of George Town into a burgeoning trading center a large influx of immigrants across various ethnicities formed the present day cosmopolitan frontier township.<sup>103</sup>

According to the 1835 population census, there were in all 40,207 inhabitants, out of which 16,435 were Malays, 8,751 Chinese, 9,208 Indians, a little less than 3000 Arabs, Siamese, Burmese, Parsees, Armenians, Acehnese, Bataks and native Christians and 790 Europeans.<sup>104</sup> But the balance between the Chinese and the Indians faded by 1891, due to a huge migration of Chinese who outnumbered the other ethnic groups by comprising 50% of the total population. Furthermore, the percentage of Indians declined from 28% in 1818 to 13% in 1906, and remains stable around that percentage till this day.<sup>105</sup>

The population census of 1931 projected 169,510 Chinese, out of whom 54% were born outside British Malaya, which further grew “with the aftermath of the World Economic Depression and the implementation of the Aliens Ordinances of 1933”.<sup>106</sup> The population census of 1947 projected a 27.8% growth in the region from the total population of 3,818,000 to 4,878,000, with a rise to 27.1% for Malays (from 1,891,000 to 2,403,000) and 46.2 % for Chinese (from 1,288,000 to 1,883,000), while a decrease in Indian population by 6.8% (from 573,000 to 534,000) was recorded.<sup>107</sup> The year of independence of the Malayan Federation projected a total natural population of 572,100 in Pulau Pinang, out of which 28.8% were Malays (164,765), 57.2% Chinese (372,241), 12.2% Indians (69,796) and 1.8% of other heritage (10,298).<sup>108</sup>

Thus, a slow rise in Chinese population over other groups can be observed over the years in Pulau Pinang. Moreover, Yaakob and Nor detected that there was a sharp increase in the population index from 1.30% in 1911-47 to 2.44% in 1947-70.<sup>109</sup> The total population

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<sup>103</sup> Yeoh Seng Guan, Loh Wei Leng, Khoo Salma Nasution and Neil Khor (Editors), *Penang and Its Region the Story of an Asian Entrepot*, Singapore: NUS Press, 2009. p.103.

<sup>104</sup> Sarnia Hayes Hoyt, *Old Penang*, p. 37.

<sup>105</sup> *Ibid.* p.29.

<sup>106</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p.163.

<sup>107</sup> CO 1047/949, Penang Island and Province Wellesley, Colonial Office, The National Archives, UK, p.19.

<sup>108</sup> CO 865/6, Penang Municipality: administration, staff, etc, Colonial Office, The National Archives. UK, p.23.

<sup>109</sup> *Ibid.*

growth in the Malayan Federation along with Pulau Pinang is further illustrated in the following tables, Table 2.3 shows the distribution of population by location from 1817 to 1901 with Table 2.4 shows the ethnic population in Pulau Pinang between 1788 until 1833.<sup>110</sup>

**Table 2.3** Population of Pulau Pinang and Malacca, 1817-1901

<b>Year</b>	<b>Pulau Pinang and Malacca</b>
1817 & 1820	60,867
1833 & 1834	120,614
1851 & 1852	170,428
1860	192,039
1871	210,686
1881	281,824
1891	324,173
1901	339,581

Source: Dorothy Z. Fernandez, Amos, H. Holey and Silvia Predaza, *The Population of Malaysia*, Kuala Lumpur: Department of Statistics, 1974, p. 9.

**Table 2.4** Ethnic Population of Pulau Pinang, 1788-1833

<b>YEAR</b>	<b>EUROPEAN</b>		<b>MALAYS</b>		<b>CHULIA</b>		<b>CHINESE</b>		<b>TOTAL</b>
<b>1788</b>	19	(1.4%)	530	(41%)	-		537	(42%)	1,283
<b>1810</b>	95	(0.6%)	2,069	(15%)	5,604	(40%)	5,088	(36%)	13,885
<b>1818</b>	400	(4%)	2,193	(18%)	5,498	(45%)	3,128	(25%)	12,135
<b>1822</b>	400	(3%)	3,367	(24%)	4,996	(36%)	3,313	(24%)	13,781
<b>1833</b>	789	(2%)	16,435	(40%)	7,886	(20%)	8,751	(21%)	40,322

Source: Andrew Barber, *Penang under the East India Company, 1786-1858*, Kuala Lumpur: AB&A, 2009, p. 103.

<sup>110</sup> Dorothy Z. Fernandez, Amos H. Holey and Silvia Predaza, *The Population of Malaysia*, Kuala Lumpur: Department of Statistics, 1974, p. 9.

## Formation of a multiracial society

As discussed in the previous section, the Federation of Malaya, including Pulau Pinang, witnessed a huge influx of immigration from the nearby countries of China and India, along with traders from the Middle-East and Europe as well as officers and denizens from Great Britain. This led to the emergence of a multiracial society. The categorising of the entire population into significant ethnic groups has been observed till the present day. The various ethnic categories are explained separately in the current section.<sup>111</sup>

### Malays

Malays<sup>112</sup> are engaged in professions like fishing, wood-cutting, paddy-cultivating, etc. Francis Light, in his dispatches dated to 1794, mentioned two kinds of Malays – the first type was those who are involved in cutting wood and cultivating paddy, and thus could be easily ruled. The other type was those who were engaged in navigating prows, addicted to smoking opium, gaming and other vices. In 1786, the Malay community was 136 in number, living along the shoreline in two villages (kampongs). Their number gradually increased after the acquisition of the island.<sup>113</sup>

Andrew Barber mentions that from 1786 onwards, the Malay community increased considerably, surpassing all other communities present on the island.<sup>114</sup> In 1822, Malays constituted 24% (3,367) of the total population and increased to 40% in 1833 (6,435). This increase in numbers can also be attributed to the growing anarchy and lawlessness in Kedah due to its war with Siam, resulting in a surge of refugees in search of safety and security.<sup>115</sup>

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<sup>111</sup> Andrew Barber, *Penang under the East India Company, 1786-1858*, Kuala Lumpur: AB&A, 2009, p. 103.

<sup>112</sup> The search for Malay origins cannot be realized based on linguistic development (Austronesian and Austroasian), archeological artifacts, anthropological artifacts, physical features, fossils and genetics. Instead, it is suggested that the identity of the Malays be based on historical sources. This is due to the fact that the Malays today are an 'existing race' formed since the 18<sup>th</sup> century as a result of the development of identity which was originally restricted to the royal class of the Malacca Sultanate. This 'imaginative community' was resulted with the demise of the royal lineage of the Sultanate and developed while being fostered by Islamic virtues and values. For further details, refer to Mohamed Anwar Omar Den, "The origin of the Malays: Rewrite history", in *Malay Journal* No. 7, 2011, pp. 1-82.

<sup>113</sup> Sarnia Hayes Hoyt, *Old Penang*, p. 64.

<sup>114</sup> Andrew Barber, *Penang under the East India Company 1786-1858*, p.134.

<sup>115</sup> *Ibid.* p.113.

James Low recorded in his book that Malays mostly dwelt in kampongs, situated on the southern edge of George Town or in the interior mainland.<sup>116</sup> These inhabitants, as mentioned by Low, acted as a fluid community, easily gaining access from the waterways to the mainland. By 1950s, Pulau Pinang consisted of twenty-one markets, twenty-eight mosques and fifty-nine local schools, teaching verses of the Quran to nearly 16, 000 boys.<sup>117</sup> Visitors visiting the place from time to time like Crawford, Rathbone, John Thomson and Dr. Abraham in the nineteenth century presented a vivid picture of the life and occupation of the Malays. Thomson, while describing the livelihood of the Malays, wrote:

There is a large Malay population on the island...it is, however, a...difficult task to point out how they are all occupied as they do not practice any trades or professions, and there are no merchants among them. Some are employed on plantations catching beetles, pruning trees, and tilling the soil; but on the whole, the Malays do as little work as possible.<sup>118</sup>

The British colonialists respected the Malay way of life and did not interfere in their lifestyle. Hoyt stated that the British officials encouraged Malays to continue with their pastoral occupation as farmers and fisherman rather than developing ways to improve their skills in the increasingly competitive and industrialised world. Hoyt asserts that most of the Malay community in the rural areas were still engaged in the traditional occupation of agriculture, inhabiting the western and southern regions of Penang Island or are engaged in the modern electronics industries.<sup>119</sup>

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<sup>116</sup> James Low, *the British Settlement of Penang*. p.143.

<sup>117</sup> Andrew Barber, *Penang under the East India Company 1786-1858*. p.121.

<sup>118</sup> *Ibid.* p. 67.

<sup>119</sup> Sarnia Hayes Hoyt, *Old Penang*, p. 68.

## Chinese

A Chinese colonisation occurred after the acquisition of the island of Pulau Pinang by Francis Light on behalf of the British East India Company in 1786. Prior to this period, there was Chinese migration to the region but the proportion was relatively low. Chinese immigration in the region of Malacca started after the Portuguese invasion in the early sixteenth century and gradually assimilated into the Malay culture, developing a special language known as Baba Malay.<sup>120</sup> Later on, after 1786, there was a large influx of Chinese migration both from mainland Malacca and China, mainly in search of jobs and better lifestyle opportunities, as well as security under the colonial governance despite the crowded and congested living conditions in the newly-formed settlements.<sup>121</sup>

For the British authorities, the Chinese constituted the ideal immigrants due to their willingness to endure hardship, their industry, perseverance and intelligence, and their ability to organise themselves.<sup>122</sup> They contributed immensely to the progress and development of the settlement, resulting in their holding of honorary positions in the government body from 1877 onwards.<sup>123</sup> A vivid picture of the attitude of the British authorities towards the Chinese population in Pulau Pinang and their livelihood can be observed in the letter written by Francis Light on 1<sup>st</sup> of February, 1787,

The Chinese constitute the most valuable part of our inhabitants; they are men, women and children, about 3000, they possess the different trades of carpenters, masons, and smiths; are traders, shopkeepers and planters, they employ small vessels and prows and send adventures to the surrounding countries. They are the only people of the East from whom revenue can be raised without expense and extraordinary efforts of the government. They are valuable acquisition, but speaking a language which they disapprove, and were they brave as intelligent they would be dangerous subjects, but their want of courage will make them bear many impositions before they rebel. They are indefatigable in the pursuit of money, and like the Europeans, they spend it in purchasing those articles which gratify their appetites. They don't wait until

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<sup>120</sup> Andrew Barber, *Penang under the East India Company 1786-1858*, p.28.

<sup>121</sup> *Ibid.* p. 89.

<sup>122</sup> Sarnia Hayes Hoyt, *Old Penang*, p. 38.

<sup>123</sup> Neil Khor Jin Keong and Khoo Keat Siew, *The Penang Po Leung Kuk: Chinese Women, Prostitution & a Welfare Organisation*, Kuala Lumpur: Malaysian Branch of the Royal Asiatic Society, 2004, p.47.

they have acquired a large fortune to return to their native country, but send annually a part of their profits to their families. This is so general that a poor laborer will work with double labor to acquire two or three dollars to remit to China. As soon as they acquire a little money they obtain a wife and go on in regular domestic mode to the end of their existence. They have everywhere peopled to teach their children, and sometimes they send males to China to complete their education. The females are always kept at home with the greatest strictness until they are married; then they enjoy greater liberty. They are excessively fond of gaming; there is no restraining them from it. This leads them into many distresses and frequently ends in a ruin.<sup>124</sup>

The paragraph above gives readers a detailed picture of the importance of the Chinese laborers in the society and administration of Pulau Pinang at that time and their worthiness to the British authority. Utilising their industries and intelligence, the Chinese population acquired a dominant position in the plantations and mining fields and some of them accumulated huge wealth through land speculations and profits earned by trade and as revenue collectors. They thus contributed greatly to the economic development of the entire peninsula, establishing a dominant business community in the Settlement. Beri opined that the dominant Chinese enterprises established outside the centralised Malayan system, also provided protection to the immigrants (Chinese) through secret societies was also known as forming the backbone of SouthEast Asia.<sup>125</sup>

## Indians

The Indian population migrated to the entrepot mostly with the colonial rulers, as sepoys or convicts. Francis Light was accompanied by several sepoys (the exact number is unknown), to render protection to the settlement. Later, most of the Indian sepoys who have arrived at the island port over time settled there even after the completion of their service.<sup>126</sup> Sandhu in his book *Indians in Malaya: Some Aspects of their Immigration and Settlement (1786-1957)*, provided insights into the living conditions and occupations of Indians who migrated to the island port. His book gives a detailed insight into the total number of Indian

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<sup>124</sup> Bertie Reginald Pearn, *An Introduction to the History of South-East Asia*, p. 224.

<sup>125</sup> K. K. Beri, *History and Culture of South-East Asia*, New Delhi: Sterling Publishers Pvt. Ltd. 1994, p. 91

<sup>126</sup> Sarnia Hayes Hoyt, *Old Penang*, p. 18.

convicts (both male and female) deported to the archipelago from which the researcher received details regarding the total population of convicts present in Pulau Pinang between the years 1810 and 1865.<sup>127</sup> This is further illustrated by Sandhu in Table 2.5 below:

**Table 2.5** Projecting the Total Number of Indian Convicts Deported to the Straits Settlements, 1810-1865

	Pulau Pinang			Malacca			Singapore			Total
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
1810	-	-	1,300	-	-	-	-	-	-	1,300
1824	-	-	1,469	-	-	-	-	-	-	1,469
1855	-	-	1,358	-	-	648	-	-	1,839	3,845
1860	1,163	93	1,255	532	-	532	2,151	124	2,275	4,063
1865	728	72	801	743	2	745	1,681	112	1,793	3,339

Source: Singh Sandhu, *Indians in Malaya: Some Aspects of Their Immigration and Settlement (1786-1957)*, Cambridge: Cambridge University Press, 2010, p. 135.

Apart from the sepoys and convicts deported by the imperial government, indentured workers, independent merchants and pilgrims also visited the area from time to time and some of them settled down in the region, constituting the second most dominant immigrant group of the contemporary time. Purcell noted that, “*most of the public works, (construction of) bridges, roads and aqueducts*” were carried out by convicts deported from the Bengal Presidency before 1800.<sup>128</sup> The Indian population was complex and divided, consisting of Tamils<sup>129</sup> from South India and Bengalis from East India. Most the community practised Islam as their religion, though a Hindu group, prominently Tamils, also settled down in the region, dealing significantly in moneylending, spice trading and investments.<sup>130</sup>

Hence, after the acquisition of the region and precisely after the formation of the Straits Settlements in 1826 and gradual transformation of the island into a major trading port, Pulau Pinang emerged as a multi-racial society— predominantly male, whose inhabitants comprised the three dominant groups discussed above. As Barber mentioned, one incident

<sup>127</sup> Kernial Singh Sandhu, *Indians in Malaya: Some Aspects of Their Immigration and Settlement (1786-1957)*, p.135.

<sup>128</sup> Victor Purcell, *The Chinese in Southeast Asia*, London: Oxford University Press, 1965, p. 248.

<sup>129</sup> Sarnia Hayes Hoyt, *Old Penang*, p. 48.

<sup>130</sup> Ibid.



experienced by John Turnbull Thomson essentially pointed out the multi-racial nature of the society:

During an outdoor feast laid on by a European landowner for his tenants and neighbours...Hindus, Muslims or Buddhists...the guests were of diverse colours, creeds and nations, all harmoniously bent on enjoyment and mutual forbearance....<sup>131</sup>

Thus, besides the main ethnic groups, there were the mixed-race Peranakan<sup>132</sup> and Baba-Nyonya<sup>133</sup> communities. These Baba-Nonya individuals were progenies of early Chinese merchants who arrived at the place during periods as early as the fourteenth century. Other Peranakan communities comprised of Indian Chitty (who were different from Indian Chettiers) and Portuguese Kristang— a Catholic Eurasian race speaking an ancient Portuguese language. Both Baba-Nyonya and the Indian Chitty communities forgot their mother tongues and thus, spoke a peculiar variety of Malay, intertwined with words from their actual mother tongue.<sup>134</sup> Europeans, overall, counted very low, among whom the presence of Britons were predominant; making up the English officials, besides Portuguese explorers, and their families. There were also the existence of variegated communities consisting of Arabs, Parsees, Armenians and Negroes from Africa.<sup>135</sup>

Among the varied races of the population in Pulau Pinang, there was a considerable proportion of slaves. They were, as Barber pointed out, “an integral part of the colonial Pulau Pinang society.”<sup>136</sup> Most of these slaves were used for household work by the British officials. Even Francis Light bore slaves, as mentioned in his will. He left them with a choice to declare their freedom or to continue serving his wife after his death. The census of 1801 in Pulau Pinang revealed 723 slave owners and nearly 1,200 slaves while the census of 1807 revealed nearly 3,000 slave owners, mostly from affluent families.<sup>137</sup>

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<sup>131</sup> Andrew Barber, *Penang under the East India Company, 1786-1858*, p. 101.

<sup>132</sup> CO 953/2/1, Penang and Singapore municipalities: position of London agents, Colonial Office, p.24.

<sup>133</sup> CO 1047/949, Penang Island and Province Wellesley, Colonial office, p. 19.

<sup>134</sup> Andrew Barber, *Penang under the East India Company, 1786-1858*, p. 101.

<sup>135</sup> Ibid.

<sup>136</sup> Ibid.p.116.

<sup>137</sup> Ibid.

Furthermore, the island also acted as a trade center of slaves, especially males, who were brought from Sumatra and often engaged in the Chinese tin mines of Perak.<sup>138</sup> Despite the British efforts of emancipating slavery from the region in 1808 onwards, the existence of these slaves continued and accounted for nearly 3,000, as recorded by the British and the Foreign Anti-Slavery Society. One interesting point to note here is that the condition of these slaves in Pulau Pinang differed significantly from the African slaves of the American Deep South and the Caribbean. Here, the slaves' societal position and rights were in better condition than the other, who were often indistinguishable to the outsider from paid servants and sometimes even from their owners.<sup>139</sup>

### **Trade and Economy**

After Francis Light had acquired the island on behalf of the British East India Company, the Chinese, Indians and West Asians migrated to the island. Among them were the traders and merchants. This migration had enriched the population of the region. These traders and merchants contributed to the rise and development of the settlement's economy. With the increase in population, there was an increase in the variety of trade which mainly involved the spice trade, especially pepper.<sup>140</sup> The interested merchants were usually from other SouthEast Asian as well as European countries. Pulau Pinang which took its position as the British entrepot helped in the development of its exports as well as import trades and economy.<sup>141</sup>

Kennedy noted that the population of Pulau Pinang which was around 1,000 until the year 1788, had increased considerably to 12,000 by 1804 after the inclusion of Seberang Perai. Its trade kept pace with the increasing population.<sup>142</sup> Britain and India imported clothes, metal-ware and opium. Meanwhile Burma, Siam and Sumatra were involved in

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<sup>138</sup> CO 273/541/2, Development of Weld Quay, Penang, Colonial Office, p. 16.

<sup>139</sup> Andrew Barber, *Penang under the East India Company 1786-1858*, p. 116.

<sup>140</sup> CO 865/66, Penang Municipality: administration, staff, etc, Colonial Office, p. 9.

<sup>141</sup> Ibid.

<sup>142</sup> Joseph Kennedy, *A History of Malaysia*, p.67.

importing rice, tin, spices, rattans, gold-dust, ivory, ebony and pepper, from the Straits produce. Some of this produce of the Straits also provided for the Company to maintain their balance in payments, for trade with China, apart from silver.<sup>143</sup>

Purcell provides a detailed picture of the trade carried out in Pulau Pinang under the reign of the colonial government and its effect onto the economy.<sup>144</sup> According to him, the directors of the Company were initially not satisfied with the region acquired by Francis Light in the setting up of a naval base and trading center. However, after the turn of the century, the attitude of the colonial rulers changed.<sup>145</sup> They made Pulau Pinang a part of the Indian Presidency, appointing its own Governor and officials and engaged them in utilising the natural resources of the island for their own use, such as timber for building ships. But as Kennedy observed this optimism was not justified as the resources were of sub-standard quality.<sup>146</sup>

Besides, there were other natural phenomena which damaged crop cultivation like pepper, nutmegs, etc. This resulted in the halting of trade activities carried out in the island up to 1860. In the later part of the 19<sup>th</sup> century, the economy of Pulau Pinang prospered with the introduction of sugar cane plantations (the Chinese planters dominated this sector after 1800). The opening up of the mainland also contributed to the economic prosperity of Pulau Pinang, as crop cultivation like that of rubber, started again. Besides this, the industries of rubber and tin (which were found in abundance in the Malay Peninsula) prospered in Pulau Pinang, creating progress in its economy.<sup>147</sup>

The different ethnic groups utilised their individual skills and industries in making the region more suitable for the cultivation of different types of crop species. As Purcell points out, the Malays cut down the larger trees and the remainder of the operations necessary for putting the land into a fit state for cultivation were performed by the Chinese at the rate

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<sup>143</sup> Ibid.

<sup>144</sup> Victor Purcell, *The Chinese in Southeast Asia*, p.162.

<sup>145</sup> Ibid

<sup>146</sup> Joseph Kennedy, *A History of Malaysia*, p. 71.

<sup>147</sup> SUK212/323, Annual Report Settlement of Penang, 1953, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p. 16.

of \$20 an orlong.<sup>148</sup> A drawback existed in the lack of systematic encouragement on the part of the Colonial Government towards the field of agriculture, and this hampered the growth and development of the settlement. Also, the Chinese cultivators mostly opted for gambier production, which promptly exhausted the soil its nutrients. Paddy was not a popular crop for the Chinese and other agriculturists, unlike the Malays. Rather they looked down on the rice planters and thus, were outnumbered by them 41:4.<sup>149</sup>

Pulau Pinang produced other products as well, which were used for trade and export. Coconut and tobacco grew on the settlement's soil but in lesser quantities and thus, were never utilised for export. Other than these, sireh - a kind of leaf used for chewing along with betel-nut, nipah and indigo were also cultivated in Pulau Pinang. Indigo was mainly produced by the Chinese who also grew orange orchards but later moved to other agriculture products due to lower profits being earned through the other aforementioned crops.<sup>150</sup>

Sugar cultivation under the Chinese prospered greatly with the new policy introduced by the British Government in 1846. Under this new policy, colonial duties for products like sugar and rum were reduced. This move was undertaken to distinguish between local products produced in Pulau Pinang and imports from China, Java and Manila which were collected at the entrepot of Singapore where heavy duties were charged.<sup>151</sup> The prominence of the Chinese farmers in almost all the agricultural commodities used for trade resulted in the huge accumulation of wealth by the community. As a result, they succeeded in building factories and initiated money lending operations. They also hired people from aboriginal ancestries and other ethnicities as laborers, thus exerting their dominance within the society. This can still be witnessed in contemporary times.<sup>152</sup>

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<sup>148</sup> Victor Purcell, *The Chinese in Southeast Asia*, p. 246.

<sup>149</sup> Ibid.

<sup>150</sup> SUK/412/2311, Annual Report Settlement of Penang, 1948, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.18.

<sup>151</sup> Ibid.

<sup>152</sup> CO 1047/949, Penang Island and Province Wellesley, Colonial Office, p.6.

## **Conclusion**

By the instructions of the Governor-General of the British East India Company, Francis Light raised the British flag on the soil of Pulau Pinang in 1786 after acquiring the island from the King of Kedah for an annual charge of \$6,000. There was mass immigration of the inhabitants from Malacca as well as other parts of the mainland, Kedah, China and India took place. There were also traders and merchants from the Middle-East and Europe along with voyagers who visited the land from time to time and eventually became inhabitants of the island. This had led to the emergence of a multi-ethnic society. Also through Light, the British Imperial Government had introduced an administrative setup in the island to look after its inhabitants. Then, this administration was neglected until the turn of the century.

It is observed that there was a dearth of health and other primary facilities such as education, public works, etc. However, during the 19<sup>th</sup> century, there was an improvement of the administrative setup of the colony. In 1826, the regions of Pulau Pinang, Malacca and Singapore were merged to form the Straits Settlements. From then on, the history of Pulau Pinang was fused with that of the Straits Settlements. Singapore, after the event, emerged as a major entrepot for British trade and prospered economically, leaving Pulau Pinang behind. Later the multi-racial society, especially the Chinese, contributed tremendously to the growth of trade and development in the region.

Along with this, the Malaya mainland was used for the setting-up of various industries, mainly rubber and tin. The two World Wars also affected the polity of Pulau Pinang and the Japanese had invaded the island in 1942. The culmination of the social and political events from the British colonialism to the Japanese invasion gave rise to the existence of a multi-racial society.

University of Malaya

## CHAPTER 3

### MEDICAL HISTORY OF PULAU PINANG, 1900 to 1957

#### Introduction

This chapter focuses on the medical history of Pulau Pinang during British Colonial Administration from 1900 to 1957. The first part of this chapter focuses on the administration of medical services, water supply, sanitation, and education for nurses and health workers. Initially, when the British first arrived in Pulau Pinang, administrators realised that there were no modern facilities or medical amenities. Thus, along with the development of administration and technological facilities like railways, water supply and sanitation, the British colonial administration also took responsibility for the establishment of modern medical services in Penang Island and Seberang Perai. Finally, this first part of the chapter will also focus on the medical education and training afforded nurses and hospital assistants. The nurses and hospital assistants were trained by the General Nursing Council of England and Wales at the Penang Regional Training School.

This chapter will then focus on government hospitals and private hospitals, travelling dispensaries and the role of non-profit organisations in Penang Island and Seberang Perai. The establishment of the Penang General Hospital in 1882, which was the largest and most advanced hospital in terms of treatment and facilities, was proof that Colonial Administration did not neglect their social responsibility in providing the best possible medical treatment to the people of Penang Island and Seberang Perai. There were also other early hospitals, started with the support of the British Colonial Administration, such as the Lock Hospital, Pauper Hospital, Pulau Jerejak Leper Hospital, Gaol Hospital, Butterworth Hospital, Bertam Hospital, Bukit Minyak Hospital, Sungei Bakap Hospital, etc.

In the last section of this chapter, the research will focus on women's and children's health in Penang Island and Seberang Perai. This section will focus on hospitals, childcare, mortality rate and vaccination, malnutrition among children and dental care. The neglect of women's and children's healthcare facilities in the colonial period in Pulau Pinang during the colonial days across the world in the 19th and early 20th century was very obvious, women and children received little attention from the colonial government since they played no obvious economic role for the colonialists. However, this changed during early 20th century, saving children's lives and their mothers' was seen as necessity since repopulating the man-force was seen as indispensable to the country as well as to the colonialists.

### **Administration of Medical Services**

The administration structure of medical services in Pulau Pinang was established during the early 19<sup>th</sup> century. Before the establishment of the Straits Settlement in 1826, the head of the medical establishment was a well-known and highly-paid surgeon from Bengal, William Dick, also from Bengal and a second Assistant, James Herriot, who had been the head of the medical side of the administration under Farquhar.<sup>1</sup> In December 1805, William Dick was granted separate establishments for hospitals and vaccination departments. The first, and by far the largest, consisted of a European and a native apothecary,<sup>2</sup> two compounders and two dressers, as well as cooks, servants "to attend on sick" and nurses. All of these, judging from the low salaries, were Asian inhabitants of Pulau Pinang. The department of vaccination required a jamadar,<sup>3</sup> a peon<sup>4</sup> and a cart driver.<sup>5</sup>

The hospital was at first situated at some distance from Georgetown but in 1809 it was moved to a healthier site closer to town. During the first five years of Presidency government the medical officers were continually changing, replacements being sent from

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<sup>1</sup> Hean Teik Ong, *To Heal the Sick: The Story of Healthcare and Doctors in Penang 1786-2004*, p.34.

<sup>2</sup> Specializes in wild crafted herbal remedies.

<sup>3</sup> Minor official or junior officer

<sup>4</sup> Unskilled farm worker

<sup>5</sup> Ibid. p.35.



Bengal.<sup>6</sup> William Dick, Head Surgeon departed in June 1807, and his successor, Charles Mackinnon, was suspended from his appointment as Head Surgeon shortly after his arrival because of disrespectful conduct towards the Governor. Other appointments of Assistant Surgeons were Thomas White in 1807 and Chalmers, Loftier, Anderson and John Crawford in 1808. The various duties were divided between the medical officers.<sup>7</sup>

Usually, the Head Surgeon was in charge of the hospital, the First Assistant in charge of vaccination, the Second Assistant in charge of medical stores, while the charge of the dispensary varied according to their other duties. Each of these sections and small establishments was paid for by allowances to its head.<sup>8</sup> In addition, an Assistant Surgeon from the Presidency did periodic tours of duty at Malacca. The final section of the civil department was under the less important Superintendent of Convicts, an uncovenanted servant.<sup>9</sup>

In 1808, John Hall, who had been in Pulau Pinang before 1805, was appointed Superintendent, and his establishment included a European registrar, two overseers, forty native serangs, forty convicts acting as tindals, and two native writers. This is of interest, since it appears that the convicts, because of a shortage of personnel, served on the establishment in a way that was designed to cause them to discipline themselves.

During the Straits Settlements administration from 1826 to 1941, the position of head of Medical and Health Department was established to oversee and supervise the health and medical services in Singapore, Pulau Pinang and Malacca. The head of the Straits Settlements reports his duties to the governor and to the Colonial Secretary who is the deputy to the Governor of the Straits Settlements.<sup>10</sup>

In Pulau Pinang, the Resident Councillor was the head of Pulau Pinang under the Straits Settlements Structure. Whereas the Chief Medical Officer was the head of the Health

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<sup>6</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p.46.

<sup>7</sup> Margaret Adams, *Penang Illustrated Guide, the Municipal Council of Georgetown*, p.48.

<sup>8</sup> John Bastin, *A Short Account of Prince of Wales's Island or Pulo Pinang in the East -Indies given to Capt. Light by the King of kedah*, p. 143.

<sup>9</sup> Ibid.p.145.

<sup>10</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p.121.

Department in Pulau Pinang. Both of them received duties and instructions from the head of the medical and health department of the Straits Settlements.<sup>11</sup> The Chief Medical Officer received instructions and was monitored by the Head of the Medical and Health Department of the Straits Settlements, who gave him guidelines and circulars for all the hospitals, clinics and dispensaries in Pulau Pinang.<sup>12</sup>

In addition, Pulau Pinang in 1916 was divided into eight districts, each district headed by a district officer. His role was vital in providing healthcare services in rural areas. He supported the role and effort outlined by the Chief Medical Officer of their district. In rural areas, the role of the *Penghulu Kampung* (Head of Village) played a vital part in helping the district officer and chief medical officer to provide medical services and healthcare in their kampongs.<sup>13</sup>

A new administration structure of the medical and health service was formed after the Second World War. The establishment of the Federation of Malaya in 1948, the Federal Division and the State Division were formed. The Federal Government remained in authority, but the state also had its own role in running medical systems and services. Authority was distributed between the Federal Government and the State Government. Under the authority of the Federation Government was the Pulau Pinang Health Department, Hospital Besar, Maternity Hospital and Pathology Department. Whereas district hospitals, clinics and other Health Organisations were under the state government.<sup>14</sup>

According to the Medical Annual Report of the Federation of Malaya in 1951, the Federal Division was responsible for all the 'general guidelines'<sup>15</sup> given to the state settlement division. It enforced the administration of the public policy on health. All matters related to quarantine issues, and controlling epidemic diseases like malaria, were

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<sup>11</sup> James Low, *The British Settlement of Penang*, London: Oxford University Press, 1972, p.63.

<sup>12</sup> *Ibid.* p.73.

<sup>13</sup> Andrew Barber, *Penang under the East India Company, 1786-1858*, pg. 36.

<sup>14</sup> MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, p.19

<sup>15</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.16.

administered by the Federal Division. In the case of the State and Settlement Divisions, each division had their own medical headquarters, with joint administration for hospital and health services.<sup>16</sup>

For the hospital services, there were specialist officers who were attached to large hospitals, and their services were available wherever it was required within the State Division. Special officers from Federal Division to the State Divisions were also drafted in when required. Within health services, there were also Sanitary Inspectors posted under the Town Boards or under the Health Officers in rural regions. Each of these Sanitary Inspectors was responsible for taking care of a population between 5,000 and 10,000 people.<sup>17</sup>

In respect to the 'Town Boards', they were again responsible for maintenance of sanitation and preventing infectious diseases within their town.<sup>18</sup> These federal and state divisions applied to all the existing Federation of Malaya, including Pulau Pinang. By 1953, administration and management of the Medical and Health Department varied to some degree.<sup>19</sup> For instance, the medical headquarters were reorganised and new additional high ranking 'Administrative Grade A Officers', and two 'Assistant Directors' were appointed.<sup>20</sup> Through the Director, they were held responsible to the Member for Health on all health policies. These Medical Headquarters were responsible for looking after functions such as research, stores, special diseases - e.g. mental disease and leprosy, quarantine issues, and even promoting, transferring, and training staff members.<sup>21</sup>

The states were responsible for the maintenance of their own hospitals, and, during this time, Malacca and Pulau Pinang had the largest federal hospitals. From 1954 till the time the British left the country, the administration and management of the Medical and Health

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<sup>16</sup> Ibid.

<sup>17</sup> Is the legislative body that governs the district.

<sup>18</sup> Wright, Arnold, and H. A. Cartwright, *Twentieth Century Impressions of British Malaya: Its History, People, Commerce, Industries, and Resources*, London: Lloyd's Greater Britain publishing Company, limited, 1908, p. 1.

<sup>19</sup> Ibid. p. 3.

<sup>20</sup> Ibid. p. 2.

<sup>21</sup> *Federation of Malaya: Report of the Medical Department for the Year 1954*, p. 21.

Departments remained unchanged, apart from the improvement of health amenities by the provision of more modern facilities.<sup>22</sup>

### **Sanitation and Healthcare Administrative Facilities: Water Supply Systems**

Pulau Pinang had many tropical diseases which emanated from water and sanitation issues. Two examples of these diseases are typhoid and malaria. Many of the people who succumbed to death in the colonial days did so as a result of typhoid and malaria. In parallel with the sanitation system which was taken care of locally by the different states, a major campaign against disease was made in the form of providing clean and plentiful water which was free from pollution.<sup>23</sup> Water is, without doubt, important, and, given the fact that many of the tropical diseases are water-borne, water related health aspects became vital in the Malay states.<sup>24</sup>

From 1900 to 1957, there was significant progress with regard to water supply maintenance and facilities. According to the sources from Penang Municipal Council, Mr. Codrington, who became the president of Penang Town Council in 1911 had improved and revived the water supply in Pulau Pinang. The first step he took was to form a separate Water Department in Pulau Pinang. Codrington appointed J.D. Fettes as Municipal Water first engineer in Pulau Pinang.<sup>25</sup> Under Codrington and Fettes, Georgetown<sup>26</sup> began to get water from Batu Feringgi amounting to 2.3m gallons per day, which, in the early 1930s, was brought via aqueduct and underground tunnel that covered 4.5 miles. From Pulau Tikus, where the aqueduct ends, the water was taken through pipelines to service the reservoir (Guillemard Reservoir) on Mt. Erskine.<sup>27</sup>

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<sup>22</sup> CO 865/66, Penang Municipality: administration, staff, etc, Colonial Office, the National Archives, UK, p.14.

<sup>23</sup> CO 865/66, Penang Municipality: administration, staff, etc. Colonial Office, National Archives, UK, p.7A.

<sup>24</sup> Ibid. p.9.

<sup>25</sup> C. Y. Choy, "The Problem of Health" in *Penang Past and Present 1786-1967, Historical Account of The City of Georgetown Town Since 1786*, Penang Historical Society, Georgetown, 1966, p. 68.

<sup>26</sup> The capital city of Penang, 1957, George Town was declared a city by Her Majesty Queen Elizabeth II, becoming the first city in the Federation of Malaya.

<sup>27</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, London,: Archives Edition, 1998, p. 259.

This system increased the water supply from 4.25m gallons to 7.25m gallons in the city of Georgetown, which represents an increase in water supply of 75 percent. That incident was recorded by a historian Loo Choo Kheam as:

The position then at the end of this period was that all the main sources of supply by gravity on the east and north of the island had been taken in, Ayer Itam Side Stream and Tats being discarded; catchment areas were better controlled, waste had been reduced, and the reticulation system expended and improved. Population served was 150,000 with 11,000 services and 78.5 miles of water main.<sup>28</sup>

Guillemard reservoir was officially opened by the Governor, Sir Hugh Clifford, on 16<sup>th</sup> July, 1929, and from this date until the late 1970s, it remained as the main water supply of Pulau Pinang. Although such a reservoir existed, the water supply remained unequally distributed across Pulau Pinang. Penang Island and South Seberang Perai had adequate water supply while North Seberang Perai suffered from a water shortage. North Seberang Perai towns and villages like Butterworth, Perai and Bukit Mertajam hardly received any water for daily use.<sup>29</sup>

This caused the Board of Rural Areas to take a decision on 15<sup>th</sup> July 1948, stating that wells and lakes should be used as a supplement for the water supply. This recommendation was because many big villages continued to rely on ponds and lakes for water, instead of pipelines.<sup>30</sup> In order to protect people from water-borne diseases, many health measures such as chlorination,<sup>31</sup> bacteriology testing, treatment with copper sulphate<sup>32</sup> etc. were conducted by the government of Malaya and Pulau Pinang in particular. Chlorination is used even to this day in order to purify water.<sup>33</sup>

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<sup>28</sup> Ibid.

<sup>29</sup> C. Y. Choy, "The Problem of Health" in *Penang Past and Present 1786-1967, Historical Account of The City of Georgetown Town Since 1786*, p. 68.

<sup>30</sup> RCP/MED/202/49, Annual Report of the Medical and Health Department Penang, 1948, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 8.

<sup>31</sup> Water chlorination is the process of adding chlorine (Cl<sub>2</sub>) or hypochlorite to water. This method is used to kill certain bacteria and other microbes in tap water as chlorine is highly toxic. In particular, chlorination is used to prevent the spread of waterborne diseases such as cholera, dysentery, typhoid etc.

<sup>32</sup> A blue crystalline solid used as a chemical to destroy fungus and algae. It can also be used to kill and remove mosquito breeding grounds.

<sup>33</sup> Ibid.

In Pulau Pinang, chlorination was carried out at all times before releasing water for public use. To control the quality of the water, it was then sent in and out every week for bacteriology tests and other chemical analysis.<sup>34</sup> The water analysis was undertaken in the Bukit Toh Alang Reservoirs, and in one Pulau Pinang water supply report, it shows that out of 12 water samples from the chemical analysis, 11 were reported as giving satisfying results.<sup>35</sup> Copper sulphate was also used to treat water suffering from algae problems. Thus, the Pulau Pinang Health Department took their responsibility seriously to solve the related water issues.<sup>36</sup>

### **Education of Health Workers**

Federation of Malaya and its Medical Department was sub-divided into three divisions which worked to educate those who worked in the Public Health Department - the Curative section, the Preventive section, and the Research section.<sup>37</sup> These three divisions are closely related to one another and overlapped with each other in purpose. In simple words, curative, preventive and research leads to 'disease prevention and cure'.<sup>38</sup>

Both the preventive section and the curative section shared some major issues. These issues stemmed from the continued ignorance of patients about modern medicine and the continual shortage of manpower at the health facilities. Thus, patients who needed treatment would seek for preventive or curative treatment and medicines. It can be said that with a good management and administrative system, the Federation of Malaya could provide useful hospital services to the needy patients.<sup>39</sup> It is noted that many of the Malays were not seen as

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<sup>34</sup> MED/PG/22/5, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur p. 7.

<sup>35</sup> MED/PG/601/55, Rural District Council Province Wellesley North, Perubatan dan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p. 3.

<sup>36</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, London: Archives Edition, 1998, p. 259.

<sup>37</sup> Paul H. Kratoska, *Honourable Intentions: Talks on British Empire in South-East Asia Delivered at the Royal Colonial Institute, 1874-1928*, p.55.

<sup>38</sup> AIR 20/5583, Malaya operations 1941-1942: medical, War Office, National Archives UK, p. 17.

<sup>39</sup> Ibid.

being receptive to modern medicine until the last part of the 19th century. The reason can be attributed to the health workers denying modern health education to the people.<sup>40</sup>

However, British journals reported that the Chinese and the Tamils who had poor understanding of the concept of modern medicines, who worked as coolies, were receptive to going to hospital because of its convenience. Another difficult issue with hospital administration and management, and especially with providing healthcare facilities, was the problem of procuring trained staff to operate in the rapidly expanding medical services.<sup>41</sup> There were few or no modern doctors available among the natives, and only the Europeans (in this case the British) came to serve as resident physicians.<sup>42</sup>

Most of the time, they went back after the contract was over (three or four years), and hardly any became permanent residents.<sup>43</sup> In some cases, doctors succumbed to tropical diseases, especially malaria, or went back to Britain to get respite when they got infected with malaria. There were other serious diseases besides malaria, such as beri-beri<sup>44</sup> which were affecting the natives, European traders and doctors, and residents on a large scale. Beri-beri was recorded to be infectious among Chinese labourers, and while the contextualised timeline does not cover this fact, it can be stated there was a beri-beri epidemic in Penang Island and Seberang Perai in 1880.<sup>45</sup>

Thus, as early as 1883, it is reported that there were talks proposing that the Medical Research Institute should be formed for the purpose of investigating a cure for such tropical diseases. There were even talks on setting up a research institute to find cures based on traditional herbs and medicines, mainly for curing the opium habit.<sup>46</sup> By the close of the 19th century, there were research institutes like the Institute for Medical Research, which was

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<sup>40</sup> Paul H. Kratoska, *Honourable Intentions: Talks on British Empire in South-East Asia Delivered at the Royal Colonial Institute, 1874-1928*, p.57.

<sup>41</sup> Chai Hon Chan, *The Development of British Malaya, 1896-1909*, p.89.

<sup>42</sup> *Ibid.*

<sup>43</sup> Paul H. Kratoska, *Honourable Intentions: Talks on British Empire in South-East Asia Delivered at the Royal Colonial Institute, 1874-1928*, p.77.

<sup>44</sup> A disease of the peripheral nerves caused by a deficiency of vitamin B1, characterised by pain in and paralysis of the extremities, and severe emaciation or swelling of the body.

<sup>45</sup> CO 927/446, Medical research Malaya: brief for visit of Mr Manson to South East Asia, Colonial Office, the National Archives, UK, p. 11.

<sup>46</sup> CO 273/679/8, Report on some aspects of medical planning for Malaya, by Dr A G H Smart, Colonial Office, the National Archives, UK, p.13A.

gaining world recognition. Besides this research institute, there were no establishments educating doctors in the Malay states during the colonial states until 1940s. Consequently, there were few or no trained native doctors. Instead there were European doctors serving as resident doctors.<sup>47</sup>

Among the few natives who trained themselves to become doctors amidst hardships, the resource to pursue the study of medicine comes either from donations from the mosque or State Government Scholarships.<sup>48</sup> There were also a few medical students who were funded by rich traders as patrons. Some students were even reported to have received the 'Queen's Scholarship and Fellowship'<sup>49</sup> from Britain that allowed a few of them to pursue their postgraduate studies in England.<sup>50</sup> From the early 20th century till the 1910s, native medical students were asked to obtain the Licentiate in Medicine and Surgery, while after the 1910s, the students obtained the MBBS (Medicinae Baccalaureus or Bachelor of Medicine).<sup>51</sup>

After the doctors graduated from the course, they underwent practical training, which was referred to as 'Housemanship'<sup>52</sup> in the government hospitals.<sup>53</sup> There were, however, doctors who, after graduating, went directly into practice. Before the 1940s, it was also reported that although the native doctors had the same qualifications as the Europeans, and in some cases even obtained those qualifications from England, there was discrimination in terms of race, and they were paid less than the Westerners.<sup>54</sup> However, with the

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<sup>47</sup> Paul H. Kratoska, *Honourable Intentions: Talks on British Empire in South-East Asia Delivered at the Royal Colonial Institute, 1874-1928*, p.22.

<sup>48</sup> Faridah Abdul Rashid, *Biography of the Early Malay Doctors 1900-1957: Malaya and Singapore*, Bloomington, Indiana: Xlibris Corporation, 2012, p.48.

<sup>49</sup> Queen's Scholarships were available to all British subjects of either sex. Recipients of the Queen's Scholarships would proceed to study at either Cambridge or Oxford universities. In 1940, the selection of Queen's Scholars was transferred to a Board of Selection appointed by the Senate of Raffles College in Singapore. The Queen's Research Fellowships were also introduced for outstanding graduates of Raffles College and King Edward VII College of Medicine.

<sup>50</sup> *Ibid.* p.50.

<sup>51</sup> Faridah Abdul Rashid, *Biography of the Early Malay Doctors 1900-1957: Malaya and Singapore*, p.50. MBBS, MBChB, MBCh, MBChir(Cantab), BMBS(Oxon), BMBS), are the two first professional degrees in medicine and surgery awarded upon graduation from medical school by universities in countries that follow the tradition of the United Kingdom.

<sup>52</sup> A male or female doctor who is still training, and who works in a hospital.

<sup>53</sup> CO 273/679/8, Report on some aspects of medical planning for Malaya, by Dr A G H Smart, Colonial Office, the National Archives, UK, p.11.

<sup>54</sup> G. Haridas, *the Proceedings of the Alumni Association of the King Edward VII College of Medicine*, Vol. 2. Singapore: Papineau Studios Advertising, 1949, p. 79.



establishment of the King Edward College, Singapore,<sup>55</sup> this attitude changed from 1910s onwards, and the native doctors were eventually accepted as equal to their European counterparts.<sup>56</sup>

Two early Malay doctors attended Sekolah Melayu Chowrasta in Pulau Pinang. They were (Datuk Dr Haji) Abdul Aziz bin Omar and (Datuk Paduka Dr) Abdul Wahab bin Mohd Ariff. Both doctors were born in 1919 and attended the Chowrasta Malay School from 1925 to 1929. Both Abdul Aziz and Abdul Wahab attended Penang Free School from 1930 to 1937. Both enrolled into King Edward VII in Singapore in 1939.<sup>57</sup>

Their medical studies were disrupted for four years during the Japanese Occupation of Singapore and the Medical College ceased operation from 15 February 1942 until 19 June 1946. When the war was over, Abdul Wahab and Abdul Aziz resumed medical studies at King Edward VII in Singapore on 20 June 1946. Dr Abdul Aziz bin Omar, Dr Abdul Wahab bin Mohd Ariff and Dr Omar bin Din, graduated in 1949 with a Licentiate in Medicine and Surgery (L.M.S.) in the Class of December 1949; a year in which there were 28 graduates. Both were prominent Malay doctors in Pulau Pinang and Malaya during the colonial days.<sup>58</sup>

Institutions dealing with educating and training nurses and hospital assistants were formed in Pulau Pinang. According to the Report of World Health Organization (WHO),<sup>59</sup> by Nurse Educator John Waterer from Penang Regional Training School, one can assess how medical education advanced during the first part of the 20<sup>th</sup> century in Pulau Pinang.<sup>60</sup> His journals reported that nursing and hospital assistants' education and training had improved and had become more intense after the British re-occupation after the Second World War. During this period, they ensured that the training courses in nursing were in alignment with

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<sup>55</sup> The King Edward VII College of Medicine in 1905 was the Straits and Federated Malay States Government Medical School. It was renamed the King Edward VII Medical School in 1913, and then the King Edward VII College of Medicine in 1921.

<sup>56</sup> Ibid. p. 81.

<sup>57</sup> Faridah Abdul Rashid, *Biography of the Early Malay Doctors 1900-1957: Malaya and Singapore*, p.17. and p. 19.

<sup>58</sup> Ibid. p.7. and p.8.

<sup>59</sup> When diplomats met those from the United Nations in 1945, one of the things they discussed was setting up a global health organization. WHO's Constitution came into force on 7 April 1948.

<sup>60</sup> John Waterer, "The Story of WHO Male Nurse", in *Stories of the World Health Organization in the Western Pacific*, Vol. II, Manila: WHO Regional Office for the Western Pacific, 1956, p.61.

the General Nursing Council of England and Wales syllabus, and followed their rules and regulations. All their criteria were observed by the Penang Regional Training School.<sup>61</sup>

Nurses were thus trained with the courses of the General Nursing Council of England and Wales at the Penang Regional Training School. The timetable was scheduled for flexibility to cater for, or be convenient for, those who delivered the courses. Nurses were both male and female (although the females were in the majority), and they were trained in the same set of theoretical and practical courses.<sup>62</sup> Many of those who studied nursing were perceived as studying only up to high school standards (VII or VIII) of education. The reason for the lack of attendance in further education has been traced to the Japanese occupation of the Pulau Pinang, and many of them had the desire to do better in their careers.<sup>63</sup> Unfortunately, those who passed their Senior Cambridge Examination<sup>64</sup> were not available for training, since the General Nursing Council courses were unappealing to the local residents, especially to the girls.

The training took three years and four months, and the length of these courses did not encourage the young women to take up the nursing profession. As a result, there was always a shortage of nurses, since the long course could only produce up to 80 nurses annually. In addition to this, the population was also rising at serious rate, such that the growth of medical and nursing schools could not keep up with the population growth, which thereby led to there being insufficient nurses to meet the demand of the rising population.<sup>65</sup>

Taking a closer look at the schools, it is noted that the main deficiency was that of staffing. Building deficiencies also existed, but this was easily remedied. Therefore, many infrastructural plans such as buildings or more accommodation for nurses in Pulau Pinang were suggested, and later completed, so as to encourage more people to take up this

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<sup>61</sup> *Federation of Malaya: Report of the Medical Department for the Year 1952*, p. 44.

<sup>62</sup> *Ibid.* 45.

<sup>63</sup> AIR 20/5583, Malaya operations 1941-1942: medical, War Office, the National Archives, UK, p. 13.

<sup>64</sup> The Senior Cambridge examinations were General Certificate of Education examinations held in Penang and Malaya. They were preceded by the Junior Cambridge and Preliminary Cambridge examinations. During the Japanese occupation of Malaysia in World War II, pupils who sat their Senior Cambridge examinations at some schools in 1941 had to wait until 1946 to learn their results. It was replaced with the Sijil Tinggi Persekolahan Malaysia during the late 1970s.

<sup>65</sup> John Waterer, "The Story of WHO Male Nurse", in *Stories of the World Health Organization in the Western Pacific*, Vol. II, Manila: WHO Regional Office for the Western Pacific, 1956, p.61.

profession. However, colonial journals reported that the shortage of staff presented a serious obstacle that the administrators needed to overcome. It was recorded that during the Semester 1 of Academic Year 1952/1953, there were 391 students who enrolled in the Faculty of Medicine, University Malaya, Kuala Lumpur.<sup>66</sup>

As stated, the nursing training courses had to be aligned with the syllabus of the General Nursing Council of England and Wales, and their rules and regulations, and therefore, the nursing course in Penang Regional Training School during that time undertook three years and four months of strenuous training.<sup>67</sup> The theoretical and the practical training were based on modern scientific methods and practices. Many of the traditional beliefs and concepts were also tested, by scientific approach, to consider and apply them, while understanding the diseases found in Pulau Pinang. For example, many Chinese used to believe that a certain type of banana was responsible for causing malaria, which seemed to be true since such bananas were seen to grow in swampy mosquito infested areas.<sup>68</sup> Thus, although the banana did not directly caused malaria, its environment did seem to fit the condition for the cause of this disease. Although the courses followed the syllabus of the General Nursing Council of England and Wales, with frequent revision of the educational systems, there was no formal established medical teaching structure or system for nursing during the first part of the 20<sup>th</sup> century.<sup>69</sup>

Every year the teaching staff organised the syllabus according to their personal teaching requirements. For instance, in 1952, the course was divided into "3 Preliminary Courses with 66 pupils, 3 Block Courses with 156 pupils and post-graduate training for 17 nurses and 6 hospital assistants". In 1952, it was estimated that a total of 110 nurses who underwent the General Nursing Council of England and Wales courses and the improvised teaching, had passed the final examination.<sup>70</sup>

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<sup>66</sup> Colony of Singapore. *Report of the Committee of Enquiry on Medical Education in Malaya, November-December, 1953*, p. 52.

<sup>67</sup> John Waterer, "The Story of WHO Male Nurse", p. 62.

<sup>68</sup> MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p. 23.

<sup>69</sup> John Waterer, "The Story of WHO Male Nurse", p.65.

<sup>70</sup> *Federation of Malaya: Report of the Medical Department for the Year 1952*, p. 21.

The nursing students learned elementary science, psychology, etc., which were designed based on the guidelines and syllabus of the General Nursing Council of England and Wales, and were taught by Sister Tutors, aided by various Medical staff and other specialists in their own subjects.<sup>71</sup> Practical training included experimenting in the laboratory as well as visiting the ward.<sup>72</sup> Practical cooking classes were also given to those who were studying to become dietitians.<sup>73</sup> There were also other special types of divisions dealing with chemistry, malaria research, entomology, bacteriology, nutrition, pathology, serology and lymph stations, etc.<sup>74</sup>

The sanitation, hygiene, and cleanliness of the nursing students was recorded as being acceptable, and students were eager to learn from their instructors.<sup>75</sup> The teaching staff informally met before they started the classes. The majority of these nursing students came from other states in the Federation of Malaya.<sup>76</sup>

Examinations were normally held during April and August, and the exams were arranged according to the following procedures:<sup>77</sup>

- a. Essays, Dictations, and Paragraph writings in English
- b. The Raven Progressive Matrices, which is a test to show individuals reasoning capacity
- c. An observation test
- d. In the final test, the student faced an interview with the examiner.

After the students went through the course and practical and passed the final exams, the qualified students were then registered to the Nursing Board of the Federation of Malaya. Those who could not qualify were made into training assistant nurses.<sup>78</sup>

The history of the medical education of Pulau Pinang and Federation of Malaya is a noble one. Although hospitals like those in Pulau Pinang were known for being understaffed,

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<sup>71</sup> RCP/MED/202/49, Annual report of the Medical and Health Department, Penang 1948, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur. p.17.

<sup>72</sup> *Federation of Malaya: Report of the Medical Department for the Year 1952*, p. 32.

<sup>73</sup> *Federation of Malaya: Report of the Medical Department for the Year 1954*, p. 66.

<sup>74</sup> *Federation of Malaya: Report of the Medical Department for the Year 1950*, p. 32.

<sup>75</sup> John Waterer, "The Story of WHO Male Nurse", p.74.

<sup>76</sup> *Ibid.* p.75.

<sup>77</sup> *Federation of Malaya: Report of the Medical Department for the Year 1952*, p.32.

<sup>78</sup> John Waterer, "The Story of WHO Male Nurse", p. 46.

they managed to conquer the great epidemics of tropical disease, and have produced a state of competent public health in South-East Asia since the colonial days.<sup>79</sup> When much of their work was destroyed by the occupation during the war, the returning doctors with their undiminished zeal set to work and succeeded in a surprisingly short time, in re-establishing order and health where control had been lost and disease had held sway.<sup>80</sup>

Since the colonialists and the native residents had been battling malaria and other deadly diseases, the British colonialists established the Penang General Hospital as early as 1882 at a cost of \$90,997. The building was reportedly built by using cheap convict labourers. Following this hospital, other hospitals were also constructed in Penang and Province Wellesley such as Lock Hospital, Pauper Hospital, Leper Hospital, Besar Hospital, Gaol Hospital, Butterworth Hospital, Birtam Hospital, Bukit Minyak Hospital, Sungei Bakap Hospital, etc. Initially, the English government focused on Penang General Hospital in ways of finance and development, but it was later extended to other hospitals as well.<sup>81</sup>

In 1922, the Health Department's laboratory was repaired at a cost of \$66,047, and the cost for recovering the rural areas was \$46,461.<sup>82</sup> From that amount, \$5,150 was spent on Butterworth Hospital to build bathrooms and toilets. In addition to these hospitals, Penang was also a recipient of 'Medical Research Grants to Malaya from Colonial Welfare And Development Funds' during the last part of the British colonial rule in FMS.<sup>83</sup>

The following Table 3.1 displays the grants disbursed by the colonial administrators to the Malay states, in form of financial allowances for funding medical research of different diseases, from 1947 to 1954. It is noted that most of the funds were channelled towards scrub research which covers 51% of the grant disbursed.<sup>84</sup>

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<sup>79</sup> Colony of Singapore, *Report of the Committee of Enquiry on Medical Education in Malaya, November-December, 1953*, p. 49 and p. 53.

<sup>80</sup> INF.P144, List of health Centres in Penang & province Wellesley, Jabatan Penerangan, Arkib Negara Malaysia Cawangan Pulau Pinang, p.14.

<sup>81</sup> No. RCP/MED/202/49, Annual Report of the Medical and Health Department Penang, 1948, Resident Commissioner Penang, Arkib Negara Malaysia Cawangan Pulau Pinang, p. 17 and p. 24.

<sup>82</sup> CO 825/84/3, Visit to South East Asia: Professor Head Adviser on Tuberculosis to Colonial Office and Ministry of Health, Colonial Office, p.36.

<sup>83</sup> CO 927/177/5, Colonial Medical Research Committee: malaria research; review of existing and proposed schemes; financial provision and trials of anti-malarial (Daraprim) drug, Colonial Office, the National Archives, UK, p. 4 and p. 7.

<sup>84</sup> CO 927/446, Medical research Malaya: brief for visit of Mr Manson to South East Asia, Colonial Office, the National Archives, UK, p.18.

**Table 3.1** Medical Research Grants to Malaya from Colonial Welfare and Development Funds for Different Diseases, 1947-1954

Number of Schemes	Title of Schemes	Year	Financial Allowance £ (GBP)
R.115 A. B.	Malaria	1947	3,740
R.115 C.	Malaria	1948	2,112
R.327 & A	Insecticides	1949	13,850
R.117,A,B	Scrub Typhus Research	1947	20,000
R.117C	Scrub Typhus Research	1949	11,151
R.117D	Scrub Typhus Research	1951	12,000
R.117E	Scrub Typhus Research	1952	8,200
R.117F	Scrub Typhus (Yellow Fever)	1954	2,114
R.538	Filariasis	1952	12,500
R.587 Virus Disease	Virus Disease	1954	14,915
R.608	Radio Active Isotopes	1954	1,100

Source: CO 927/446, Medical research Malaya: brief for visit of Mr Manson, Colonial Office, to South East Asia, Colonial Office, The National Archives, UK, p.18.

Based on the Table 3.1, it is noted that the spending in the medical department exceeded the donation and medical administrative allocations given by the government. For instance, in the early 1900's, the Medical Department of the Straits Settlement's spending was 10 times more than revenue received from hospitals and disease treated, and in 1905, revenue was \$16,482.46, while the spending was \$181,233.34.<sup>85</sup> The variance in income and spending continued to be the case throughout British colonial days. The following Table 3.2 is one such case which shows the wide gap in income and expenditure. However, in 1946, it is noted that the Medical Department managed to bring down the actual spending compared with their estimates.<sup>86</sup>

<sup>85</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, London,: Archives Edition, 1998, p. 259.

<sup>86</sup> *Ibid.* p.231.

**Table 3.2** Revenue and Expenditure for the Year of 1946

<b>Revenue</b>	<b>Estimates 1946</b>	<b>Actual 1946</b>
Hospital Fees and Sales of Medicine	\$532,000	\$1,165,490
<b>Expenditure</b>		
Personal Emoluments	\$4,960,902	\$2,798,706
Other Charges, Annually Recurrent	\$7,011,653	\$5,382,358
Other Charges, Special Expenditure	\$1,100,000	\$115,602

Source: MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kemneterian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.26.

As for the medical charges, in terms of fees and sales of medicine to the patients, the colonial journal reported that there was not much difference between the two periods i.e. from the pre-war and Japanese occupation period and after the British re-occupied Pulau Pinang (and other Malay states).<sup>87</sup> The early doctors in the 18th century charged around \$2 to \$4 for house visitation and treatment. By 1940s, doctors who were 'held in higher esteem' were charging as much as \$10 to \$20.<sup>88</sup> These charges in the hospital and dispensary remained the same during the 1950s. Sales of medicine included supplies to private companies and firms to enable them to replenish their stocks. However, their stocks decreased when supplies were sold through commercial channels. Sales of vaccine products and fees for clinical tests by the Institute for Medical Research totaled \$65,793 in 1946.<sup>89</sup>

<sup>87</sup> CO 273/552/8, Provision of an additional European medical officer for Penang District Hospital, Colonial Office, National Archives UK, p. 14.

<sup>88</sup> Ong Hean Teik, *To Heal the Sick: The Story of Healthcare and Doctors in Penang 1786 to 2004*, p. 38 and p. 42.

<sup>89</sup> *Ibid.* p. 58.

## Hospitals and Healthcare Services

### Government Hospital

English administration from 1900 to 1957 held a more liberal health care viewpoint, where they encouraged the welfare organisation and non-government health associations to help eradicate dangerous diseases and improve the health standard of the Pulau Pinang residents as a whole. The noteworthy associations which participated in Pulau Pinang were the British Red Cross Society Federation of Malaya (Penang Island and Seberang Perai Branch) and The Penang and Province Wellesley Association for the Prevention of Tuberculosis (Penang Island and Seberang Perai Branch).<sup>90</sup>

During the 1920s and 1930s, the children's health standard received less attention and no effort was made to improve these standards. The 1940s saw the advent of the Second World War and the Japanese invasion of the Malaya States (and Pulau Pinang). The coming of the Japanese invasion on 8th December, 1941 has been recorded as offsetting the British efforts to eradicate the epidemics in Pulau Pinang.<sup>91</sup> The Japanese established occupation of Pulau Pinang starting from 1942 until the end of Second World War in 1945.<sup>92</sup>

During this time, the Japanese took little or no interest in civilian hospitals and medical needs. Hospital management and administration, including the supply of drugs, maintenance of hospital equipment, and taking care of patients, was all carried out by the local people. In addition to this, the Japanese were known for disrupting the balance of the peasants' lives. Half of what the peasants cultivated was taken away by the Japanese, initiating famine and epidemics of malaria by the late 1940s. Labourers succumbing to the malaria epidemic led to the depletion of the labour reserves for cultivation, and by 1948, Pulau Pinang was under deep famine and saw a consequent rise in diseases.<sup>93</sup>

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<sup>90</sup> MED/PG/146/56, Balik Pulau Red Cross, Pejabat Daerah Barat Daya Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur. p. 3.

<sup>91</sup> *Federation of Malaya: Report of the Medical Department for the Year 1946*, p. 43.

<sup>92</sup> Paul H. Krastoska, *The Japanese Occupation of Malaya: A Social and Economic History*, p. 1.

<sup>93</sup> *Federation of Malaya: Report of the Medical Department for the Year 1946*, p. 39.



Although the local authorities persuaded the Japanese to supply quinine<sup>94</sup> to subdue malaria, in the end Pulau Pinang suffered from an immense predicament during the whole Japanese occupation and evacuation of the country. During this time, there were many complaints about labourers suffering from malaria, pneumonia, dysentery, diarrhoea, and ulcers, at a time when hospital supplies were scarce.

Facilities such as the travelling dispensaries also ceased to exist in Pulau Pinang and other Malay states after the Japanese arrived.<sup>95</sup> When the Japanese finally evacuated from the country, many smaller hospitals (apart from the travelling dispensaries) also eventually ceased to exist due to the non-maintenance of hospital facilities and looting, with whole villages being exterminated by diseases. Fortunately, by the end of the Second World War, the British re-occupied the Malay States including Pulau Pinang, and engaged in the restoration of the hospital services.<sup>96</sup>

By 1948, a marked improvement was seen when the British Red Cross Society Federation of Malaya Pulau Pinang was formed. This association, through its great effort, contributed towards improving the standard of the children's health by providing health advice, health treatment and medicines to school children for free.<sup>97</sup> Besides the efforts made by the British Red Cross Society to provide good and improved health services, the Government also improved many hospitals in Penang Island and the Seberang Perai such as the Penang General Hospital, Lock Hospital, Pauper Hospital, Leper Hospital, Gaol Hospital, Butterworth Hospital, Birtam Hospital, Bukit Minyak Hospital and Sungei Bakap Hospital.<sup>98</sup>

In addition to this, there were several special institutions dealing with mental diseases<sup>99</sup> and leprosy. The larger hospitals which were accommodating as many as 500 beds were located in Pulau Pinang, Malacca, and Johore Bahru; while smaller hospitals were spread

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<sup>94</sup> A drug(a bitter crystalline compound) used to treat fevers such as malaria. Quinine was first isolated in 1820 from the bark of the cinchona tree. Extracts from the bark have been used to treat malaria since at least 1632.

<sup>95</sup> Paul H. Krastoska, *The Japanese Occupation of Malaya: A Social and Economic History*, p. 21 and p.29.

<sup>96</sup> *Ibid.* p. 108.

<sup>97</sup> MED/PG/146/56, Balik Pulau Red Cross, Pejabat Daerah Barat Daya Pulau Pinang, p. 3.

<sup>98</sup> INF.P144, List of health Centres in Penang & Province Wellesley, Jabatan Penerangan, Arkib Negara Malaysia, Cawangan Pulau Pinang, p. 1A and p.3.

<sup>99</sup> Refers to a wide range of mental health conditions; disorders that affect your mood, thinking and behavior. Examples of mental illness include depression, anxiety disorders, schizophrenia, eating disorders and addictive behaviors.

across other states. There were 13,332 beds in total, by the end of the 1950s.<sup>100</sup> Such beds and other medical facilities enabled 207,483 patients to be admitted and treated across the Malay states in 1950. On average, there were 10,445 patients who were treated every day in these hospitals.<sup>101</sup> The Table 3.3 below portrays the beds and accommodation that were available in the hospitals of Pulau Pinang.

**Table 3.3** Beds and Accommodation Available in the Hospitals of Pulau Pinang in Summary of Hospital Accommodation, 1950

Name and Location of Hospital	Number and Category of Beds				Remarks
	General	Obstetrics	Tuberculosis	Infectious	
Penang island and Seberang Perai	1058	140	574	32	-

Source: MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kemneterian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.18.

The Penang and Province Wellesley Association for the Prevention of Tuberculosis (Penang and Seberang Perai Branch)<sup>102</sup> also played an important role in the effort of treating and helping tuberculosis patients in Penang Island and Seberang Perai. Their contribution included the formation of the Diagnostic Clinic in Jalan Macalister, construction of a Fluorescent-screening Room in Penang General Hospital and the introduction of a Treatment Allowance Scheme to help families and tuberculosis patients, which had financial problems, to continue getting treatment. This matter proves the importance of the charitable organisations in handling health problems of the population of Pulau Pinang.<sup>103</sup>

Primary care was normally given by the doctor who acted as first contact and principal point of continuing care for the patient.<sup>104</sup> Early research shows that most of these patients that were admitted to government hospitals in Pulau Pinang, were Chinese and

<sup>100</sup> CO1047/949, Penang Island and Province Wellesley, Colonial Office, the National archives UK, p. 7.

<sup>101</sup> Ibid. p. 9.

<sup>102</sup> Tuberculosis (TB) is a potentially fatal contagious disease that can affect almost any part of the body but is mainly an infection of the lungs. It is caused by a bacterial microorganism, the tubercle bacillus or Mycobacterium tuberculosis. In Chapter 3 of this thesis, research will on the History of Tuberculosis in Penang during years 1900 to 1957.

<sup>103</sup> MED/PG/146/56, Balik Pulau Red Cross, Pejabat Daerah Barat Daya Pulau Pinang, Arkib Negara Cawangan Pulau Pinang, p. 4.

<sup>104</sup> Edward Shorter, "Primary Care", in Roy Porter (Ed.), *The Cambridge History of Medicine*, England, UK: Cambridge University Press, 2006, p. 2.

Indians who lived in cities and were ready to use the hospital services more than the Malays who preferred treatment at their own houses by their wives. According to Chai Hon Chan, “the largest number of hospital patients were Chinese, because the Malays considered the hospital as the traditional ‘dying house’ rather than as a place where a cure for disease and sickness might take effect. The Malays, therefore, were conspicuous by their absence.”<sup>105</sup>

The Malays perceived that hospitals were full of pork-eating infidels, no Malay could be induced to enter such a place for medical treatment, even if it was a case of life and death. The furthest they could be persuaded to go was to be treated as out-patients”.<sup>106</sup> This statement shows that the Chinese constituted the majority number of patients in hospital, which they considered as the dying house. Malays only became out-patients, who receive treatment but did not stay in the hospitals. They did not like staying in the hospital because the food served was not halal. As stated by Chai Hon Chan, “the Malays had scruples about entering a hospital where the food was not prepared according to Muslim custom”.<sup>107</sup>

Malays relied on traditional treatment concordant with their beliefs. It was obvious in rural areas that majority of the Malays before the Second World War doubted the medical treatments and services offered by Government Hospitals in Pulau Pinang. In other words, they were more focused on traditional treatment and medicine.<sup>108</sup> However, this attitude and mindset changed after the Second World War.<sup>109</sup>

Taking a general stand, it can be stated that by the end of colonial rule in Pulau Pinang, people were overwhelmingly relying on western medicine although traditional medicine usage could not be ruled out. People began to overcome their reluctance to go to hospitals. Out-patient clinics before the Second World War had an annual attendance of 90,000, but by the 1953-43, the figure was approaching 1,000,000.<sup>110</sup> The last part of the

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<sup>105</sup> Ibid.

<sup>106</sup> Chai Hon Chan, *The Development of British Malaya, 1896-1909*, p. 202.

<sup>107</sup> Ibid, p. 203.

<sup>108</sup> Traditional medicine is the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness.

<sup>109</sup> Ong Hean Teik, “The Early Years: A Struggle for Survival”, in Ong Hean Teik (Ed.), *To Heal the Sick: The Story of Healthcare and Doctors in Penang 1786 to 2004*, p. 73.

<sup>110</sup> CO 865/66, Penang Municipality: administration, staff, etc, Colonial Office, p. 8.

1950s saw the General Hospital with 800 beds processing more than 2,300 patients a year. Meanwhile 19,000 maternity cases passed through the maternity hospital in 1953 as compared with 6,000 in the pre-war period.<sup>111</sup>

To meet the demand of the patients, the Government Health Services expanded rapidly across Pulau Pinang where the health service was considered one of the best in South-East Asia during the 1950s. In 1953 alone, the government opened a new Out-patients Department and Blood Transfusion Unit, two new clinics in the Rural Areas, and a new ward in the Children's Orthopedic Hospital. In fact, the three rural health centers in 1941, increased to 44 by the end of 1953.<sup>112</sup> By 1954, foundation stones were also laid as a new wing of the Maternity Hospital to double its size, and a new children's wing and out-patient clinic, donated by a Parsee philanthropist were added. New X-ray, cancer and surgical units were expected to follow this, equipped with all modern facilities.<sup>113</sup>

Besides building medical infrastructures and providing stationary hospital services across Pulau Pinang, the British also organised travelling dispensaries, which dispensed through a light motor lorry or motor-boat.<sup>114</sup> These dispensaries worked on a scheduled timetable where every worker was aware of the agreed time and place. They were aware of the weekdays on which they were supposed to work, and the districts or regions to which they were appointed to work. During their scheduled work, the dispensaries distributed medicines for cold, fever, influenza, ointments for skin diseases, wounds, burns and sores, and other medicines.<sup>115</sup> Since malaria was one of the most common diseases, quinine was available at almost every public building like police stations, post offices and the house of the village

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<sup>111</sup> CO 877/55/3, Medical training: study leave for courses on tuberculosis diseases, Colonial Office, the National Archives, UK. p. 16.

<sup>112</sup> MED/PG/118/55, Improvement of Condition in rural Area, Pejabat Daerah Barat Daya, Arkib Negara Pulau Pinang, p. 13.

<sup>113</sup> MED/PG/20/57, The Penang & Province Wellesley Association for the prevention of Tuberculosis, Jabatan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Cawangan Pulau Pinang, p. 14.

<sup>114</sup> Paul H. Kratoska, *Honourable Intentions: Talks on British Empire in South-East Asia Delivered at the Royal Colonial Institute, 1874-1928*, p.89.

<sup>115</sup> *Ibid.* p.93.

headman (*Penghulus*).<sup>116</sup> And, most importantly, the travelling dispensaries engaged themselves in distributing it to the people.<sup>117</sup>

The survey of the travelling dispensaries shows that these services were mainly available among residents in rural areas,<sup>118</sup> and helped them overcome their health problems.<sup>119</sup> The rural area residents sought the service of the travelling clinics since it was easier for them to approach these facilities. According to George Maxwell,<sup>120</sup> almost all villagers knew the time and day the moving clinic would arrive in their village. The medical support prepared for the rural areas also remained the same as the rest, which included medicines for cough, stomachache, oil for skin problem, ringworms, bandages and much more.<sup>121</sup> Examples of places that received special treatments are Jalan Balik Pulau and Ayer Hitam every Saturday.

It is also interesting to see that the western missionaries working with the travelling dispensaries were active in treating the newly born babies, children and women. The residents received vaccine for the many conditions stated above, and any health vaccine required by children and mothers.<sup>122</sup> Other rural areas that the moving clinic visited with vaccines and other medical supplies were Tasek Gelugor, Pokok Machang, Kampung Selamat, Simpang Tiga Tasek, Gelugor and Kampung Bahru Malay School.<sup>123</sup>

All this support was given free to all residents, and the names and addresses were recorded. Although the moving clinic treated for free, many parents did not care about it and did not partake of its aid. This led to the prevalence of gum disease, malaria and goitre.<sup>124</sup> The moving clinic played an important role in rural areas, but they remained far from

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<sup>116</sup> Penghulu is the village headman or chief. He is the person appointed to administer an area that is often a single village. The headman has several official duties in the village, and is sometimes seen as a mediator in disputes and a general “fixer” of whole village’s or individual’s problems.

<sup>117</sup> MED/PG/341/52, Malaria Advisory Board, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur. p. 13.

<sup>118</sup> Malini Dias, *Glimpses of old Penang: In Conjunction with the 30<sup>th</sup> Anniversary of the Star Publication Malaysia Berhad*, Petaling Jaya: Star Publications, 2002, p. 113.

<sup>119</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, London: Archives Edition, 1998, p. 263.

<sup>120</sup> Sir George Maxwell was a British colonial administrator in British Malaya and the Straits Settlements.

<sup>121</sup> Paul H. Kratoska, *Honourable Intentions: Talks on British Empire in South-East Asia Delivered at the Royal Colonial Institute, 1874-1928*, p. 414.

<sup>122</sup> MED/PG/245, Maternity & Child Welfare clinics P. W. Programme, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p. 8.

<sup>123</sup> Malini Dias, *Glimpses of old Penang: In Conjunction with the 30<sup>th</sup> Anniversary of the Star Publication Malaysia Berhad*, p. 39.

<sup>124</sup> *Ibid.* p.43.

satisfying all the sick people since they could not handle the various complicated problems. Therefore, these medical services were limited to a few diseases only, handing out vaccines and medicines to treat common ailments.<sup>125</sup>

### Private Hospitals

As for the private hospitals, the largest and the most popular were run by the Christian Churches. As early as 1924, the church took the opportunity to establish clinics. In 1924, a clinic was established by the Seventh-day Adventist<sup>126</sup> church in Jalan Muntri, and this clinic was administered by doctors from the United States of America.<sup>127</sup> The purpose of the establishment provided by the Seventh-day Adventists was to help patients and victims from the same race and religion by giving free treatments to the poor. Many patients came to seek treatment from this clinic, and in January and February 1948 alone, the number of patients who were treated at this clinic amounted to 1,600 and 2,000 respectively. According to Datuk Teddric Jon Mohr,<sup>128</sup> this response by the locals showed that they did not want western treatment, because of the discrimination they had experienced and their dissatisfaction over what they had undergone at Penang General Hospital.<sup>129</sup>

Thus, the patients preferred treatment from private hospitals.<sup>130</sup> Before the Second World War, Seventh-day Adventists were also responsible for bringing the inflow of foreign currencies to Malaya when foreign patients in neighboring countries also came for treatment. According to Hean Teik Ong, “the dedication and loving care of the staff was very much appreciated by the many patients who came not only from Pulau Pinang but from Thailand and Indonesia”.<sup>131</sup> Over the years, the Seventh-day Adventists later set up other clinics and they became very popular in the cities. In the meantime, the Christian ‘Methodist Mission’

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<sup>125</sup> MED/PG/188/48, Medical Examination of School Children, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, pg. 2A.

<sup>126</sup> This is a Christian non-profit medical institution in Penang, Malaysia. It is operated by the Adventist Hospital & Clinic Services and part of an international network of hospitals operated by the Seventh-day Adventist Church. The hospital is well known in the community for its promotion of a healthy vegetarian diet and charity work to assist needy patients, particularly heart patients.

<sup>127</sup> Ong Ht, *The Penang Medical Practitioners’ Society*, Penang: Diamond Jubilee Magazine, 2002, p. 2 and p. 8.

<sup>128</sup> Former CEO and director of Adventist Hospital.

<sup>129</sup> MED/PG/253, Hospital Visiting Committee 1949, Pejabat Daerah Barat Daya, Arkib Negara Malaysia, Kuala Lumpur, p. 6.

<sup>130</sup> Ong Ht, *The Penang Medical Practitioners’ Society*, p. 8.

<sup>131</sup> *Ibid.*, pp. 73-74.

also made their mark in Pulau Pinang, and their clinics and services were popular in the rural region. These Methodist Mission groups were responsible for setting up the Penang Sanitarium Hospital at 465 Burma Road, and Penang Mission Clinic at 422, Chulia Port.<sup>132</sup>

Western influences, and, in this case, the Christian missionaries' influences in health, were higher in cities than rural areas. This is because not all residents of rural areas could accept the presence of foreigners. However, their services were very beneficial, and were appreciated by the residents in the cities. Their roles were not limited just to helping in medical areas. They also played an important role in establishing and administering English schools such as Convent and Francis Xavier.<sup>133</sup> Along with this, the Christian associations and their health services were more popular in areas where Malays were in the minority. Since the Malays found the Christian treatment and their intention to convert them to be contrary to the Malay Islamic beliefs, they usually did not receive treatment from the Christians. On the other hand, Christian associations like the Catholic Welfare were popular among the Chinese both in rural and urban areas.<sup>134</sup>

The Christian private hospitals along with their missionary activities thus played an important role in improving the standard of adult and children's health in Pulau Pinang. According to the Journals published by The Penang Medical Practitioner's Society,<sup>135</sup> the idea of setting up a community health care centre in Pulau Pinang was first mooted by twelve Chinese community leaders in 1876 and a fund-raising campaign was subsequently launched. A traditional-style building was completed in 1883 on a plot of land of 10,600 sq. ft. at Muntri Street. This building was named the Lam Wah Ee Hospital. "Lam Wah" means "Chinese in the South" and "Ee" means "medicine".<sup>136</sup>

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<sup>132</sup> MED/PG/253, Hospital Visiting Committee 1949, Pejabat Daerah Barat Daya, p. 3 and p.4.

<sup>133</sup> MED/PG/257/52, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p. 2.

<sup>134</sup> MED/PG/46/54, British Red Cross Society General, Perubatan dan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p. 5.

<sup>135</sup> The Penang Medical Practitioners' Society (PMPS) was founded in 1932, when a group of 18 private medical practitioners met on 27th May 1932 at 337, Anson Road in a meeting convened by Dr J. Emile Smith, a Malayan general practitioner and leader of the Eurasian community. They decided to form the Penang Medical Practitioners' Society; in less than an hour they had draft rules circulated, considered and adopted. The annual subscription fee would be \$6.

<sup>136</sup> MED/PG/640/55, Rural Health scheme Penang & P. W, Jabatan Kesihatan Pulau Pinang, p. 9.

These twelve community leaders were elected to be the first Board of Directors. Initially, free consultation and medication in traditional Chinese medicine was offered to the public. Within a few years, this became very popular as a source of medical services not only to the Chinese community but also to the other communities in Pulau Pinang. Because of this, Muntri Street has since become known as “Lam Wah Ee Hospital Street”. As the demand for these services became more popular, two branch clinics were set up, one at Beach Street and the other at Magazine Road.<sup>137</sup>

After the Second World War, a campaign was launched to collect donations for the rebuilding of the Lam Wah Ee Hospital, as the traditional-style building in Muntri Street was destroyed by air raids during that War. In 1955, the new two-storey building was completed. The Beach Street branch was moved to Green Lane to benefit the people in the Jelutong and Green Lane areas. The Green Lane branch is situated on a piece of land donated to the Hospital by the British East India Company much earlier.<sup>138</sup>

Interestingly, the Lam Wah Ee Hospital at first relied on the services of experienced traditional physicians or “sinsehs” who came from China. Later a system of examinations conducted by a committee of master “sinsehs” was introduced as a selection device to maintain standards and to encourage younger people to take up the study of traditional medicine. To be a physician, only the top three candidates in the bi-yearly examination were automatically appointed as the official physicians of the hospital for a period of two years. Such appointments were considered as a great honour and many of the top Chinese physicians in Pulau Pinang originated from the Lam Wah Ee examination system.<sup>139</sup>

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<sup>137</sup> Ong Ht, *the Penang Medical Practitioners' Society*, Penang: Daimond Jubilee Magazine, 2002, p. 2 and p. 21 and p. 37.

<sup>138</sup> This land is to become the site for the new hospital today, at Tan Sri Teh Hwe Lim Road, George Town, Penang.

<sup>139</sup> MED/PG/257/52, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, p. 4.



## **Dispensary and Healthcare Facilities in Rural Areas**

The introduction of the Rural Health Centre Scheme in Pulau Pinang,<sup>140</sup> with the purpose of providing health services to rural areas where there were no health services at all, showed that much transformation was required in various facets to bring about the required developments. Such transformation started with the setting up of local councils and municipalities in small towns and villages. These institutions were responsible for providing essential health services. As for the health facilities, the infrastructure included the health centres as well as the training schools, which was seen as needing restoration.<sup>141</sup>

Team building was also seen as the focus of developing the Rural Health Centres. Rural areas always took backstage when it came to the suppling of modern facilities. The little effort that was attempted by the British in its early colonial occupation in the Malay states including Pulau Pinang was rummaged by the Japanese invasion during the Second World War and the Japanese occupation of the country. Rural areas were greatly affected and the undisturbed life of the peasants became chaos. Half of what the peasants cultivated was taken away by the Japanese, causing famine and epidemics of malaria after the Second World War.<sup>142</sup> By the time the British came back for re-occupation, Pulau Pinang was under famine and disease.<sup>143</sup>

However, laying aside the blame attributed to the Japanese occupation, it can be said that the British colonial administrators themselves did not perform well in the assignment of health facilities in the rural areas. While chronicling medical development in Malaya from 1896 to 1909, Chai Hon Chan stated that from the late 20<sup>th</sup> century onwards and during the British colonial administration, there was a lack of doctors, nurses, and other

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<sup>140</sup> MED/PG/640/55, Rural Health Scheme Penang & Province Wellesley, Jabatan Kesihatan Pulau Pinang, p. 4A.

<sup>141</sup> Ibid.5.

<sup>142</sup> Ibid.

<sup>143</sup> MED/PG/341/52, Malaria Advisory Board, Kementerian Kesihatan Malaysia, p. 15.

hospital staff to provide respective services to the Malay states.<sup>144</sup> The reason for the shortage of doctors was that there were no native resident doctors, and those who came from Britain tended to succumb to tropical diseases. Many of the doctors become malaria victims themselves and they either died or went back to their countries, leaving the Malay country.<sup>145</sup>

Such a predicament created a shortage of doctors, and generated other medical staff issues. The unwillingness to undergo the long courses and the inability to clear the General Nursing Council of England and Wales courses among the Malay nurses<sup>146</sup> also contributed to the shortage of nursing staff. In addition to this, although major decisions in the health facility system were dominated by the State authority, there were many jurisdictions where the local and the municipal institutions had their own dominion.

Thus, in rural areas, all the responsibility for domiciliary midwifery, maternal and child health and sanitation and hygiene systems were managed by the regional administration themselves.<sup>147</sup> In such cases, most of the time, the local authorities did not have the management skills to look after such administration, nor did the State authority give equal consideration to all local regions.<sup>148</sup>

Such administration, along with lack of staff, made the statistical distribution ratio of midwives to mothers in Pulau Pinang is one to every 2,000 during the 1950s.<sup>149</sup> There was also only one rural health sub-center for every 1,000 people and one rural health district center for every 50,000 people.<sup>150</sup> Although the practical application, as well as the active existence of this statistical distribution, can be well debated, there were attempts made to provide a modern health system in rural areas in early 20th century Pulau Pinang. The Report of the committee of Enquiry on Medical Education of Malaya in 1953 stated that there was a need to increase the number of general practitioners in the urban areas, in parallel to

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<sup>144</sup> Chai Hon Chan, *The Development of British Malaya, 1896-1909*, p. 77.

<sup>145</sup> MED/PG/257/52, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, p. 4.

<sup>146</sup> *Federation of Malaya: Report of the Medical Department for the Year 1952*, p.44.

<sup>147</sup> MED/PG/245, Maternity & Child Welfare clinics P. W. Programme, Kementerian Kesihatan Malaysia, p. 13.

<sup>148</sup> Ibid.

<sup>149</sup> MED/PG/640/55, Rural Health Scheme Penang & Province Wellesley. Jabatan Kesihatan Pulau Pinang, p. 7.

<sup>150</sup> Ibid. p. 12.

development of specialist and consultant services in hospitals, and plans for new services and provision for their staffing in the rural areas were made, but these were never implemented.<sup>151</sup>

In 1955, the Rural Health Scheme journals reported that the health problems of the residents in rural areas persisted due to the many predicaments stated above.<sup>152</sup> The assessment shows the weaknesses and the lack of health systems and facilities. Even after the British re-occupation until the time colonialism was ending in the country, there was an extreme shortage of staff in health centres in rural areas such as Balik Pulau.<sup>153</sup>

On 13<sup>th</sup> December 1955, the Health Department of Pulau Pinang sent out a letter to “The Honorable, The Settlement Secretary, Pulau Pinang”. In the letter, the Health Department also admitted the shortages for trained staff in Pulau Pinang. Such shortages can also be seen in Telok Bahang, Seberang Perai, Kepala Batas, etc. And based on the results of the investigations carried out in Kepala Batas Health Centre (refer to Table 3.4), it is evident that there was an extreme shortage of staff, and that they were also in need of infrastructure and buildings for all nurses, health officers and dental officers.<sup>154</sup>

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<sup>151</sup> Colony of Singapore. *Report of the Committee of Enquiry on Medical Education in Malaya, November-December, 1953*, p. 49.

<sup>152</sup> MED/PG/640/55, Rural Health Scheme Penang & Province Wellesley, Jabatan Kesihatan Pulau Pinang, p. 7.

<sup>153</sup> Ibid.p.4.

<sup>154</sup> MED/PG/640/55, Rural Health Scheme Penang & Province Wellesley, Jabatan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p. 26.

**Table 3.4** Number of Health Staff Needed in Pulau Pinang in December, 1955

<b>Staff needed</b>	<b>Numbers</b>
Medical and health officers	4
Dental officers	3
Hospital helper	12
Right hand health nurse	1
Nurse helpers	11
Midwife	37
Clerk	4

Source: MED/PG/640/55, Rural Health Scheme Penang & Province Wellesley, Jabatan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p. 2.

Even when colonialism was drawing to a close, there were still shortages of health facilities in rural areas. Such hard-hit rural areas of Pulau Pinang needed improvement. These areas were Balik Pulau, Telok Bahang, Kepala Batas, Teluk Kumbar, Bayan Lepas, Kuala Muda, Penaga and Maklom.<sup>155</sup> The health facilities that were lacking in these places were hostels for staff, hospital buildings and clinics. There was also a shortage of drivers and nurses etc. This shows that the rural areas did not possess a good health system.<sup>156</sup> To solve these matters, the main plan of the Pulau Pinang Health Department was to recruit and train different categories of health staff and also to make amends with financial assistance. The Pulau Pinang Health Department designated an estimated fund of \$1,340,000 in 1955, to solve the matter.<sup>157</sup>

In the following year (1956), the Pulau Pinang Health Department spent around \$100,000 for construction in rural areas. This included construction of roads and drains, small rural housing schemes, an animal husbandry station and other plans that brought benefits. The restoration and construction works can be seen in Tasek Gelugor, Sungai Dua and Penaga when the electricity supply was extended into those areas in 1956.<sup>158</sup> As for Bukit

<sup>155</sup> Ibid. p. 3.

<sup>156</sup> CO 865/66, Penang Municipality: administration, staff, etc, Colonial Office, p. 13.

<sup>157</sup> MED/PG/640/55, Rural Health Scheme Penang & Province Wellesley, Jabatan Kesihatan Pulau Pinang, p. 20.

<sup>158</sup> APP14118/55, Improvement of Condition in Rural Areas, Pejabat Daerah Barat Daya Pulau Pinang, p.14.

Mertajam, water, streets, drains and lights were constructed and connected to Kampung Juru and Kampung Kuala. This shows the effort the government took to improve the state of health of the residents in the rural areas of Pulau Pinang, by the closing chapter of colonialism. Also the massive construction of drains, clean water supplies and the construction of animal husbandry stations was intended to reduce the incidence of diseases like malaria and typhoid in Pulau Pinang.<sup>159</sup>

### **Non-Profit Organisations and Healthcare Organisations**

In Penang, the Non-Profit Organisations (NPOs)<sup>160</sup> started to take an active part in the maintenance of health and services after the Second World War. There were also many private hospitals which were run by Christian Missionaries, which were voluntary and charitable in nature. These hospitals helped in maternal and child welfare.<sup>161</sup> Many of these institutions are financed by donations from the Christian community. This section also considers the work of the British Red Cross Society Federation which functioned voluntarily without even depending on donations from the Malay community.<sup>162</sup> The re-establishing of hospital services after the Second World War was supplied and supported by the British Red Cross Society Federation. By 1948, a remarkable improvement was noted after the British Red Cross Society Federation of Malaya, Pulau Pinang branch was established. This association, through its great efforts, contributed to the improvement of the children's health standards of Pulau Pinang by providing health advice, health treatment and medicines to school children for free.<sup>163</sup>

According to the journal of 'Red Cross Assistant for Resettlement Areas' in 1952, residents preferred the British Red Cross Society since they took better care of the patients than the travelling dispensaries or the government establishments. R.E. Anderson's account

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<sup>159</sup> MED/PG/130 Annual Report 1951, Bukit Mertajam, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, p. 22.

<sup>160</sup> This is an organization whose purposes are other than making a profit. A nonprofit organization is often dedicated to furthering a particular social cause.

<sup>161</sup> *Federation of Malaya: Report of the Medical Department for the Year 1950*, p. 51.

<sup>162</sup> MED/PG/146/56, Balik Pulau Red Cross, Pejabat Daerah Barat Daya, Arkib Negara Malaysia, Kuala Lumpur, p. 27.

<sup>163</sup> MED/PG/130, Annual Report 1951, Bukit Mertajam, Kementerian Kesihatan Malaysia, p. 12.

journal tells us that the Medical Service Supervisor, Mrs. Hamilton of the British Red Cross Society was very popular among the Malay residents.<sup>164</sup> The reason was that the Malay residents were never comfortable with the male doctors, helpers, or even nurses in travelling dispensaries and moving clinics, as well as in established hospitals. But with Mrs. Hamilton, they 'felt at home'.<sup>165</sup> As part of working with the NPOs, Hamilton visited 20 schools in 1955 and 1956 and treated 4,320 children, handling health problems such as dirty head, scabies, eye troubles, discharging ears, worms, enlarge spleens, scores and cuts, vitamin deficiency, anemia, threadworms, fever and mumps.<sup>166</sup>

Simultaneously, she also taught students about self and environmental hygiene and regarding care for their physical health. She organised transportation services to send children to eye specialists, dental doctors, hospitals and emergency facilities. In 1956, a Red Cross cupboard was stationed in schools.<sup>167</sup> Mrs. Hamilton worked tirelessly in the Province Wellesley in the same year. One diary reported that Mrs Hamilton found and treated an eight-year-old Chinese boy with tuberculosis of the hip<sup>168</sup> in Pai Teck School, Nibong Tebal in 1956. Mrs. Hamilton coaxed his parents to admit the boy at the Bukit Mertajam Hospital. The boy was clearly happy and there was hope of recovery. This can also be viewed as preventing the boy from being a carrier of the disease to other children.<sup>169</sup> In the same year, Mrs. Hamilton visited villages and residential areas voluntarily. She also brought the children and adults who had fever to the hospital for check-ups and treatment.<sup>170</sup>

In Kuala Muda and Penaga, it is recorded the Red Cross treated children with various diseases, among which eye treatment was the most popular. The biggest number of children suffering from eye problems was recorded in April 1951, totalling 307 cases. The reason for such a large number of cases was vitamin deficiency. There were also other diseases such as

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<sup>164</sup> *Federation of Malaya: Report of the Medical Department for the Year 1954*, p. 39.

<sup>165</sup> MED/PG/257/52, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, p. 62.

<sup>166</sup> *Federation of Malaya: Report of the Medical Department for the Year 1954*, p. 41.

<sup>167</sup> MED/PG/226/51, Medical boxes for kampong, Pejabat Daerah Barat Daya, Arkib Negara Malaysia, Kuala Lumpur, p. 31.

<sup>168</sup> Tuberculosis of the joints, called articular TB, progressively destroys the joints at the hips or knees. Doctors refer to the condition as "mono-arthritis" because only one joint is affected. The affected joint swells and becomes painful. Movement stiffens, and the range of motion is limited. In severe and chronic cases, abscesses develop in the affected joints.

<sup>169</sup> MED/PG/257-52, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, p. 4B.

<sup>170</sup> RCP/MED/202/49, Annual report of the Medical and Health Department, Penang 1948, Resident Commissioner Penang, p. 18.

handicapped newborn, or later becoming handicapped, which were treated on a large scale by NPOs such as the Red Cross.<sup>171</sup> The highest rate of the treatment of the handicapped was in February and March 1956 which amounted to 326 and 384 cases, whereas, the lowest record was in May 1956 with only 30 cases. Many children who got infected by worms were also treated by the Red Cross Society, and there were as many as 325 cases recorded in March and 98 cases in June 1956.<sup>172</sup>

## **Women's and Children's Health**

### Maternity Hospitals and Child Healthcare

Pulau Pinang did poorly in the set-up of Maternity and Child Healthcare facilities. This neglect of healthcare amenities for women and children during the colonial period in Pulau Pinang is, however, not unusual. In fact, during the colonial days around the world in the 19th and early 20th century, women and children received little attention from colonial government since they played no obvious economic role for the colonialists.<sup>173</sup>

In her book of European women who lived in Pulau Pinang during the colonial period, Christine Doran also stated that the predicament of negligence in maternal and child's health was equally faced by the European residents like the natives.<sup>174</sup> According to her, many natives and European women in Pulau Pinang succumbed to death while delivering babies. There was no such thing as 'forceps'<sup>175</sup> or any other much needed instrument for difficult deliveries. These were absent in the early colonial period.<sup>176</sup>

However, laying aside the modern facilities, many of the Malay women themselves wanted to deliver their babies at home with the help of the traditional birth attendants

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<sup>171</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p. 19.

<sup>172</sup> MED/PG/188/48, Medical Examination of School Children, Kementerian Kesihatan Malaysia, p. 24.

<sup>173</sup> Lenore Mandeson, *Sickness and the State: Health and Illness in Colonial Malaya, 1870-1940*, p. 87 and p. 93.

<sup>174</sup> Christine Doran, "'Oddly Hybrid': Childbearing and Childrearing Practices in Colonial Penang, 1850-1875", in *Women History Review*, Volume No. 6, No. 1, 1997, p. 56.

<sup>175</sup> Forceps are a surgical instrument that resembles a pair of tongs and can be used in surgery for grabbing, manoeuvring, or removing various things within or from the body. They can be used to assist the delivery of a baby as an alternative to the ventouse (vacuum extraction) method.

<sup>176</sup> MED/PG/601/55, Rural District Council Province Wellesley North, Penang Resident Commissioner, p. 16.

(*bidan*),<sup>177</sup> since they were wary of the Western health care.<sup>178</sup> Many of them also considered hospitals as places of dying, and not necessarily for giving birth or getting treated. But by the turn of the 20th century and by the time the World Wars broke out, saving children's lives and that of their mothers was seen as a necessity since repopulating the man-force was seen as indispensable to the country as well as to the colonialists.<sup>179</sup>

As part of these efforts, starting from the pre-war period, initially during the early part of 20<sup>th</sup> century, Dr. G. W. Park opened up the Maternity Hospital of King Edward VII in 1915, and from then until 1957 more than 30,000 babies were born there. During the Japanese Occupation, the Japanese used it as a naval hospital. After the Second World War, the British came back and used it as their barracks. After 1955, the premises served as the headquarters of the St John's Ambulance and Red Crescent Society, and the centre for Pulau Pinang NGOs. When Dr. G. W. Park retired in 1917, his successor, Dr. Rose, took over the responsibility (until 1927).<sup>180</sup>

During his leadership, various achievements were realised, particularly in the mother and child health care system. For a start, there were epidemics of influenza, smallpox, and plague in 1918 to 1919. Since bubonic plague attacks children and adults, public places such as cinemas were shut down to avoid spreading the disease.<sup>181</sup> In fact, the infant mortality which stood at 367 in 1904 had fallen by 155 by 1923.<sup>182</sup> During and after the war, efforts were still made to set up Maternity and Child Healthcare facilities. For instance, Dr. Brodie set up the Maternity and Child Welfare Centre in 1936<sup>183</sup> to solve the issue of infant mortality and to strengthen the health of the mothers. At the end of the 1930s, the unhygienic consumption of food led to an outbreak of typhoid in 1937, and again in August to September

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<sup>177</sup> Traditional birth attendants, which play the role of midwife in birth delivery.

<sup>178</sup> Lenore Mandeson, *Sickness and the State: Health and Illness in Colonial Malaya, 1870-1940*, p.33.

<sup>179</sup> MED/PG/605, Rural District Council Province Wellesley Central, Perubatan dan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p. 22.

<sup>180</sup> Penang Historical Society, "Health Problem and Maternity", in *Penang: Past & Present, 1786-1963. A Historical Account of the City of George Town since 1786*, p. 69.

<sup>181</sup> MED/PG/46/54, British Red Cross Society General, Perubatan dan Kesihatan Pulau Pinang, p.24.

<sup>182</sup> MED/PG/245, Maternity & Child Welfare clinics P. W. Programme, Kementerian Kesihatan Pulau Pinang, p. 6.

<sup>183</sup> *Federation of Malaya: Report of the Medical Department for the Year 1950*, 66.



1939. In 1937, of the 60 typhoid patient cases, only 46 recovered; while in 1939, of the 575 patients treated in hospital, 106 patients died of the disease.<sup>184</sup>

The main cause for these typhoid epidemics can be traced to poverty and unhygienic consumption of food. In Dr. Brodie's words, *“To those with a public health mind, a tour through the streets of Penang can result only in nightmare! The uncontrolled and unhygienic conditions under which the food and drink are consumed by what would appear to be the whole population of certain districts, makes one wonder why there is not a permanent state of "epidemic" caused by food poisoning. Certainly, the hope of tracking down one source of infection seems faint in the extreme, so long as the large armies of food sellers ply their trade with such unhygienic methods. In a general epidemic, it would be difficult to know where to begin . . .”*<sup>185</sup>

British re-occupation of Pulau Pinang (and Malay States) in 1945, saw the colonial administrators giving special attention to maternity and child welfare activities. Government-run Maternity and Child Welfare amenities under the Medical Department of the Federation became very common.<sup>186</sup> By the 1950s, there were specially developed maternity blocks attached to the Government Hospitals in Pulau Pinang, with well-developed labour rooms and other facilities.<sup>187</sup> Child Welfare Clinics, under the guidance of female Medical Officers and trained nursing sisters, were also made available in all the areas of Pulau Pinang.<sup>188</sup>

The Department of Child Health gained momentum by the 1950s, and Child Health Specialists also became available in Pulau Pinang by this time.<sup>189</sup> Collaboration between Child Welfare and Government Hospitals was also strengthened, along with the relationship between Child Welfare and education. Thus, before the Second World War

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<sup>184</sup> Ibid.

<sup>185</sup> Penang Historical Society, “Health Problem and Maternity”, in *Penang: Past & Present, 1786-1963. A Historical Account of the City of George Town since 1786*, p. 71.

<sup>186</sup> *Federation of Malaya: Report of the Medical Department for the Year 1950*, p.48.

<sup>187</sup> MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, Kuala Lumpur, p.18.

<sup>188</sup> Ibid. p.19.

<sup>189</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia. p.22.

broke out, there was a good maternity hospital in Pulau Pinang with 110 beds, and in larger towns, there were Infant Welfare Centres and Child Specialists.<sup>190</sup>

By the end of British colonialism in Pulau Pinang, not only had all these improved and developed, but, even in smaller towns and villages, there were centres for resident nurses and midwives, as well as adjacent dispensaries.<sup>191</sup> Treatment in smaller towns included treating minor ailments, anti-natal supervision; instruction in child feeding; and teaching about raising the standards of hygiene at home. Maternity and Child Healthcare facilities can therefore be recorded as seeing marked improvement over the period of British occupation compared with other health treatment facilities.<sup>192</sup>

Child Welfare Clinics under the guidance of female Medical Officers and trained nursing sisters were also made to be available in all the areas of Pulau Pinang. The Department of Child Health gained momentum by the 1950s, and Child Health Specialists also became available in Pulau Pinang by this time. A new section of medical facilities was also created in the form of nurses specifically educated to take care of premature babies.<sup>193</sup>

These premature babies included all those children who were born with a weight of 5½ pounds or less.<sup>194</sup> Many of the children were born below that birth weight, and the Child Specialists noted the reason for such disorder as "*the result of malnutrition, worm infestation and tuberculosis, so that although the majority of diseases seen in England are also seen in Malaya, yet the approach to disease and its treatment must always bear in mind these three mentioned conditions*".<sup>195</sup>

When colonialism finally closed its last chapter in Pulau Pinang in 1957, children and mothers were receiving a great deal of care and attention compared with other categories of

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<sup>190</sup> Ibid. p.23.

<sup>191</sup> MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, p. 19.

<sup>192</sup> MED/PG/245, Maternity & Child Welfare clinics P. W. Programme, Kementerian Kesihatan Malaysia, p. 17.

<sup>193</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p. 26.

<sup>194</sup> *Federation of Malaya: Report of the Medical Department for the Year 1950*, p.63.

<sup>195</sup> Penang Historical Society, "Health Problem and Maternity Ward", in *Penang: Past & Present, 1786-1963. A Historical Account of the City of George Town since 1786*, Penang: George Town (Penang) City Council, 1966, p. 69.

patients, with many medical employees and staff such as doctors, female medical officers, health sisters, and health nurses taking care of them.<sup>196</sup>

### Mortality Rate & Vaccination

Infant mortality was an issue that was prevalent across the whole world, though the Federation of Malaya with its high infant mortality ranked high when compared with other countries.<sup>197</sup> Hospital pediatricians were interested in reducing the infant mortality rate during delivery, as well as reducing the number of children who were admitted to hospitals and succumbed to various diseases. Infant illness and death were common during the first month of the child's life. Also, there were those who were stuck with infant-infected disease for the rest of their lives (like polio).<sup>198</sup>

In the Malay States malnourishment and unhygienic environments represented the main factors toward infant and maternal mortality rates. Infantile diarrhoea was also one of the most common problems found in the Malay states during the colonial period.<sup>199</sup> The reason for the unhygienic conditions were many, such as poverty, unemployment, ignorance, and bad housing systems. Diseases that led to infant mortality also include the congenital defects which encompass all still-births and neonatal deaths.<sup>200</sup>

The colonial administrators took various measures to bring down mortality rates among children and mothers, and to prevent them succumbing to various diseases caused by the unhygienic environment.<sup>201</sup> Among such measures, vaccination<sup>202</sup> for tuberculosis,<sup>203</sup>

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<sup>196</sup> Ibid.

<sup>197</sup> G. Haridas, *Proceedings of the Alumni Association of the King Edward VII College of Medicine, Vol. 2*. Singapore: Papineau Studios Advertising, 1949, p.71.

<sup>198</sup> MED/PG/208, Vaccinations, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.2A.

<sup>199</sup> Ibid.p.3

<sup>200</sup> MED/PG/234, B.C.G. Training, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.5.

<sup>201</sup> MED/ PG/188-48, Medical Examination of School Children, Perubatan dan Kesihatan Pulau Pinang, p. 22.

<sup>202</sup> Vaccination is the administration of antigenic material to stimulate an individual's immune system to develop adaptive immunity to a pathogen. Vaccines can prevent or ameliorate morbidity from infection.

<sup>203</sup> Bacillus Calmette–Guérin (BCG) vaccine is a vaccine primarily used against tuberculosis. The BCG vaccine was first used medically in 1921.

smallpox<sup>204</sup> and typhoid<sup>205</sup> was seen as one of the strongest tools to combat mortality issues. It can be stated here that compulsory vaccination had been practised in the Colony since 1868, but for various reasons, its benefits only reached a very small proportion of the population. Thus, of all the children born, a fair proportion, for a variety of reasons, failed to be vaccinated. In Pulau Pinang, the 1888 record shows only 2,054 children being vaccinated and 403 being re-vaccinated.<sup>206</sup>

The percentage of successful cases was 75.3% and the failures were 15.8%. Cases in which the child was not seen again after vaccination were 8.9% of the whole. However, in Seberang Perai, the colonial surgeon (Dr. McClosky) reports 3,350 patients being vaccinated, with 90.4% success rate.<sup>207</sup>

The cost of vaccination averaged 66.5 cents per head in Penang Island and 29.5 cents in Seberang Perai. The calculation is based on the successful cases only.<sup>208</sup> By the end of the colonial period in the 1950s, the travelling dispensaries were doing a great job to bring about mother and child vaccination. The following Table 3.5 shows the frequency of administering vaccination by the travelling dispensaries in the 1950s in various areas of Pulau Pinang.<sup>209</sup>

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<sup>204</sup> Smallpox vaccine, the first successful vaccine to be developed, was introduced by Edward Jenner in 1796. He followed up his observation that milkmaids who had previously caught cowpox did not later catch smallpox by showing that inoculated cowpox protected against inoculated smallpox.

<sup>205</sup> Typhoid vaccines are vaccines that prevent typhoid fever. The first typhoid vaccines were developed in 1896 by Almroth Edward Wright, Richard Pfeiffer, and Wilhelm Kolle.

<sup>206</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p.112.

<sup>207</sup> MED/PG/208, Vaccinations, Kementerian Kesihatan Malaysia, p. 5.

<sup>208</sup> Ibid.

**Table 3.5** Frequencies of Vaccinations for Infant and Mother, 1948

<b>Days</b>	<b>Districts</b>	<b>Approx. Miles from centre.</b>	<b>Clinics</b>
<b>Monday</b>	Machang Bubok Mengkuang	½ mile from M. Bubah 3 miles from Sg. Lembu	Weekly Twice monthly
<b>Tuesday</b>	Penanti (Kbg. Semang)  Spg. Tiga (Mengkuang Titi) Ara Kuda	1 miles from Bt. Ladra Muda  3 miles from Bt. Ladra Muda  6 miles from Bt. Ladra Muda	Twice monthly  Twice monthly Twice monthly
<b>Wednesday</b>	---	---	---
<b>Thursday</b>	Bukit Tengah Kpg. Alma Kuala Juru, Bagan Nyior	3 miles from B.M. 8 ½ miles from B.M. 3 ½ miles from Juru	Twice weekly Twicw weekly Twice monthly
<b>Friday</b>	----	-----	-----
<b>Saturday</b>	Pdg. Lalang, Spg. Ampat Tasek.  Tassek Junjong, and Kampung  Changkat	2 miles fromn Spg. Ampat  3 ½ miles from Spg. Ampat  4 miles from Sg. Bakap	Weekly  Weekly  Weekly

Source: RCP/MED/202/49, Annual report of the Medical and Health Department, Penang 1948, Resident Commisioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 25.

### Children's Health Problems

During the colonial period, infants and children had suffered from many health issues. Therefore, British colonial administration ensured that infants and children underwent medical examination. The school children in Penang Island and Seberang Perai also received routine medical examination under the responsibility of the School Health Officers. Their duty was to visit the schools, perform check-ups and give treatments to the students who had health problems. These students would be advised to seek treatment at the hospital or clinic

when necessary. In such cases, the officer would transfer their treatment record to the hospitals and clinics.<sup>210</sup>

Based on the outlook of the early colonial period, during the 1920s and 1930s, the spread of worms (*cacing kerawit*) posed a huge problem amongst school children in rural areas of Pulau Pinang. According to Dr. Paul F. Russel, a medical doctor from England, who was the chairman of the Rural Sanitation Campaign in Pulau Pinang, these patients were widely scattered across the rural areas of Pulau Pinang. There were as many as 32,000 infected people in Pulau Pinang.<sup>211</sup> To make the people realise how dangerous the disease was, Dr. Russel held lectures and gave speeches in schools. He was desperate to expose the cause of worms spreading and the methods by which people could prevent themselves becoming a victim of this disease. He used illustrations, posters and graphs for demonstration to communicate to his audience (as high as 500 people) to ensure that they understood the dangers of the disease.<sup>212</sup>

In addition to such demonstrations and lectures, almost all schools, whether English, Chinese or Malay schools, were given health services from the British colonial administration. The Malay schools that received such services were located at Bagan Jermal, Bagan Ajam School and Sungai Bakap. The Chinese schools, such as Kwang Hwa Chinese School, Sin Chung School and Chin Twa School also received health services.<sup>213</sup> During the 1920s, it was reported that English schools' health conditions were a lot better than Malay schools. Statistically, the average student who suffered abnormal health in an English school was 30 percent, different from Malay schools, where more than 50 percent students suffered from health problems.<sup>214</sup>

Besides, blind and deaf disabilities in Malay schools were 30% higher than the English schools. This situation was not because of the English government who did not pay

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<sup>210</sup> RCP/MED/202/49, Annual Report of the Medical and Health Department Penang, Resident Commissioner Penang, p. 9.

<sup>211</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p.112. p. 751.

<sup>212</sup> MED/PG/257-52, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia p. 2.

<sup>213</sup> RCP/MED/676/49, Medical Examination of School Children, Resident Commissioner Penang, p. 1.

<sup>214</sup> Ibid.

attention to Malay schools, but that most of the students who registered in Malay schools came from poor families, while most of the students in English schools were from well off families.<sup>215</sup> Interestingly, Lawrence Stone in his book provides a theory in his studies of the early Europe in *The Family, Sex and Marriage in England 1500-1800*.<sup>216</sup> Based on his book, he shows that when high infant mortality rate occurs, there is a tendency for parents to become emotionally distant and eventually neglect their children. Such a theory can somehow be implicitly linked to the indifference shown by the parents in Pulau Pinang towards their children suffering from malnutrition (aside from being conditioned by poverty).<sup>217</sup> Besides that, Medical Examination for Schools in Seberang Perai from 28<sup>th</sup> April to 11<sup>th</sup> December 1952 showed that the health conditions in English and Chinese schools was better than in the Malay schools. For example at St. Theresa's Convent school in Seberang Perai, which has 295 students, only 31, or 10 percent, of female students from that school had health problems.<sup>218</sup> This matter is recorded in Table 3.6 below:

**Table 3.6** Student's Health Problems in St. Theresa's Convent School, Seberang Perai, 1952

Type of disease	Amount
Fatigue and weak condition	6
Skin problem	2
Blind	23
<b>Total</b>	<b>31</b>

Source: RCP/PG/676/ 49, Medical examinations of school children, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 7.

In the year 1952, the recurring child health problems in Malay schools were severe in rural areas of Seberang Perai. For example, in Telok Ayer Tawar School, 50, or 28 percent, of the 176 students suffered health problems. Similar incidents happened in Bukit Mertajam School too – 42, or 39 percent, of the 124 students suffered health problems. In schools in

<sup>215</sup> Ibid. p.3.

<sup>216</sup> Lawrence Stone, *The Family, Sex and Marriage in England 1500-1800*. London, UK: Penguin Books, 1990, p. 1 and p.2.

<sup>217</sup> Benjamin Roberts, *Through the Keyhole: Dutch Child-Rearing Practices in the 17th and 18th Century: Three Urban Elite Families*. Amsterdam, The Netherlands: Uitgeverij Verloren, 1998, p. 61.

<sup>218</sup> RCP/MED/676/49, Medical Examination of School Children, Resident Commissioner Penang, p.2 and p. 3.

Sungai Dua, Seberang Perai, out of 456 students, 68, or 15 percent of them, suffered health problems.<sup>219</sup> This is shown in the following Table 3.7:

**Table 3.7** Details of Children Health Problem in Malay School, Sungai Dua, Seberang Perai, 1948

Type of disease	Amount
Fatigue and weak condition	43
Anaemia	6
Skin problem	7
Blind Scabies	3
Dermatitis	3
Conjunctivitis	4
Enlarged Speen	2
TOTAL	68

Source: RCP/PG/676/ 49, Medical examinations of school children, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p.3.

This had happened because the Head of Health Officer, who was instructed to perform the health check-ups, gave less attention to non-English schools.<sup>220</sup> After this, various efforts were made to provide healthcare services to school children in rural areas, such as travelling clinic services for treating the students. Principals and heads of the schools also had to assume the responsibility for sending out letters to parents and guardians to inform them about the health problems faced by their students in schools.<sup>221</sup>

To ensure the success of these measures, health officers and nurses visited all schools in Penang Island and Seberang Perai. They examined all students and gave prescriptions for light diseases such as worms, leprosy, eye problems, lack of nutrition, high fever and more. *Anti-typhoid* and *anti-diphtheria* vaccination was also administered to safeguard the students from typhoid and inflammations.<sup>222</sup> They also performed physical check-ups, health tests, B.C.G. (Bacille Calmetter-Guérin) vaccinations and additional treatment for children who were infected with contagious diseases such as dry cough, typhoid and malaria. Their health

<sup>219</sup> Ibid. p.1.

<sup>220</sup> RCP/PG/676/ 49, Medical examinations of school children, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p.3

<sup>221</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941, Volume 8: 1922-1926*, p. 345.

<sup>222</sup> Ibid. p. 352.



services were also extended to the school's staff, providing physical check-ups. And thus, the performance by the Right-Hand Health Nurses and Health Officer Assistants for providing treatment to students should be applauded.<sup>223</sup> Among the school facilities provided, the areas of focus were the lighting, water supplies and toilets. Thus, colonial administrators were passionate in bringing better education, hygiene, and other health services among children in schools.<sup>224</sup>

### Malnutrition among Children

The problem of malnutrition<sup>225</sup> received very regular mention in official government records after the Second World War in Pulau Pinang.<sup>226</sup> In 1949, Pulau Pinang Health Department was occupied in sending letters to all school authorities in Pulau Pinang in English as well as in the Malay language entitled "*Makanan Pagi Untuk Kanak-kanak Sekolah*" (Breakfast for School Children) to provide breakfast or at least milk to children. This letter also urged parents to be responsible in preparing breakfast for their child since teachers discovered that many children did not have breakfast and this affected their studies.<sup>227</sup>

The letter stressed that even a small amount of rice or bread and a cup of coffee, which requires little time to prepare, can clearly improve children's learning performance.<sup>228</sup> This explains the circumstances faced by school children that had led to malnutrition in the mid 1950s and the role played by the government in handling this situation and making the parents responsible for their children's health. However, in reality, not all parents could fulfil the demand, due to poverty. There were also many parents who remained unaware of what

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<sup>223</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p. 2 and p. 3.

<sup>224</sup> Ibid.

<sup>225</sup> Lack of proper nutrition, caused by not having enough to eat, not eating enough of the right things, or being unable to use the food that one does eat. In this focus will be given to malnutrition problems among children.

<sup>226</sup> MED/PG/601/55, Rural District Council Province Wellesley North, Perubatan dan Kesihatan Pulau Pinang, p.4 and p. 6.

<sup>227</sup> Ibid. p.7 and. p.9

<sup>228</sup> MED/PG/46/54, British Red Cross Society General, Perubatan dan kesihatan Pulau Pinang, p. 20.

missing breakfast or malnutrition meant and took little notice because they felt that study was not important for their children.<sup>229</sup>

The distribution of milk and food for school children was controlled by the Health Department until 8th November 1948, when the Education Department took charge of providing these supplies at no charge to poor school children in rural towns from the Pulau Pinang Health Department. Principals and school teachers worked together and started the Milk Scheme for growing children.<sup>230</sup>

A minimum standard of nutrition suggested was to give a cup of milk and a spoon of Cod Liver Oil<sup>231</sup> to the school children.<sup>232</sup> Stock containing milk, cocoa and palm oil was gathered and stored in two warehouses in Ayer Itam and Bukit Mertajam. The visit of the Head Health Officer, W.H. Jeffrey in the year 1948, found out that most schools had adequate food stock in storage which is equivalent to four months sustenance for the school children. There was also a stock system which was used to record the collecting activity, so that they could detect and handle the extra stock in schools. Meanwhile, food provision for poor school children was also addressed.<sup>233</sup>

In 1956, Mrs. Hamilton had introduced the 'Milk Scheme for malnourished children' (discussed in the previous section). The help of older girls who willingly assisted in the distribution of the milk supply to school children, made sure the effort on 'Milk Scheme' was a success. Red Cross Boxes were also created and boiled water was prepared for school children.<sup>234</sup> This programme was carried out in rural town schools and managed by Mrs. Hamilton. Among schools which were visited by her and her helpers were the Kung Yu School, Kuala Muda, Meng Kuang, Pinang Tunggal, Malay School and Permatang To'Bidu Secondary School.<sup>235</sup>

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<sup>229</sup> RCP/EDU/1487/47, School Feeding Scheme 1948, Resident Commissioner Penang, p.3.

<sup>230</sup> Ibid.

<sup>231</sup> Cod liver oil is a nutritional supplement derived from liver of cod fish. As with most fish oils, it has high levels of the omega-3 fatty acids, eicosapentaenoic acid and docosahexaenoic acid.

<sup>232</sup> Ibid.18.

<sup>233</sup> MED/PG/46/54, British Red Cross Society General, Perubatan dan kesihatan Pulau Pinang, p. 26.

<sup>234</sup> Ibid.p. 3.

<sup>235</sup> RCP/EDU/1487/47, School Feeding Scheme 1948, Resident Commissioner Penang, p.3.

The food provided for school children was very nutritious. It had rice, which contained milled rice, high content of vegetables, coconut oil, dried fish and dried shrimps. Cooked food from school contained high calorie and carbohydrate content. Children who were found suffering from a lack of calories or carbohydrate were given healthy rice. Unfortunately for those who had the problem of malnutrition, Mrs. Siew Young, a female medical officer, reported that these children did not achieve positive results from this system. When making a comparison between the Chinese schools and Malay schools, only the Malay schools were seen to gain the help of the volunteer members for cooking food, while in Chinese schools, cooks were hired.<sup>236</sup>

In 1954, it was reported that malnutrition among school children had reached its peak and that the school feeding was not helping to improve the children's health.<sup>237</sup> This caused the Balik Pulau District Officer, R.G. Holden to come to a decision that such systems should be organised and handled by local committees, and the authorities themselves. In his own words,

I am definitely in agreement with the main proposal of the committee for School Feeding that the provision of school meals should be organised on a local basis by the local community, with advice from interested Government Departments, and that if trials along these lines are unsuccessful, Government should not step in and take over-even if funds are available.<sup>238</sup>

His statement also stressed that it is the parents' responsibility to provide nutritious food for their children and parents should not expect the government to carry out that duty. Similarly, a suggestion was made that the parents' associations in schools should be responsible for creating a committee for giving food to poor students,<sup>239</sup> instead of being dependent on the government. Even after this, the public still did not realise how important health was. And school feeding was a failed attempt, especially in rural schools which had

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<sup>236</sup> Ibid, p. 3.

<sup>237</sup> MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, File No. p. 6 and p.7.

<sup>238</sup> MED/PG/46/54, British Red Cross Society General, Perubatan dan kesihatan Pulau Pinang, p. 26.

<sup>239</sup> MED/PG/123/54, Malnutrition among School Children, Pejabat Daerah Barat Daya Pulau Pinang, p. 5.

village children. The help of the staff and public society had been very important. However, combatting malnutrition among school children through school feeding failed to meet its purpose.<sup>240</sup>

Among the causes of failure of the government plan was that the government, at the outset, did not take into account the cost of kitchen utensils, workers, warehousing, transport and food preparation inspection. In short, the government did not observe the ongoing matter of school feeding.<sup>241</sup> One of the defects was also the allocation for expansion of the canteen. Furthermore, not all schools had the physical space for building to expand the size of their canteens.<sup>242</sup>

In a research conducted in a Malay school in Teluk Bahang in 1939, a group of students who were given free milk failed to gain more weight. But the children who did not get free milk had gained weight. This happened because parents, knowing that their children were being given free milk in school, reduced their food supply, which then made the children become thin. Having said this, the 'milk scheme' and the 'feeding scheme' were not a complete failure.<sup>243</sup> The systems managed to provide help for the English schools, by subsidy to the canteens so that they could sell all kinds of food at discounted prices. In 1948, there were also 129 Chinese schools, 100 Malay schools and 42 Indian schools (under the estate's administration) in Pulau Pinang which were provided with school feeding systems.<sup>244</sup>

## Dental Care

As for dental care, there were three main areas that provided dental services in rural areas – Ayer Itam, Bayan Lepas and Balik Pulau. The dental service in Ayer Itam was considered the best because Ayer Itam's Health Centre was open every day to provide treatment, especially for school children. In Balik Pulau, residents got treatment provided

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<sup>240</sup> MED/PG/118/55, Improvement of Condition in rural Area, Pejabat Daerah Barat Daya Pulau Pinang, p. 6.

<sup>241</sup> MED/PG/146/56, Balik Pulau Red Cross, Pejabat Daerah Barat Daya Pulau Pinang, p. 9.

<sup>242</sup> Ibid.p.7 and p.10.

<sup>243</sup> MED/PG/123/54, Malnutrition among School Children, Pejabat Daerah Barat Daya Pulau Pinang, p. 3.

<sup>244</sup> MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, p. 11.

three times a week. However, in Bayan Lepas, the Dental Health clinic was only open two days a week. Besides that, school children who lived near to the health clinics were given priority in dental care.<sup>245</sup>

In Bayan Lepas, students from Chung San School, for example, got the priority for dental care because they lived near the health clinic.<sup>246</sup> Compared with rural areas, children in the city were more fortunate because they lived near the dental service facilities. In rural towns, the percentage of children who needed dental service was as high as 90 percent. To handle this problem, a mobile dental clinic was sent to the rural areas for school visits and to create dental care awareness through speeches and demonstrations about hygiene and dental care.<sup>247</sup> Other services included tooth extraction, patching, gum treatment, dentures and more. Even so, the response to dental services in rural areas was poor. However, the mobile dental clinics continued to remain in operation.<sup>248</sup>(refer to Table 3.8)

**Table 3.8** Table of Visitation of the Moving Dental Clinic to Schools in Pulau Pinang, 1952

Day	School
Monday	Permatang Sintok Malay School
Tuesday	Telok Ayer Tawar Malay School
Wednesday	Permatang Sintok Malay School
Friday	Nibong Tebal Anglo-Chinese School
Saturday	Ayer Tawar Malay School

Source: MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.5A.

Dental services tended to focus on English schools. Out of 11 schools visited in Seberang Perai, seven were English schools, three Malay schools and one a Chinese school. This was because the dental problems amongst children in English schools were greater than the Malay and Chinese schools.<sup>249</sup> This happened because many students from the English schools were rich children and they ate a lot of candies, snacks and fast food which would

<sup>245</sup> Ibid p.7 and p.8.

<sup>246</sup> MED/PG/104/50, Dental treatment, Pejabat Daerah Barat Daya Pulau Pinang, p. 8.

<sup>247</sup> MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, File No. p. 6 and p.7.

<sup>248</sup> Ibid. p.5A.

<sup>249</sup> MED/PG/104/50, Dental treatment, Pejabat Daerah Barat Daya Pulau Pinang, p. 8

eventually cause tooth decay. The Table 3.9 below shows the number of students who had dental problems in an English school:<sup>250</sup>

**Table 3.9** Number of Students and Dental Treatments in Bukit Mertajam School, 1952

Treatments and services given	Number of students
Tooth extraction	164
Patch	249
Gum treatment	64
Dressings	37
Dentures	10
Other problems	20

Source: MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.5A.

Besides this, dental officers often took sick leave. So when the lack of dental staff was severe, a dental officer was forced to visit various rural village schools of Seberang Perai for five consecutive days.<sup>251</sup> The lack of officers was confined to the dental service provided to children. Otherwise, the visit of the officer was beneficial to children and adults at the places they visited. As a result of this shortage of dental officers, routine dental treatment failed for school children in Pulau Pinang and the Malay states in general.<sup>252</sup>

## Conclusion

The British can be applauded for the remarkable performance of setting up western medical facilities in Pulau Pinang. The efforts made by the British in preventing diseases and in reducing the mortality rate in Malaya can be acclaimed. Along with the Malays, the British officials were also susceptible to many tropical diseases. However, the British had persevered to develop medical facilities in Pulau Pinang as it was deemed necessary to them. So, many rudimentary health care facilities were set up at the outset, and Pulau Pinang was among the first to set up healthcare infrastructure, which was developed eventually around the time of the close of colonialism.

<sup>250</sup> MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, p. 71.

<sup>251</sup> MED/PG/601/55, Rural District Council Province Wellesley North, Perubatan dan Kesihatan Pulau Pinang, p. 4.

<sup>252</sup> MED/PG/104/50, Dental treatment, Pejabat Daerah Barat Daya Pulau Pinang, p. 9 and p. 11.

In order to understand the development of medical systems and facilities in Pulau Pinang during the colonial days, we noted that the administrative management had a division of power between the state Government and local governments, who were managing the hospitals, health departments and head of hospitals. All of this has been discussed. This chapter has also looked into the development and spread of hospitals and dispensaries in Pulau Pinang by the British Colonial Administrators. Although the Japanese took little or no interest in civilian hospitals and medical needs during their occupation of Pulau Pinang in the Second World War, the British re-occupation somehow restored health services again. They set up various hospitals such as the Penang General Hospital, Lock Hospital, Pauper Hospital, Leper Hospital, Gaol Hospital, Butterworth Hospital, Birtam Hospital, Bukit Minyak Hospital, and Sungei Bakap Hospital.

By 1950, it was reported that there were 69 Government hospitals in all the Federation of Malaya. The British also organised a more liberal health policy when they encouraged the welfare organisations and non-government health to help eradicate dangerous diseases and improve Pulau Pinang residents' health standard as a whole. Such organisations included the British Red Cross Federation and the Christian missionary societies.

Among the Christian missionaries, the Seventh-day Adventist church, the Methodist, and the Catholic Federation had their own role in taking care of the patients. But Christian associations were able to work only in certain places. For example Catholic Welfare, operated only in areas where the Chinese stayed in middle district, and where Islamic opposition was not found. In addition to the government and the private systems and NPOs, women's contribution in handling children's health problems in Pulau Pinang have also been discussed in this paper. There were women like Mrs Hamilton who were passionate to provide good health services to children in rural areas. As a member of the Red Cross she visited nearly all schools in Seberang Perai and Bukit Mertajam. She also paid much medical attention to the sick children in almost all schools in that area.

To solve the issues of school children's health and their malnutrition, she started the Milk Scheme system, in addition to what the government did in the form of school feeding (by the Pulau Pinang Health Department). The Milk Scheme for children was very beneficial, but the Pulau Pinang Health Department's school feeding system was a failure. Other services provided by the government like the dental care to school children also failed, especially in rural regions. Such facilities remained available mostly to English schools, and to the well-off children in urban areas as has also been discussed in this paper. Putting the difficulties and failures aside, the British colonial administrators can no doubt be ascribed as the champions in bringing modern health facilities in Pulau Pinang and in other Malay states.

No matter how much developed western medicine existed, writers such as Giok Ling argue that people in Malay Peninsula (including Pulau Pinang) still continued to use traditional medicine. The fact is that different ethnic groups had their own aboriginal medicines even before the western medicines developed during the British Colonial Administration. The persistence of traditional medicines has been traced to colonial healthcare policies, where there was an uneven growth of development and services.

In addition to this, early western and colonial medicine did not appeal to the natives, and it took time for western medicine to penetrate into the society. On the part of the British, when the western medical facilities initially developed, there were shortages of people and resources, and the medical facilities vehemently suffered because of the expansion and over-utilisation of their abilities to help patients across the country.



## CHAPTER 4

### HISTORY OF MALARIA IN PULAU PINANG, 1900-1957

#### Introduction

In this chapter, research will focus on the history of malaria in Pulau Pinang during British colonial administration from 1900 to 1957. The first part will focus on the historical background of the disease, understanding the disease and the mosquito nuisance which causes malaria. The objective of this part is to understand the historical background of malaria, the transmission of the disease and the problems caused by malaria in Penang Island and Seberang Perai. Malaria was a life-threatening disease. In the year 1829, Penang Island and Seberang Perai witnessed nearly one third of the population die from malaria. This caused the British Colonial Administration to invest money in preventive measures and attempts to eradicate malaria in the region.

The second part of this chapter will focus on the importance of research and investigation of the Institute of Medical Research, Kuala Lumpur, in finding effective ways for the prevention of malaria, for malaria control, the best ways to eradicate mosquitoes breeding areas and experiments on effective drugs for the treatment of malaria. In addition, this chapter will look at the importance of education and training to educate the public to keep their surrounding areas free from mosquito breeding places. The training of health officers and workers in malaria control and using DDT spraying will be also discussed in this chapter. Finally, this part will focus on prevention measures for malaria and on malaria control in rural areas before and after the Second World War, where attention will be given to the measures taken by the authorities to destroy mosquito breeding areas. This research

shows that in rural areas, the usage of DDT spraying was very important where as in urban areas, oiling was a more effective way of controlling malaria.

In this chapter's final section, the research will focus on the treatment of malaria patients in government hospitals in Penang Island and Seberang Perai. Penang General Hospital was the best hospital during this period which received the most malaria cases and had the best facilities and specialist doctors to deal with these cases in Penang Island and Seberang Perai. It surpassed other government hospitals in the state. The adoption of new modern medicine from the West had helped alleviate the suffering of malaria patients, and healed and cured their diseases. Indeed, malaria was a great problem from 1900 to 1957, but cases of malaria were controlled and reduced more after the Second World War in 1947, with preventative measures being undertaken by the authorities and effective treatment for malaria patients becoming available in Government hospitals.

## **History and Nature of the Disease**

### **Origin of Disease**

Malaria, a life-threatening disease, is caused by transmission of a one-cell parasite known as *plasmodium* through blood, transmitted by female *Anopheles* species mosquito. Its historical evidence can be traced from ancient historical sources such as clay tablets, writing on papyrus and texts.<sup>1</sup> Other sources of information about the existence of the disease were gained from clay tablets from Mesopotamia dating from 2000 BC, papyrus inscriptions from Egypt around 1570 BC and Hindu texts, from sixth century BC.<sup>2</sup>

Scientists have expressed their concern about the appropriate diagnosis of the symptoms of the disease mentioned in these ancient historical sources.<sup>3</sup> The later discoveries

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<sup>1</sup> Randall M. Packard, *The Making of a Tropical Disease: A Short History of Malaria*, 1st Edition, Maryland: Johns Hopkins University Press, 2011, p.36.

<sup>2</sup> Sonia Shah, *The Fever: How Malaria Has Ruled Humankind for 500,000 Years*, New York: Farrar, Straus & Giroux, 2011, p.29.

<sup>3</sup> CO 111/781/10, *Malaria: Malariological Survey; Reports On The Malaria Investigations Service for 1943, 1944 and 1945*, Colonial Office, The National Archives, United Kingdom, p.3.

from Greek historical and literary figures - sources like Homer (850 BC), Empedocles of Agrigentum (550 BC) and Hippocrates (400 BC); confirm the prevalence of the disease and its effect on human lives during that particular epoch.<sup>4</sup>

The idea was that miasmas rising from swamps was the sole reason behind the growth of the disease and this idea persisted for nearly 2500 years. It was generally assumed that the term malaria originated from Italian *mal'aria*- meaning spoiled air and now that belief has been refuted by scientists. The discovery of Louis Pasteur and Robert Koch on the incrimination of microorganisms gave the reasons behind infectious diseases and germ theory of infection in 1878 to 1979.<sup>5</sup> Later the discovery of parasites of malaria by Charles Louis Alphonse Laveran in 1880 and incrimination of mosquitos as vectors, for avian malaria by Ronald Ross in 1897 paved the way for further studies in the field. The incrimination of mosquitos as vectors for human malaria was carried out by Italian scientists like, Giovanni Battista Grassi, Amico Bignami, Giuseppe Bastianelli, Angelo Celli, Camillo Golgi and Ettore Marchiafava during the period 1898 to 1900.<sup>6</sup>

The history of malaria is multi-faceted, tracing its prevalence in pretty well every part of the world, from America to Africa, to Asia and Europe and it is largely fostered in the tropical swamps, where the high temperatures pose an ideal environment for the *Anopheles* to breed. According to Scientific American in 1953, one of the deadly parasites of malaria (*Plasmodium vivax*) originates from Africa, usually from chimps, had infected the lives of 10 million individuals annually.<sup>7</sup> The parasites of the disease had travelled from Africa, through human movements and growth of civilizations, to areas across the Mediterranean, Arabian Peninsula, and Southern Europe, Central, South and SouthEast Asia.<sup>8</sup>

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<sup>4</sup> CO 874/1093, Malaria Research, 1941-1948, Colonial Office, The National Archives, United Kingdom, p. 3.

<sup>5</sup> UK, CO 913/15, Malaria Sub-Committee: Minutes and Papers Circulated, 1941-1948, Colonial Office Record, The National Archives, p. 1. (View Introduction).

<sup>6</sup> IMR 159/28, Malaria advisory Board Minutes April 12th 1928, Penyelidikan Penyelidikan Perubatan, Arkib Negara Malaysia, Kuala Lumpur, p.13.

<sup>7</sup> Ibid.

<sup>8</sup> Randall M. Packard, *The Making of a Tropical Disease: A Short History of Malaria*, 1st Edition, p.19.

It had infected regions like India, China, Korea and Japan. Carter and Mendis presented a vivid historical development of malaria in their study in the *Clinical Microbiology Review*. According to them, Northern Europe witnessed the prevalence of malaria in the Dark and Middle Ages, through France and Britain and from the Balkans, specifically through sea routes.<sup>9</sup> From North Europe, it travelled to Russia and adjoining areas and finally made its presence felt in Ukraine, the Caucasus and other parts of Central Asia. From Europe, the parasites named *Plasmodium vivax*, *Plasmodium falciparum* and *Plasmodium malariae* travelled to the New World, starting from the Caribbean to Central and South America.<sup>10</sup> With economic development and thereby raising the demand and supply of slaves from West Africa, malaria had entered the continent of North America in the 18<sup>th</sup> century. And by the following 100 years, with the rise of agriculture and habitation in US and Canada, malaria prevailed across the “tropical, subtropical and temperate regions of the two American continents”.<sup>11</sup>

Southern Asia witnessed the devastating effect of malaria from ancient times, and until recently in the 19<sup>th</sup> and 20<sup>th</sup> centuries due to colonialism,<sup>12</sup> the continual dominance of the disease in the region has affected the mental, physical, social and economic conditions of the residents of the continent. Its clutches not only resulted in an increase in the mortality rate but also affected pregnancy, impotence (of males) and *infantilism* (of both sexes).<sup>13</sup>

### Defining the Disease of Malaria

Malaria is one of the world’s most threatening and fatal diseases which created havoc in the 19<sup>th</sup> and early part of the twentieth centuries and had destroyed millions of human lives across all continents. The disease, existing from ancient times, had been mentioned by

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<sup>9</sup> Sonia Shah, *The Fever: How Malaria Has Ruled Humankind for 500,000 Years*, p.34.

<sup>10</sup> *Ibid.* p.25. and p.32.

<sup>11</sup> Robert Sallares, *Malaria and Rome: A History of Malaria in Ancient Italy*, England: Oxford University Press, 2002, p.33. and p.35.

<sup>12</sup> Colonialism, apart from flourishing inter-continental trade conducted by various empires, led to the spread of the disease, which by the beginning and medieval period of the Christian era, fostered in nearly all the continents.

<sup>13</sup> Sonia Shah, *The Fever: How Malaria Has Ruled Humankind for 500,000 Years*, p.36 and p.39.

various literatures, ranging from the ancient civilizations of Egypt and Rome to the present day. The evidence of the prevalence of the disease has been found in the ancient Egyptian civilization and Nunn expressed that the existence and spread of the disease was more favourable in those times than the contemporary period.<sup>14</sup>

Ancient Egyptian papyri like the Ebers Papyrus of 1,550 B.C. and the Edwin Smith Surgical Papyrus of 1600 B.C. mentioned about elements of fever, rigours, splenomegaly (reflecting familiarity with malarial symptoms) and mosquito repellents along with incantations for the prevention of the entry of the disease-laden vapours.<sup>15</sup> Eijk in his historiographical analysis of the theory of Jones, Ross, and Ellett; portrayed the presence of malaria and its role in the ancient Mediterranean world.<sup>16</sup>

The existence of malaria in ancient Greece was established by the theory proposed by Jones, Ross, and Ellett who blamed the Persian invasion during the mid-5<sup>th</sup> century for its introduction in the country.<sup>17</sup> But the spread of the disease was rationalised by the cultural decline “that set in towards the end of the 5<sup>th</sup> century and culminated in the collapse of classical civilization in late antiquity”.<sup>18</sup> Though in the malaria theory of the ancient Greek society Jones did not proclaim that “plague” mentioned in various Greek literature as malaria but he sometimes expressed that, “it is hard to believe that any other disease except malaria could produce so much sickness in so short a time”.<sup>19</sup>

Pinder mentioned about the virulent waves of malaria affecting Italy in the 3<sup>rd</sup> and 4<sup>th</sup> century B.C. and 6<sup>th</sup>, 7<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup>, 18<sup>th</sup> and 19<sup>th</sup> century C.E. According to him, “the Madonna of the fever has long been a familiar sight in the homes and churches of the Campagna”.<sup>20</sup> Till today, historians are unable to confirm the presence of malaria in the ancient bones. However, it can be ascertained that one of the primary causes of anaemia

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<sup>14</sup> John F. Nunn, *Ancient Egyptian Medicine*, University of Oklahoma Press, 2002, p. 69.

<sup>15</sup> James Henry Breasted (editor), *The Edwin Smith Surgical Papyrus: Published in Facsimile and Hieroglyphic Transliteration*, University of Chicago Press, 1930, p. 231.

<sup>16</sup> James L. A. Webb, *Humanity's Burden: A Global History of Malaria*, London: Cambridge University Press, 2008, p.48.

<sup>17</sup> CO 927/177/5, Colonial Medical Research Committee: malaria research; review of existing and proposed schemes; financial provision and trials of antimalarial (Daraprim) drug, Colonial Office, The National Archives, UK, 1955, p. 20.

<sup>18</sup> Ibid.

<sup>19</sup> Frank M. Snowden, *the conquest of malaria: Italy, 1900-1962*, New Haven, Connecticut: Yale University Press, 2005, p.2 and p.3.

<sup>20</sup> Roger M Pinder, *Malaria: The Design, Use, and Mode of Action of Chemotherapy*, Scientechnica, 1973, p. 29.

among the ancient population was malaria through the works of Arensburg, Walker and Kester et al.<sup>21</sup>

Russell in his book *Practical Malariology* defined the disease as “an unwholesome atmosphere or a noxious substance capable of engendering disease”.<sup>22</sup> Though later he decided that this definition was archaic, preferring instead the modern definitions of the disease.<sup>23</sup> Sandosham (1965) defined the disease as “of man characterized by fever, association with anaemia, enlargement of spleen, and pigmentation of the tissues which was caused by specific organisms (the malaria parasites of man) and transmitted by the bite of infective mosquitos”.<sup>24</sup>

### Signs and Symptoms of Malaria

The working group of the World Health Organisation had presented several criteria to identify malaria. The common symptoms of malaria are high fever, headache, chills and shivers, and may include nausea and vomiting and diarrhoea. Hippocrates recognised periodicity in malaria and a standard duration of growth of the parasite is the distinguished feature at all stages of its life cycle.<sup>25</sup> According to him, this inherent character of the disease is almost incapable of alteration except by one factor - the temperature of its environment.<sup>26</sup> But Pinder was of the opinion that these classical symptoms are not adequate to establish unequivocal diagnosis since they “occur in other conditions, and the malarial fever may be irregular or remittent rather than intermittent”.<sup>27</sup>

This essentially happens in the case of *P. vivax*, *P. falciparum* and *P. knowlesi*, where with prolonged spread of the disease, there could be severe complications that can affect multiple organs of the body.<sup>28</sup> Some of the common manifestations of the disease in humans are severe vomiting, diarrhoea, generalized convulsion, delirium and impaired

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<sup>21</sup> Randall M. Packard, *The Making of a Tropical Disease: A Short History of Malaria*, p.24.

<sup>22</sup> Paul Farr Russell, *Practical Malariology*, Oxford: Oxford University Press, 1963, p. 1.(View Introduction)

<sup>23</sup> Ibid.

<sup>24</sup> A.A. Sandosham, *Malariology: with Special Reference to Malaya*, Kuala Lumpur: University of Malaya Press, 1955, p.33. and p.36.

<sup>25</sup> Percy Cyril Claude Gamham, *Malaria Parasites and Other Haemosporidia*. Oxford: Blackwell Scientific, 1966, p. 35.

<sup>26</sup> Ibid. p. 36.

<sup>27</sup> Sonia Shah, *The Fever: How Malaria Has Ruled Humankind for 500,000 Years*, p.4.

<sup>28</sup> Ibid.

consciousness, cerebral malaria, acute renal failure, black water fever, hypoglycaemia, adult respiratory distress syndrome (ARDS), disseminated intravascular coagulation (DIC), hypotension and shock.<sup>29</sup>

According to a World Health Organisation Report, the initial appearance of symptoms is fever, which ranges from some days to few months during the incubation period ( the time from the mosquito bite until initial symptoms appear) of the infection. Generally, in the early stages of malaria, the initial symptoms may appear within 9 to 14 days, but in some cases the symptoms take nearly one, two or several months to appear.<sup>30</sup>

Infection begins when the parasites from the infected mosquitos gets injected into the skin capillaries (small blood vessels) and are carried around the body through the bloodstream until they invade the liver hepatocytes. In the liver, the parasites mature and multiply before entering the bloodstream again. Upon entering the blood flow, these parasites attack the red blood cells, while reproducing further.<sup>31</sup>

This process is repeated indefinitely and is responsible for severe complication affecting the internal organs like the brain and the kidneys. The parasites inhabiting and infecting the red blood cells start blocking the capillaries, and thereby obstructing the usual blood flow, leading to interruption in normal functioning of the organs affected.<sup>32</sup> According to Flegel, *falciparum* malaria affects the appetite of the patients, making the food tasteless - specifically metallic and bitter.<sup>33</sup> Along with this, there exists a sensation of a lump formation in the epigastrium, some having aching sensation over the liver, while others might have an enlarged liver and spleen.<sup>34</sup> Hence, as it can be observed, the symptoms of malaria are varied and numerous, sometimes rendering difficulty in diagnosing the actual disease. It is usually

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<sup>29</sup> Randall M. Packard, *The Making of a Tropical Disease: A Short History of Malaria*, 1st Edition, p.63.

<sup>30</sup> Ibid.

<sup>31</sup> IMR 159/28, Malaria advisory Board Minutes April 12th 1928, Insitut Penyelidikan Perubatan, p.18.

<sup>32</sup> Ibid.

<sup>33</sup> MAB 19 /31, Treatment of Malaria, Institut Penyelidikan Perubatan, Arkib Negara Malaysia, Kuala Lumpur, p.16.

<sup>34</sup> CO 927/177/4, Colonial Medical Research Committee: malaria research; minutes of meetings, Colonial Office, the National Archives, UK, 1950, p. 2.

based on some of the primary symptoms where patients are encouraged to go for a check-up, so as to diagnose the disease as early as possible to avoid any complications.<sup>35</sup>

### The Causes of Malaria

Prior to the discovery that the mosquito was the prime cause of malaria, E. G. Russell blamed water and soil as the sole reason behind the spread of the disease.<sup>36</sup> He suggested that “*the production of this miasm (malaria) seems to depend on the decomposition of organic matter, in the presence of permanent moisture of the soil and humidity of the atmosphere*”.<sup>37</sup> Russell further explained that similar to typhoid, which is caused by the decomposition of organic matter of animal origin, malaria is caused by the decomposition of organic matter of vegetable origin.<sup>38</sup>

According to him, malaria occurs with great intensity in low lying, moisture laden and swampy regions and also in places of high temperatures. And water too, he said, contained the elements of malaria and humans became infected by the disease when contaminated water was consumed.<sup>39</sup> The actual cause of the disease, that it was due to mosquitoes and malarial parasites, was discovered after the 1890s. And the female *Anopheles* mosquitos were responsible for the prevalence and spread of malaria through transmission of protozoan parasites belonging to the *Plasmodium* genus.<sup>40</sup> The understanding of the malaria parasites in blood was first uncovered by Alphonse Laveran in 1873.<sup>41</sup>

The transmission of malaria occurs through the bite of an infected *Anopheles* mosquito and seldom through blood transfusion. Based on the report by UNICEF, the blood sucked by the mosquito, of an infected person, carries the parasites into the insect body.<sup>42</sup> Within the mosquito body, the parasites are multiplied through sexual reproduction and

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<sup>35</sup> Ibid. p.3. and p.4.

<sup>36</sup> MED/PG/341/52, Malaria Advisory Board, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, 1952, p.2 and p.3.

<sup>37</sup> Ibid.

<sup>38</sup> Arthur Anantharaj Sandosham, *Malariology: with Special Reference to Malaya*, p.43.

<sup>39</sup> Ibid.44.

<sup>40</sup> Randall M. Packard, *The Making of a Tropical Disease: A Short History of Malaria*, 1st Edition, p.41.

<sup>41</sup> Edward Theodore Withington, *Medical History from the Earliest Times: A Popular History of the Healing Art*, Scientific Press, Limited, 1894.

<sup>42</sup> CO 67/354/6, Anopheles(Malaria) eradication scheme, 1952, Colonial Office, the National Archives, UK., p.7.



develop. After their maturity within 10-14 days, these parasites are ready to infect some other body.<sup>43</sup> In such a situation, if the mosquito with mature parasites bites the body of a healthy individual, the parasites get into the blood circulation and to the liver. In the liver, these parasites are multiplied and again enter the blood flow. UNICEF reported that the parasites multiply up to 10 times each two days, destroying blood cells and infecting the new cells within the whole human body.<sup>44</sup> The five species of malaria parasites infect individuals with their various levels of severity where symptoms usually appear within seven to twenty one days but could be delayed up to several months after the transmission.<sup>45</sup>

Each of the five variegated species of *Plasmodium* has a distinctive microscopic appearance, and “each one produces a somewhat different pattern of symptoms.”<sup>46</sup> Two or more parasite-species might develop in the same area and can infect an individual simultaneously. *Plasmodium falciparum* is one of the deadliest malaria parasites which caused sudden advancement in the infection that produced numerous life-threatening deformity and maximum number of deaths, especially in Africa. *Plasmodium vivax* is the most geographically extensive and displays milder symptoms compared with the other varieties. However, relapses might occur within 3 years after varying symptom-free periods and the chronic form of the disease is debilitating.<sup>47</sup> It is usually prevalent in the temperate zones and also in the tropical areas such as Asia. *Plasmodium malariae* infections are milder than the other two discussed above and remain dormant in the blood for a prolonged period of time, sometimes decades, without generating any symptoms. However, persons with asymptomatic *P. malariae* parasites may infect others through blood transfusion or mosquito

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<sup>43</sup> CO 927/142/6, Research Committee, in Experiments in Rural Malaria Control in Malaya 1948-1950, Colonial Office, the National Archives, UK, p. 5.

<sup>44</sup> Ibid. p. 6.

<sup>45</sup> CO 927/177/4, Colonial Medical Research Committee: Malaria research; minutes of meetings, 1950, Colonial Office, the National Archives, UK, p.22.

<sup>46</sup> CO 67/370/7, Anopheles Eradication Scheme; and end to Malaria: correspondence, 1950, Colonial Office, the National Archives, UK, p.11.

<sup>47</sup> Ibid.

bites. Its presence is observed in Africa presently, waning out from the other temperate zones.<sup>48</sup>

*Plasmodium ovale* is a rare kind of malaria specie occurring in tropical Africa. Its major distinctive morphologic feature includes an ovoid shape of infected RBCs. Moreover, the parasite is not as ameboid as vivax and the nuclei are usually larger across all stages of development.<sup>49</sup> The last one, discovered in the later part of the 20<sup>th</sup> century is *Plasmodium knowlesi*. It was discovered among monkeys (hence the name monkey malaria) and was used as a pyretic agent in treating neurosyphilis in 1930s. After its discovery as a fatal specie among humans, its prevalence has been noted mostly in the SouthEast Asia region, and Malay Peninsula.<sup>50</sup>

### **Mosquito Nuisance**

For centuries, malaria had been the key reason behind human mortality, disease, disablement, and social and economic stagnation, beside land fertility and provision of other resources required for development. Prior to the incrimination of mosquitos as the vector, first for avian malaria by Ross in August 1897, decayed organic matter arising from the swampy lands and resulting in *bad air* was considered as the probable cause of malaria and the consequence of human suffering. Chai related cause of endemic malaria to the mystery behind Angkor Wat and that of the decline of kingdoms like Sri Vijaya and Majapahit.<sup>51</sup>

In fact, malaria has been one of the crucial catalyts behind the “absence of any significant development in native agriculture amongst people, whose livelihood had been closely related to the cultivation of swamp rice”.<sup>52</sup> The Colonial Office records reported that since the establishment of imperial governance in Pulau Pinang and Malacca, the surgeons

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<sup>48</sup> CO 111/781/10, Malaria: malariological survey; reports on the Malaria Investigations service for 1943, 1944 and 1945, Colonial Office, the National Archives, UK, p. 14.

<sup>49</sup> FD 1/7599, Minutes of meetings: research on malaria, 1953, Medical Research Council, the National Archives, UK, p. 18.

<sup>50</sup> Ibid.p.6.

<sup>51</sup> Chai Hon Chan, *The Development of British Malaya 1896-1909*, p.116.

<sup>52</sup> Ibid. p. 117.

of the East India Company had to deal with veritable diseases, transforming the island into a “*convalescent station*”.<sup>53</sup>

Among the several cases reported at the Malacca hospitals, tropical ulcers took the foremost position, followed by dysenteries and fever. Occasional outpourings of cholera and smallpox were also prevalent as recorded by the ward and grants of the colonial administration.<sup>54</sup> Pulau Pinang’s malaria menace was observed by the officials serving the East India Company. The recollection of two military doctors shed some light on the menace of malaria (earlier known only as *fever*), on the entrepot:

Fever is observed to bore by large proportion of one-third of the whole number of ascertained causes of death among the adult residents. This island has long been noted for the very fatal form of the disease that presents itself. So insidious was its approach, scarcely one attacked with it recovered- that it was dreaded by medical men and others as a new and unknown affection, totally irremediable and distinguished from all other fevers by its uniformly fatal issue.<sup>55</sup>

The records presented by the Institute of Medical Research announced that Pulau Pinang had earned its bad name for frequent occurrence of fever in the region.<sup>56</sup> Out of 34 European civil servants stationed at Pulau Pinang, between 1805 and 1825, 20 died before 1830, half of whom perished due to fever. The probable reason behind such fever was “*maculatus-transmitted falciparum malaria*”,<sup>57</sup> resulting in one-third of total deaths in Pulau Pinang in the early 20<sup>th</sup> century.

In fact, Francis Light himself fell victim to this fatal disease which led to his eventual death.<sup>58</sup> There was little knowledge about how the fevers led to fatality among inhabitants and also there was a scarcity of resources to fight the disease. As a result, little improvement occurred in the incidence of such diseases during the period from 1830 to 1900. Hence, due

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<sup>53</sup> *Fifty Years of Medical Research, 1900-1950*, Kuala Lumpur: Institute of Medical Research, 1951, p.39.

<sup>54</sup> CO 859/216/2, Anti-Malaria Programme, 1950, Colonial Office, the National Archives, UK, pp. 8-10.

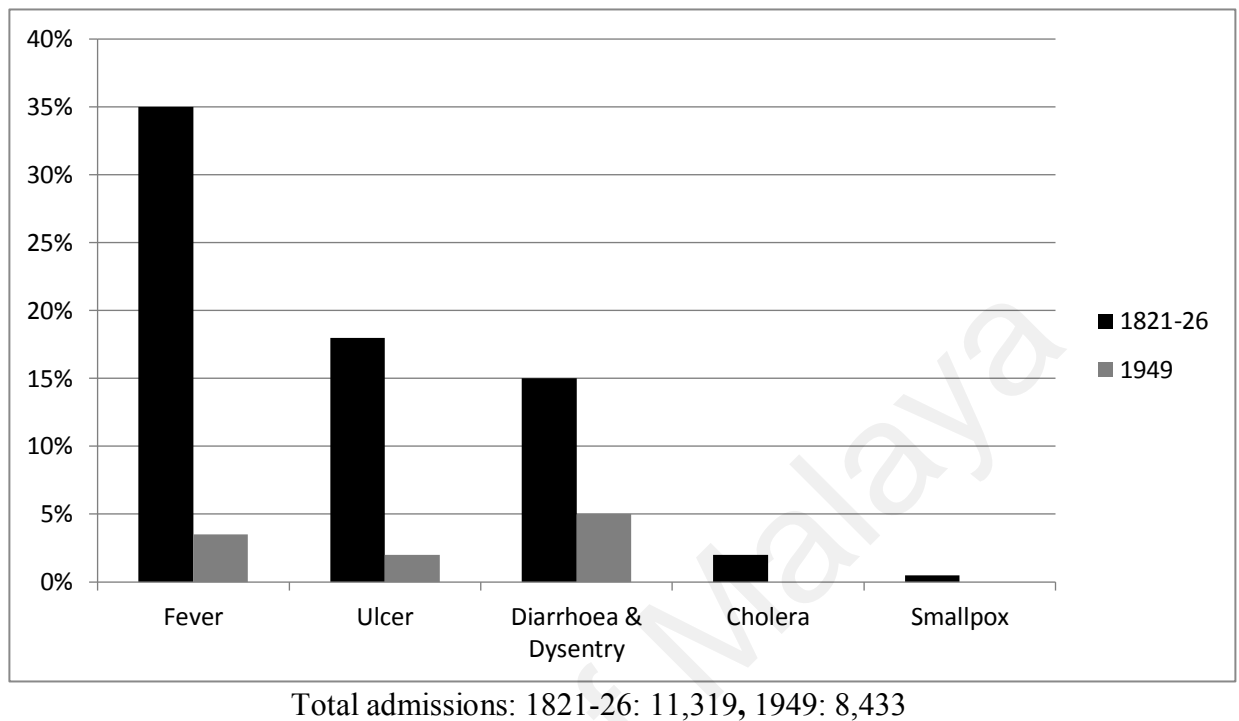
<sup>55</sup> Chai Hon chan, *The Development of British Malaya 1896-1909*, p.120 and p.121.

<sup>56</sup> CO 927/142/6, Malaya: Interim Report to the Colonial Insecticides, Fungicides and Herbicides Committee, and the Colonial Medical Research Committee, in *Experiments in Rural Malaria Control in Malaya 1948-1950*, Colonial Office, The National Archives, UK, 1951, p.36.

<sup>57</sup> *Ibid.* p. 88.

<sup>58</sup> Chai Hon chan, *The Development of British Malaya 1896-1909*, p.137.

to lack of preventive or curative progress, the disease claimed a huge toll of lives, particularly after the growth of the population and agricultural advancements.<sup>59</sup>



**Figure 4.1:** Chart Projecting the Percentage of Total Admissions in the Years 1821, 1826 and 1949

Source: MED/PG/578 Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.12.

Figure 4.1 clearly depicts that the largest number of cases admitted to government hospitals in 1821 to 1826, was due to fever which was later identified as malaria. Out of the total admissions of 11,319, 35% belonged to cases of fever, less than 20% due to ulcer, 15% or less case of diarrhoea and dysentery and very few cases of cholera and smallpox. But there is a vast difference in the number of cases of malaria (less than 5%) reported at the hospital during 1949.<sup>60</sup>

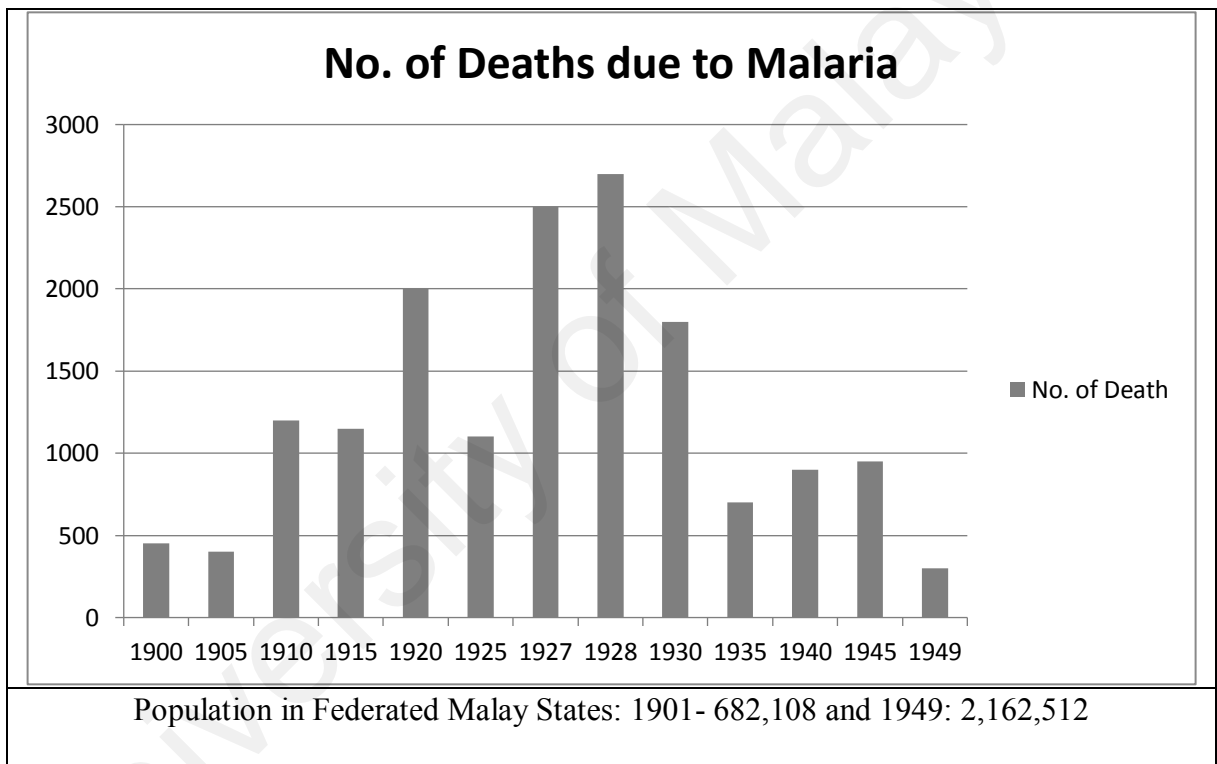
The reduction in number of cases of malaria was probably due to its curative discoveries and preventive measures undertaken by government and other responsible

<sup>59</sup> CO 859/219/3, Anti Malaria Programme, 1951, Colonial Office, the National Archives, UK, p.13.

<sup>60</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.12.

bodies. Other diseases also showed a decline from their previous positions, portraying the efficient handling of the government bodies and the awareness within the inhabitants.<sup>61</sup>

The Institute of Medical Research recounted that malaria in Pulau Pinang “has a long reach into an unrecorded past and an unknown future”.<sup>62</sup> With the rise of the agricultural and industrial development, the disease spread rapidly. The disease rose to its peak in 1927 to 1928, during the pre and post-World War period and the reasons behind the rapid spread of the disease was unknown.<sup>63</sup>



**Figure 4.2** Case of Deaths from Malaria in Government Hospitals of Federated Malay States, 1900-1949

Source: *Fifty Years of Medical Research in Malaya, 1900-1950*, the Institute for Medical Research: Kuala Lumpur, 1951, p.73.

<sup>61</sup> *Fifty Years of Medical Research in Malaya 1900-1950*, Institute of Medical Research, Kuala Lumpur, p. 89.

<sup>62</sup> *Ibid.* p. 90.

<sup>63</sup> *The Straits Times*, 18<sup>th</sup>, March, 1948, p.1.

Figure 4.2 illustrates the gradual rise and fall of deaths in Government run hospitals in the Federated Malay States. From 1900 onwards, the mortality cases were within 500, which rose steeply to above 1000 fatality cases within ten years, as can be seen in the period of 1910 to 1915. In the later years it increased dramatically, resulting in more than 2500 deaths due to malaria alone.<sup>64</sup> The reason for this was that previously the deaths which are categorised as non-specified fevers were now re-categorised as malaria.<sup>65</sup> Gradually, the cases declined after the Japanese invasion. The Institute of medical Research reasoned that efficient preventive measures taken by the Hospital authorities had reduced fatality rates in the particular period of 1935 to 1949. The Institute maintained an experimental clinic in the General Hospital at Kuala Lumpur, where therapeutic resources were provided to treat the fatal disease. These measures might be the reason behind such a reduction in fatality, though the complete conclusion behind such a waning cannot be rendered to a single cause.<sup>66</sup>

Table 4.1 presents the total deaths from the year 1921 to 1925 in the Penang Island and Seberang Perai, portray the stupendous rise in the cases of fatality, due to their re-categorisation from non-specific fevers to malaria.<sup>67</sup>

**Table 4.1** Number of Deaths in Pulau Pinang, 1921-1925

Year	Penang Island	Seberang Perai
1921	620	1, 441
1922	218	1,643
1923	156	1,598
1924	102	1,433
1925	509	1,372

Source: Robert L. Jarman(ed.) *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, London: Archives Edition, 1998, p. 134.

<sup>64</sup> *Fifty Years of Medical Research in Malaya, 1900-1950*, the Institute for Medical Research, p.73.

<sup>65</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 259.

<sup>66</sup> CO 874/1093, Malaria Research, 1941-1948, Colonial Office, the National Archives, p.12.

<sup>67</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 124.

## Education and Training

The general public in Pulau Pinang needed education about the importance of cleanliness and keeping their surroundings clean and free from mosquito breeding. According to the Straits Settlements Sessional Papers, a cleanliness campaign was initiated in 1928, on Penang Island.<sup>68</sup> The campaign was aimed to encourage people to keep their homes and surrounding places clean. This effort had helped towards the destruction of possible breeding grounds.<sup>69</sup>

In addition, after the Second World War the public was aware that quinine was distributed freely through the schools, post offices and police stations in Pulau Pinang.<sup>70</sup> Anti-malarial measures included in-house inspections and supervision by the health officials and supervisors, and even through impositions of fines. Anti-malaria awareness was carried out through projection of films to spread the knowledge of the disease and its causes and to teach the significance of the preventive methods to the people in Pulau Pinang. However, there was a lack of cooperation and communication between the authorities and people in rural areas especially in Seberang Perai which hindered the development of the anti-malarial campaign.<sup>71</sup>

Even after the Second World War, according to a survey done in rural areas in Pulau Pinang, there was a lack of knowledge among the general public concerning the disease and preventive measures for malaria. Thus, many houses and residential areas were potential mosquito breeding grounds. In addition, the public rejected modern medicine and treatment in hospitals and they depended on traditional medicine. In fact, many people in rural areas trusted in the efficacy of traditional medicine.<sup>72</sup>

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<sup>68</sup> *The Malay Mail*, 23th May, 1931, p.6.

<sup>69</sup> Anon, *Various Mosquito Survey: Straits Settlements Seasonal Papers*, London, 1928, p. 23.

<sup>70</sup> FD 1/4282, General Research: drug resistance in malaria, by Dr Ann Bishop, Cambridge University, Medical Research Council, the National Achieves, UK, p. 12.

<sup>71</sup> MED/PG/159/54, Malaria control in SW.D District, Pejabat Daerah Barat Daya Pulau Pinang, Arkib Negara Malaysia, Cawangan Pulau Pinang, p.2.

<sup>72</sup> CO 874/1093, Malaria Research, Colonial Office, the National Achieves, UK, p. 31.

According to the Malaria Advisory Board in 1952, health supervisors and staff required adequate training and technical knowledge for residual house spraying. In order to ensure that certain health supervisors acquired the desired skills and knowledge, the Kuala Lumpur Medical Investigation Institute organised special training on spraying techniques for the selected health supervisors, so as to efficiently destroy the vectors.<sup>73</sup> This training helped the supervisors to conduct appropriate sprayings to destroy the vectors and thus sprayings also became effective in controlling the disease in rural areas, especially the inland zones. Thus, the spraying techniques became regular practices for eradicating the mosquito menace.<sup>74</sup> However, there were several objections raised against a certain residual house spraying team concerning their lack of skills in spraying around Bukit Mertajam, Seberang Perai.<sup>75</sup>

## **Research and Investigation**

The Institute for Medical Research, Kuala Lumpur

As malaria is a complicated disease, the prevention, treatment and cure requires a lot of research and investigation. The experiments were conducted on thousands of mosquitoes, which are the vector that causes malaria, in order to find suitable residual insecticides to destroy mosquito breeding places in the Federation of Malaya.<sup>76</sup> Also researchers discovered suitable medication for treating patients and had developed medicine such Quinine, Atebrin, Paludrine and Plasmoquine, which was used to combat malaria. However, the Institute for Medical Research, Kuala Lumpur was responsible for the administration of suitable doses and medication to treat and cure malaria.<sup>77</sup>

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<sup>73</sup>CO 827/177/4, Colonial Medical Research Committee: malaria research; minutes of meetings, 1948-1950, Colonial Office, the National Archives, UK, p. 19.

<sup>74</sup> CO 913/14, Malaria Sub-Committee: Minutes and papers circulated, Colonial Office, the National Archives, UK, p. 17.

<sup>75</sup> Ibid.

<sup>76</sup> CO 859/216/2, Anti-malaria programme, Colonial Office, The National Archives, UK, 1950, p.18.

<sup>77</sup> CO 913/14, Malaria Sub-Committee: minutes and papers circulated, Colonial Office, UK, 1950, p.33.



In 1900, the Institute for Medical Research (IMR) began with the proposal from the Resident General of the Federated Malay States, Sir Frank Swettenham. His objective was to establish a Pathological Institute in Malaya that “carry out scientific and sustained research into the cause, treatment and prevention of all forms of malaria fevers and beri-beri.”<sup>78</sup> This proposal was the consequence of the Berlin Conference in 1885 to regulate European Colonisation and to venture into such activities as “to promote the moral and material well-being of the native population and to explore the great and unknown field of tropical medicine”.<sup>79</sup>

The European colonial powers at that time, namely the Dutch and the English, moved almost simultaneously to establish new research institutions in the colonies. The Pathological Institute in British Malaya was one such institution which was set-up to serve as a research outpost for the London School of Tropical Medicine which was established a year earlier in 1899 at about the same time as that of the Liverpool School of Tropical Medicine.<sup>80</sup> Kuala Lumpur was chosen as the site for the new Institute because of its central position in the Malay Peninsula. The time was opportune because during that period, the country was beset by not only tropical diseases such as malaria and beri-beri, but also by dysentery, smallpox, cholera, plague, rabies and other endemic, sporadic, infectious and contagious diseases.<sup>81</sup>

Sir Patrick Manson, Medical Advisor to the British Colonial Officer at that time, appointed Dr. Hamilton Wright, a pathologist at the London School of Tropical Medicine, to serve as the Institute’s first Director. During the first year, Wright spend most of his time planning the new Institute.<sup>82</sup> When the buildings were completed, a formal opening

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<sup>78</sup> CO 111/781/10, Malaria: malariological survey; reports on the Malaria Investigations Service for 1943, 1944 and 1945, Colonial Office, p.24.

<sup>79</sup> FD 1/7611, Committee: meeting; papers on Malaria Institute, 1955-1960, Medical Research Council, p.36.

<sup>80</sup> FD 1/7599, Minutes of meetings: research on malaria, Medical Research Council, p.28.

<sup>81</sup> Ibid.

<sup>82</sup> CO 874/1093, Malaria research 1941-1948, Colonial Office, p.23.

ceremony was held in February 1901 and in August the same year, the Pathological Institute became known as the Institute for Medical Research.<sup>83</sup>

Equally fruitful was the early research work of malaria in Malaya. Whilst Leicester and Daniels were researching into the taxonomy and vector biology by the malaria mosquitoes, Watson, another surgeon, was experimenting with new methods of malaria control in the Klang District. The findings of such complementary investigations influenced Watson to propose the basic principles of malaria control which are still valid today. Malaya can thus claim credit as the first country in the world successfully to apply the knowledge pertaining to the transmission mode of malaria to create one of its control methods.<sup>84</sup>

During the period of 1928 to 1940, the main direction of the Institute of Medical Research was to acquire more information about the vector of malaria. Malaya has a rich anopheline mosquito fauna with well over 60 species. Only a few of these, about six, are actually responsible for transmitting malaria. One of the ways of determining whether an Anopheline is a vector, is the experimentation that allows it to feed on a patient and then to observe the course of infection in the mosquito.<sup>85</sup> For the purposes of research, experiments that allowed over 10,000 Anophelines to feed on malaria patients were conducted. Based on this, the first valuable information on the efficiency of the mosquitoes in transmitting malaria was obtained.<sup>86</sup>

This research and its findings provided information on how readily mosquitos were attracted to man for a blood meal. However, an aggregate of over 100,000 specimens of Anopheles were collected throughout the Malay Peninsula, and these were dissected and examined for malaria parasites. In this way, the major and important vectors were incriminated. Information on the biology of the species such as its breeding places, its feeding

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<sup>83</sup> Ibid.

<sup>84</sup> CO 111/781/10, Malaria: malariological survey; reports on the Malaria Investigations Service for 1943, 1944 and 1945, Colonial Office, p.23.

<sup>85</sup> CO 927/177/4, Colonial Medical Research Committee: malaria research; minutes of meetings, 1948-1950, Colonial Office, p.26.

<sup>86</sup> Ibid.

preferences, its longevity, its flight range and its resting and biting habits were studied and effective control measures recommended accordingly.<sup>87</sup>

The breeding places of mosquitoes, unlike the birds, is very varied. In choosing the breeding place, several factors such as rainfall, temperature, water salinity, water movement, pH of the soil, flora and sunlight were considered. Several thousand larvae from a wide variety of breeding places were collected. Based on the research conducted, it was possible to predict the type of Anopheles that one could expect in each area, and it was also possible to commence effective control measures against them.<sup>88</sup>

IMR as a research institute, also set up the malaria research division which primarily provides certain services to the public, the medical profession, and the government. One of the services provided is the examination of malaria parasites in blood films of patients referred to IMR, by general practitioners.<sup>89</sup> This is done in the hope that the GP would cooperate and also refer cases who relapsed after initial treatment. These cases were admitted to the British Military Hospital, Kinrara for treatment and kept under hospital observation to obtain further information on the response of malaria parasites to chloroquine and other drugs.<sup>90</sup> IMR malaria research division treated cases of chloroquine resistant malaria in collaboration with the British Military Hospital, Puchong, and participated in the treatment of malaria at the Orang Asli Hospital, Gombak, Selangor. The vitro sensitivity test was utilised by the research division for early detection of chloroquine resistant malaria. The research into parasitology, diagnosis, treatment and control of malaria was one of three notable achievements by IMR during this period.<sup>91</sup>

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<sup>87</sup> CO 927/142/6, Malaya: Interim Report to the Colonial Insecticides, Fungicides and Herbicides Committee, and the Colonial Medical Research Committee, in Experiments in Rural Malaria Control in Malaya 1948-1950, Colonial Office, The National Archives, UK, 1952, p.19.

<sup>88</sup> Ibid.

<sup>89</sup> FD 1/7599, Minutes of meetings: research on malaria 1953, Medical Research Council, p.14.

<sup>90</sup> Ibid.p.15.

<sup>91</sup> CO 874/1093, Malaria research 1941-1948, Colonial Office, p.19.

In 1948, annual reports from the Medical and Health Department of Pulau Pinang and the Institute for Medical Research reflected a common fact; that the developed areas of Pulau Pinang had implemented effective measures for eradication of the disease, derived as a result of research and investigation. This had led the region to emerge as a leader in controlling malaria,<sup>92</sup> as reported by the Medical and Health Department of Pulau Pinang;

The investigations which have been carried in the Malaria Research Division of the Institute for Medical Research have contributed fundamentally to the knowledge of malaria control for the past thirty years. The scientific work of the Institute is coordinated with the work which is being carried out by Government and Municipal agencies and by medical practitioners working on estates through the agency of the Malaria Advisory Board.<sup>93</sup>

#### The Malaria Bureau

The Malaria Bureau was formed in the year 1911, located beside the Institute for Medical Research, Kuala Lumpur, and remained separated from the Institute of Medical Research until 1927. A medical entomologist named Strickland was appointed to conduct study on the class of anopheles mosquito in greater detail.<sup>94</sup> In 1917, Hacker who took over from Strickland, did extensive investigation on the anopheline fauna at various terrains, including observations on the species found in their breeding places, and their possible relations to malaria.<sup>95</sup>

He suffered much from malaria himself, but nonetheless he proved in 1923 that *A. barbirostris* was a vector of malaria for some regions. It is a complex three to five sibling species. Hacker was finally incapacitated by his malaria. By early 1928, the Malaria Bureau was eventually merged with the Institute for Medical Research, Kuala Lumpur to form the Division of Malaria Control.<sup>96</sup> The major activities of the division were to conduct studies

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<sup>92</sup> RCP/MED/202/49, Annual report of the Medical and Health Department, Penang 1948, Resident Commissioner Penang, p.5.

<sup>93</sup> Ibid. p. 6.

<sup>94</sup> FD 1/7599, Minutes of meetings: research on malaria 1953, Medical Research Council, p.24.

<sup>95</sup> Ibid.

<sup>96</sup> CO 859/216/4, Anti-malaria programme 1951, Colonial Office, p.19.

on anopheles vectors and compile the information into a series of handbooks which formed the foundation of the standard works in used until today.<sup>97</sup>

### Research on the Malaria Vector

Although the mosquito was known to be the vector of malaria, it was still unknown as to which was the responsible species. Dr. Hamilton Wright, the first director of the Institute for Medical Research had collected anophelines for investigation but was unable to identify them reasonably as the vector due to the rudimentary state of knowledge in the early 1900s.<sup>98</sup> In 1903, Watson was posted as medical officer in Klang, where, in addition to his duties at the hospital he made several collections and carefully dissected each and every mosquito. His first published report in 1911, based on his findings that showed a positive result, indicated that the mosquito is a vector of malaria.<sup>99</sup> His mosquito findings recorded four infections in 19 *Anopheles maculatus*, and one infection among 10 “*umbrosus*”. His findings for *A. maculatus* were confirmed by other workers at the Institute in 1912. Later, in 1918, Barber found another breed known as *Anopheles sunaicus* to be a vector. Also, it was previously proved to be a vector in the Anadaman Islands, by Christopher.<sup>100</sup>

Investigative measures of anti-malarial controls involved the study of chemical prophylactics and suppressive drugs. It also studied the importance of “residual spraying with insecticides”.<sup>101</sup> These studies were considered innovations that broadened the scope of anti-malarial prevention.<sup>102</sup> Besides, such measures also resolved the malarial problem that existed in densely populated areas. The application of all these procedures had resulted in the reduction of the malarial cases compared with the previous years during the Japanese occupation and initial restoration years of British power.<sup>103</sup> Table 4.2 reports on the anti-

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<sup>97</sup> Ibid. p.21.

<sup>98</sup> FD 1/7599, Minutes of meetings: research on malaria 1953, Medical Research Council, p.20.

<sup>99</sup> FD 1/7611, Committee: meeting; papers on Malaria Institute 1955-1960, Medical Research Council, p.11.

<sup>100</sup> Ibid. p.16. and p.19.

<sup>101</sup> Macgregor, R.B. 1950. *Annual Report of the Medical Department, Federation of Malaya, 1949*. Kuala Lumpur, pp.6-8.

<sup>102</sup> CO 927/177/4, Colonial Medical Research Committee: Malaria research; minutes of meetings, Colonial Officer, the National Archives, UK. p.2.

<sup>103</sup> R. B. Macgregor, *Annual Report of the Medical Department 1950*, p.9.

malarial measures adopted by 80 estates of Selangor which were carried out by the Health Department. The anti-malarial methods employed by these estates ranged from oiling to drugs such as Paludrine.<sup>104</sup>

**Table 4.2** Anti-Malarial Measures Undertaken by 80 Estates of Selangor, according to the Questionnaire of the Health Department, 1950

<i>Methods</i>	<i>Number of utilities</i>
1. Oiling alone	17
2. Oiling plus DDT spraying of lines	14
3. Oiling plus Paludrine: 2 tablets once a week.	11
4. Oiling plus Paludrine: 1 tablet once a week.	5
5. Oiling plus DDT spraying plus Paludrine: 2 tablets once a week.	7
6. Oiling plus DDT spraying plus Paludrine: 1 tablet once a week	2
7. Oiling plus Atebrin: 2 tablets once a week.	1
8. Paludrine: 2 tablets once a week	6
9. Paludrine: 1 tablet once a week.	2
10. DDT spraying plus Paludrine: 2 tablets once a week.	9
11. DDT spraying plus Paludrine: 1 tablet once a week	3
12. DDT spraying only	2
13. No Anti-malarial measures undertaken (no resident labour force)	1
Total	80

Source: R. B. Machgregor, *Annual Report of the Medical Department for Federation of Malaya, 1949*, Kuala Lumpur, 1950, p.9

Numerous researches and investigations were carried out so as to expand the knowledge about malaria and its vectors, and the type of environment which is conducive for them to thrive. This had eventually led to considerable development in controlling the disease as well as the prevalence of veritable *Anopheles* mosquito during the 1950s in the Federation of Malaya, which included Pulau Pinang.<sup>105</sup> As such, extensive research in the field of malaria had paved a way to the utilisation of chemical prophylactics and suppressive drugs together with insecticides. The range of anti-malarial protection was extended beyond towns, kampongs and normal households, especially to include the labourers.

Hence the successes in the control of one of the largest fatal diseases in the Federation of Malaya, especially in Pulau Pinang, became an example of efficient and effective

<sup>104</sup> Ibid.

<sup>105</sup> CO 927/178/2, Malaya, malaria research: Paludrine trials; third interim report 1951, Colonial Office, p.21.

administration of malaria control which was based on the solid research and investigation by the Institute for Medical Research. Also through effective population control and extensive investigations conducted, Malaya had emerged as a hub for malarial-treatment.<sup>106</sup> Although earlier attempts to treat malaria have been detrimental in tackling the situation due to the lack of understanding and knowledge in the particular region, later developments in treatment had eradicated the incidence of cases both in rural as well as urban areas.<sup>107</sup>

During the 1950s, Malaya emerged as a leader in the research and investigation of anti-malarial cures. The investigative works carried out by the Malaria Research Division of the Institute for Medical Research contributed significantly in gaining a detailed knowledge for defeating malaria. Thus, considerable success on the control of the prevalence of the malaria vector decreased the number of cases of malaria in the region.<sup>108</sup>

### **Prevention Measures by Colonial Government and Local Authorities**

#### **Before the Second World War**

Being worst hit by the epidemic of malaria, Malaya can aptly be honoured for being the first country across the globe successfully to have applied the knowledge about the mode of transmission of malaria to its control in 1898.<sup>109</sup> Malcolm Watson in his book *The Prevention of Malaria in the Federated Malay States: A Record of Twenty Years' Progress*, has provided a detailed account of the arrival of the British colonialists and their settlements in Pulau Pinang.<sup>110</sup>

Hence, a vivid picture of the position and climate of the region and the gradual prevalence and spread of malaria together with the increase of population, can be read from

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<sup>106</sup> CO 859/ 216/4, *Anti Malaria Programme*, 1951, Colonial Office, p. 3.

<sup>107</sup> CO 83/242/10, *Malaria Campaign, 1945*, Colonial Office, p. 6.

<sup>108</sup> Ibid.

<sup>109</sup> Malaria campaign, 1945, Colonial Office, the National Achieves, UK, CO 83/242/10, p27.

<sup>110</sup> Malcolm Watson, *The Prevention of Malaria in the Federated Malay States: A Record of Twenty Years' Progress*, London: E. P. Dutton & Company, 1921, p. 2.

the enriched collection.<sup>111</sup> Thus, the observation by the author provides an idea about the reason for the prevalence of malaria in the Malay Peninsula and the havoc it created for the population, especially in an era when the cause and prevention of the disease was little known.<sup>112</sup>

Pulau Pinang, once healthy during the occupation in 1786, gradually became *malarious* and in 1829 nearly one-third of its population went into the clutches of malarial death.<sup>113</sup> Various literatures provide an insight into the preventive measures conducted by the British authority to tackle the situation and improve the health facilities that were available to the inhabitants. These sources also provided the reasons behind the waxing and waning of the disease from time to time.<sup>114</sup>

At the beginning of the century the main method of control of vector mosquitoes was by environmental sanitation. In 1913 this was augmented by oiling vector breeding sites. After the Second World War, experiments were conducted with recently available residual insecticides.<sup>115</sup> Dichloro-diphenyltrichloroethane (DDT) was introduced during the war. At that time, other insecticides were very scarce and the problems of insect control were most critical. A long series of testing was conducted during the five years 1949 to 1953 in which DDT, Bensene hexachloride-gamma isomer (BHC), Dieldrin and Chlordane were tested against different species of mosquitoes. Since then, a range of insecticides have been screened against insects for medical importance by the Division of Medical Entomology.<sup>116</sup>

Sir Malcom Watson assumed the post of Government Surgeon of the districts of Klang, Kuala Selangor and Kuala Langat, Selangor in 1901. During his term, he observed the prevalence of malaria among the inhabitants.<sup>117</sup> The control of vectors of malaria was

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<sup>111</sup> Ibid. p. 2.

<sup>112</sup> Ibid.

<sup>113</sup> Arthur Anantharaj Sandosham, *Malariology with Special Reference to Malaya*, p.54.

<sup>114</sup> CO 913/14, Malaria Sub-Committee: minutes and papers circulated 1946-1950, Colonial Office, p.3 and p.6.

<sup>115</sup> Residual insecticides are synthetic chemicals. The best known are DDT and BHC (Gammexane). Sprayed on walls inside house they remain poisonous to insects for weeks or months; hence the term residual.

<sup>116</sup> CO 927/142/5, Malaya: experiments in malaria control by DDT, Gammexane and Paludrine 1949-1950, Colonial Office, p.24.

<sup>117</sup> Malcolm Watson, *The Prevention of Malaria in the Federated Malay States: A Record of Twenty Years' Progress*, p. 7.



discovered during early 20<sup>th</sup> century. Pioneer work carried out in Klang by Watson laid the foundation for the control of malaria by anti-larval measures. When Watson came to know that the subsoil drainage and other environment measures were not practical for runner estates, he used an oil blend of medium viscosity with good spreading ability on the surface of the water to form a thin layer of film which obstructed the oxygen supply from the mosquito larvae. And during that period, preventive measures conducted included drainage of water collected from lands and felling of trees in the jungle.<sup>118</sup>

Such measures helped in the reduction of the prevalence of the disease from the coastal areas. But such measures did not help the authorities in their dealing with mosquito breeding and spreading of the disease for a longer period as there existed an unknown breed of *Anopheles* mosquito *A. maculatus*. Earlier only two species of *Anopheles* *A. umbrosus* and *A. karwari* were known. Later, the third *A. maculatus* was discovered. This can be understood through Watson's account,

...it is equally unhealthy when the jungle has been felled and the ravine streams are free from weeds, for a new malaria carrier appears, namely, *A. maculatus*. The conclusions reached ten years ago have been confirmed, and much additional evidence could be adduced were it necessary to do so. ...practically the only alteration being that *Nyssorhynchus willmori* now appears as *A. maculatus*.<sup>119</sup>

In 1906, Pulau Pinang adopted new measures to prevent the spread of malaria by prescribing ten grains of Quinine (twice a week). The Municipal Commissioners also recruited workers to form the team called the Mosquito Brigade, who carried out tasks to eradicate mosquito breeding grounds throughout the island. These workers (around 90 in number) were given the responsibility of using 4,120 gallons of petroleum to abolish those breeding grounds.<sup>120</sup> Though these measures responded well in eradicating mosquito

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<sup>118</sup> Ibid.

<sup>119</sup> Ibid. p.86.

<sup>120</sup> Penang: Past & Present, 1786-1963. A Historical Account of the City of George Town since 1786, City Council of George Town, p. 69.

breeding to quite an extent, the medicinal dosage failed to produce effective results, leading to an increase of the dosage to ten grains per day “with double doses to those who did not respond.”<sup>121</sup>

The implementation of quinine during the whole period of 1901 to 1910 varied with time.<sup>122</sup> The first decade of the 20<sup>th</sup> century witnessed an increase in the spread of malaria, despite anti-malarial efforts carried out. This was precisely due, as Watson pointed out, to the lack of systematic administration of the measures and the lack of proper knowledge of the disease due to fewer research studies.<sup>123</sup> Another possible reason could have been the lack of proper infrastructure and facilities in the hospitals. This inappropriate implementation of effective measures and consequent rise in the prevalence of the disease and its carriers had a grave impact on the health of both Europeans and other inhabitants. Watson pointed this out about the prevailing conditions on the hills of the island:

During the years I have known this district [...] only two Europeans have been known to escape the disease. They lived on a spot where the spleen-rate is only 20. It is the place which is farthest from the breeding place of anophelines, being on a point well away from any ravine or jungle. That such a spot should be found so near to very unhealthy places is of the most hopeful augury.<sup>124</sup>

Out of the total 29 European officials living in the ten hilly areas of Malaya, only four were saved from sufferance, and that was mainly due to less proximity to swampy lands or less time spent in the place.<sup>125</sup> But one apparent factor was there were less or nil deaths among Europeans due to malaria. As Watson recollects, “there is only one bright spot in the record; it is, that no European has died from malaria.”<sup>126</sup> Most of them recovered in hospitals, or went to sea-trips or Europe for medical vacations.<sup>127</sup> But the lack of systematic anti-malarial

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<sup>121</sup> Ibid. p.88.

<sup>122</sup> CO 874/1093, Malaria research 1941-1948, Colonial Office, p.23.

<sup>123</sup> *Penang: Past & Present, 1786-1963. A Historical Account of the City of George Town since 1786*, p. 89.

<sup>124</sup> Ibid. p.94.

<sup>125</sup> Malcolm Watson, *the Prevention of Malaria in the Federated Malay States: A Record of Twenty Years' Progress*, p. 17. An officer, according to Watson, stayed only for less than a month, thus saved from the havoc of the disease.

<sup>126</sup> Ibid. p.75.

<sup>127</sup> Ibid. p.78.

measures had a huge toll on the lives of the labourers. Most of the labourers across all the estates fell victim to the fatal disease.<sup>128</sup>

One of the reasons behind such a scenario was the refusal to take anti-malarial medicines.<sup>129</sup> Given the rise of the disease among the European masters, most of the anti-malarial measures fell behind, and the entire responsibility fell on the native subordinates. These subordinates found it hard to manage the administration of quinine because of the huge number of labourers who had fallen ill. Watson's account provides a vivid picture of the rising ill-health of the labourers and the pain-staking task of the managers in administering the drug.

On one estate 170 coolies were recruited. [...] within two months of their arrival I visited the estate and found that on the day of my visit 102 out of 170 were unfit for work (suffering from malaria). Many of these were removed to hospital. [...] Of another estate: have been having a bad time with malaria-turning out 170 (had malaria) out of 340 coolies. On this estate the labour force was reduced in three months from 340 to 150. [...] Another estate: have been very bad with fever, practically every coolie had it (malaria) and about six deaths.<sup>130</sup>

Later, in 1911, the Government set up a Central Mosquito Advisory Board, which administered all the anti-malaria work ventured, and Local Mosquito Destruction Boards which conducted the operations in the developed parts of Pulau Pinang.<sup>131</sup> Such establishments saved numerous lives and money. This had caused rapid growth and expansion of the rubber industry and in turn provided revenue for further investment into health facilities.<sup>132</sup>

During the 1920s, authorised personnel discovered that the reason behind the failure completely to eradicate mosquitos was the continual survival of these insects inside empty

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<sup>128</sup> IMR 159/28, Malaria advisory Board Minutes April 12th 1928, Institut Penyelidikan Perubatan, p.9.

<sup>129</sup> CO 859/216/4, Anti-malaria programme, 1951, Colonial Office, p. 12.

<sup>130</sup> CO 67/370/7, Anopheles Eradication Scheme; and end to Malaria: correspondence, Colonial Office, p.7A.

<sup>131</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 124.

<sup>132</sup> Ibid.

cans, tins, coconut shells and vases.<sup>133</sup> Also, the cement drainage pipes used for the draining of water became clogged, reflecting considerable deterioration over time. Thus, by the mid-1920s, baked clay pipes replaced the former due to their prolonged durability.<sup>134</sup> Though the latter pipes were costly, yet their long-lasting effect compensated the sum involved. These drainage measures were constantly kept under supervision and inspection, to check for wear and tear of the pipes, and to monitor water clogging due to flooding.<sup>135</sup>

Moreover, measures such as creating awareness among the inhabitants regarding cleanliness were also initiated. A cleanliness campaign, which was launched by the colonial authority to encourage people to keep their homes and surrounding places clean, helped towards the destruction of possible breeding grounds.<sup>136</sup> Besides this, the administering of quinine drugs continued in the Malay States and Pulau Pinang. While describing the anti-malarial measures adopted in Pulau Pinang, in the 1920s, the account of Dr. L.W. Evans, M.R.C.P., L.R.C.S., bears utmost importance. According to him, the Pulau Pinang area “*has always been troublesome*” and most of the staff suffered from malaria.<sup>137</sup> Improving the condition of the region “*had often been considered but shelved owing to the difficulty of the problem or the apparent impracticability of the recommendations.*”<sup>138</sup> The prevalence of the malaria vector had persisted due to the low-lying and swampy position of the area which was surrounded by rice fields. As he noted:

In August a survey was made by Mr. Ampalavanar, the mosquito Inspector, and the most offending area was found to be the overgrown swamps on the northern boundary. This has been dealt with by cleaning and filling for 200 yards (not quite completed by end of year) the work being done by P.W.D. and paid for Anti-mosquito vote.<sup>139</sup>

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<sup>133</sup> CO 123/405/8, Medical: funding of malaria survey and appointment of health officer, Colonial Office, the National Archives, UK, p. 17.

<sup>134</sup> T.S. Macauley, ‘Anti-Malarial Work In Straits Settlements,’ *The Malayan Medical Journal & Estate Sanitation*, Vol. 1, No. 1, 1926, p. 21.

<sup>135</sup> CO 927/177/4, Colonial Medical Research Committee: malaria research; minutes of meetings, Colonial Office, the National Archives, UK, p. 14.

<sup>136</sup> Anonymous, *Various Mosquito Survey: Straits Settlements Seasonal Papers*, London, 1928, p. 23.

<sup>137</sup> Ibid.

<sup>138</sup> FD 1/7600, Minutes of meetings: research on malaria, Medical Research Council, the National Archives, UK, 1953, p. 17A.

<sup>139</sup> UK, CO 859/216/4, Anti-malaria programme, 1950, Colonial Office, the National Archives, p. 3.

In 1923 the Municipality of Pulau Pinang took control of the Infectious Diseases Hospital and spread awareness through the broadcasting of films related to the anti-mosquito campaign. A large number of patients who were found to be infected with malaria parasites, underwent treatment at the Hospitals after the knowledge of the causes and its cure had been discovered.<sup>140</sup>

**Table 4.3** Total Expenditure for Anti-Malaria Programme in Pulau Pinang in the year 1921, 1926, 1928, 1932 and 1935

<b>Year</b>	<b>Total amount</b>
1921	\$ 50,000
1926	\$ 75,000
1928	\$ 120,000
1930	\$ 65, 000
1932	\$ 45, 000
1935	\$ 35, 000

Source: *Federation of Malaya, Annual Report for the Medical Department for the year of 1946*, Medical and Health Department, Kuala Lumpur, 1946, p.31.

The Great Depression, which was a severe worldwide economic depression that took place from 1929 to 1927, had an impact on the colonial annual expenditure for the anti-malaria programme in Pulau Pinang. This is shown in Table 4.3 above, where this was a dramatic reduction in the spending for anti-malaria effort in where in 1920 it was \$50,000, compared to \$65, 000 in 1930, \$45, 000 in 1932 and only \$35,000 in 1935, such drastic reduction was the direct result of the severe worldwide economic recession which affected the anti-malaria activities in Pulau Pinang.<sup>141</sup>

#### Japanese Occupation of Pulau Pinang

Anti-malarial work suffered a significant negligence during the period of Japanese invasion and occupation of Pulau Pinang. Information for comparison of the measures with other years was also difficult later on because of the lack of records during this period. According to the annual report of Pulau Pinang medical and health department in 1946, the incidence of epidemics increased during Japanese Occupation of Pulau Pinang due to

<sup>140</sup> CO 953/2/1, Penang and Singapore municipalities: position of London agents, Colonial Office, the National Archives, UK, p. 1A.

<sup>141</sup> CO 927/178/2, Malaya, malaria research: Paludrine trials; third interim report, Colonial Office, the National Archives, UK, p. 21.

negligence of anti-malarial actions, especially in the urban areas. Also the rural areas witnessed the growing incidence of the disease but these were not epidemic scale outbreaks as observed in the cities and towns.<sup>142</sup>

Severe epidemic outbreaks occurred in settlements where the Japanese army introduced a policy of “Grow More Food” where the inhabitants had unwittingly formed new areas of mosquito breeding while using their agricultural abilities.<sup>143</sup> As a result of this policy, the gardeners had elevated the water level in the inspection compartments by blocking the outlet pipes with coconut shells or other such materials, in order to carry on their work. These had obstructed the “flow of subsoil water along the pipes”.<sup>144</sup> The authorities removed all such obstructions by laying the pipe lines again and thus preventing water clogging. Another difficulty noted by the British authorities was a mass deforestation drive carried out by the Japanese forces, which resulted in the formation of fresh breeding places in Pulau Pinang. The epidemic control only resumed after the re-occupation of Pulau Pinang by the British authorities after the Second World War in 1946.<sup>145</sup>

**Table 4.4** Total Number of Cases Suffering from Malaria, Hospitalised in Government and Estate's Hospitals, 1946

	1940	1941	1942	1943	1944	1945	1946
<b>Cases of Malaria, undergoing treatment in the State's Government Hospital.</b>	-----Not Available -----						1042
<b>Cases of Malaria, undergoing treatment in Estate Hospital</b>	-----Not Available-----						913
<b>Aggregate Malaria cases hospitalized</b>	-----Not Available-----						1955
<b>Total Death of malarial patients hospitalized</b>	-----Not Available -----						84

Source: RCP/MED/ 315/47, Annual Report of Medical & Health Department of Penang, 1946, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p.8.

<sup>142</sup>RCP/MED/ 315/47, Annual Report of Medical & Health Department, 1946, Resident Commissioner Penang, Arkib 1946. Kuala Lumpur, p. 13.

<sup>143</sup> Ibid.

<sup>144</sup> MED/PG/341/52, Malaria Advisory Board, Kementerian Kesihatan Malaysia, p.15.

<sup>145</sup> SUK/3123/1232, Annual Report Settlement of Penang, 1947, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.8.

**Table 4.5** Number and Percentage of Deaths, due to Malaria and Fever of Undefined Origin, 1946

	1940	1941	1942	1943	1944	1945	1946
<b>Malaria</b>	----- Not Available -----						234
<b>Fever of undefined origin</b>	----- Not Available -----						2293
<b>All causes</b>	----- Not Available -----						7210
<b>Percentage ratio of deaths Malaria to deaths from all causes</b>	----- Not Available -----						3.23
<b>Percentage ratio of deaths from Malaria &amp; deaths from fevers of undefined origin- To all causes</b>	----- Not Available -----						35.05

Source: RCP/MED/ 315/47, Annual Report of Medical & Health Department of Penang, 1946, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p.2.

Both of the Tables 4.4 and 4.5 above depict one common factor that there is an absence of records from the years 1940 to 1945, i.e. the years of tension and eventual invasion and occupation by the Japanese forces over Pulau Pinang and the consequent neglect regarding anti-malarial or health related approaches by the authority concerned.<sup>146</sup> As a result of considerable neglect in controlling the epidemic and delay in adopting DDT in-house spraying as a general public health measure due to invasion, there were a large number of people affected by malaria and many cases were fatal. The measures of subsoil drainage and automatic sluices etc., which were totally abandoned during the Japanese occupation period, returned to their previous levels, with minimum delay.<sup>147</sup> Numerous areas of mosquito breeding appeared. As a result Pulau Pinang, at this point, lagged behind other neighbouring colonial states such as India and Ceylon and particularly Singapore in the prevention of malaria.<sup>148</sup> After the re-establishment of the British authorities over the Malay Peninsula and the formation of the Malayan Union (1946) and eventually the Federation of Malaya (1948),

<sup>146</sup> RCP/MED/ 315/47, Annual Report of Medical & Health Department of Penang, 1946, Resident Commissioner Penang, p.2 and p.8.

<sup>147</sup> RCP/MED/ 315/47, Annual Report of Medical & Health Department, 1946, Arkib Negara Malaysia, Kuala Lumpur, p. 11.

<sup>148</sup> Malaria Advisory Board: Federation of Malaya, *Malaria Control by Modern Methods, Circular No. 7*, Kuala Lumpur, 1952, p. 12.

anti-malarial operations gained a new momentum in Pulau Pinang and the Malay Peninsula.<sup>149</sup>

Based on table 4.6 the negligence towards anti-malarial measures during Japanese occupation of Pulau Pinang becomes clear. It can clearly be observed that there was a considerable rise in the number of malarial cases in the Government hospitals of Pulau Pinang in 1946, with more incidences in January, gradually lessening towards the end of the year.<sup>150</sup>

**Table 4.6** Increase in Number of Admissions due to Malaria in Government Hospital in Pulau Pinang, 1946

Months	No. of Malaria (Classified) Admissions.
January	297
February	171
March	144
April	200
May	164
June	184
July	128
August	95
September	61
October	45
November	87
December	78
Total	1654

Source: RCP/MED/ 315/47, Annual Report of Medical & Health Department of penang, 1946, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p.23.

In summary, prevention measures and investment of both human and financial resources had a direct impact on the increase or decrease of the disease. This can be seen during the Japanese occupation and control from 1941 to 1945, the abandonment of the efforts made towards the eradication of the disease by the Japanese army had caused malaria

<sup>149</sup> Though, Japanese invasion had its effect on the inhabitants of Singapore also. As per the reports of Malaria Advisory Board: Federation of Malaya (1952), during the time period of 1942 to 1945, nearly 500 cases of primary malaria occurred annually. Its anti-malarial measures were also initiated for the second time after the re-occupation of British Imperial forces in 1946. The concerned Health Officers along with other personnel of colonial authority, together launched joint combat against the diseases by establishing training centres in the rural areas and in the urban areas, the Municipality did a great deal of work to address the issue.

<sup>150</sup>RCP/MED/ 315/47, Annual Report of Medical & Health Department, 1946, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 13.



cases rise astonishingly. Moreover, their policy to grow more food, led to the spread of the disease throughout the island.<sup>151</sup> Upon the return of British Rule to the region after the Second World War, various efforts initiated such as repairs of drainage systems and canals. Thus the control over the spread of Malaria was regained. By 1951 to 1952, the incidence of the fatal disease showed a gradual decline compared with previous years.<sup>152</sup>

#### After the Second World War

Also, permanent control of malaria was established in densely populated areas and had resulted in the reduction of the incidence of the disease, which declined gradually over the years, particularly by 1949. Even though in some regions, there were rising cases of malaria but the overall count of cases were low.<sup>153</sup> The credit of such waning of malaria can be attributed to the widespread use of prophylactic drugs and use of D.D.T. for in-house spraying and as larvaecide.<sup>154</sup>

Pioneer work regarding prevention measures for malaria were initiated in Pulau Pinang after the Second World War in 1946. This was followed by the colonial authority who administered the measures on the island as outlined by Ernest P. Hodgkin in 1956, who briefly described the transmission and prevention measures of malaria in Pulau Pinang and other states within the Federation of Malaya.<sup>155</sup> He also mentioned about two distinct species of the vector prevalent in two areas of the island - hills and coastal areas - and the particular preventive measures carried out to address them.<sup>156</sup>

Firstly, *Anopheles maculatus* is prevalent on hilly regions.<sup>157</sup> By 1947, it was known to all the inhabitants, including the Europeans, migrants and natives, that this particular

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<sup>151</sup> RCP/MED/ 315/47, Annual Report of Medical & Health Department of Penang, 1946, Resident Commissioner Penang, p.23.

<sup>152</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.17.

<sup>153</sup> CO 927/142/6, Research Committee, in Experiments in Rural Malaria Control in Malaya, 1948-1950, Colonial Office, p. 5-10. This file explains in details the anti-malaria programme done in Malaya during the early 1950s.

<sup>154</sup> Ibid.p. 7.

<sup>155</sup> Ernest P. Hodgkin, 'The Transmission of Malaria in Malaya,' *Institute of Medical Research Study*, No. 27. Kuala Lumpur: Caxton Press Ltd., 1956, p. 1-70.

<sup>156</sup> Ibid.p. 72.

<sup>157</sup> In Penang and Seberang Perai the favorite breeding places are drains, pools, seepages, springs, rice fields, marshes, borrow pits, lake margins, and reservoirs. Fresh water is generally preferred, but larvae are found in stagnant water or polluted water but never in salt or

species was the most prominent vector to spread malaria in the hills. A certain number of the species were dissected and malarial parasites were found in them. Despite the low numbers of the species carrying the parasites, it was confirmed that *maculatus* do act as vectors in transmitting malaria.<sup>158</sup>

Thus, this confirmation led to effective preventive control measures, so as to restrict or eradicate the breeding of these mosquitos. In the urban areas, permanent sub-soil drainage systems were instituted, “by means of earthenware pipes discharging into open concrete channel was eminently satisfactory”.<sup>159</sup> In other areas, a common practice was spraying mineral oil into streams and other breeding areas, performed at weekly intervals. Significant actions involved maintenance of clean water channels to, “free them from grass and other obstructions, without pocket at the side, and properly graded where the terrain required” though these procedures were not carried out efficiently for a prolonged time.<sup>160</sup>

Secondly, *anopheles sundaicus* were mostly found in the coastal areas of Pulau Pinang where brackish water was found. The brackish water of the coastal areas created an impeccable environment for the rise and spread of the *sundaicus* vector, due to its tolerance for the salty water. As Macgregor in 1950 pointed out, the exclusion of the salty water from the area led to the incrimination of the specie and disappearance of malaria.<sup>161</sup> In some parts of the island such as Georgetown and Batu Ferringhi, exclusion of salt water through construction of bonds and tide gates; digging and conserving of the drainage system, led to the eradication of the disease within those areas.<sup>162</sup> As the operation was cost-consuming, the rest of the region continued to use anti-malarial oil which tend to be palliative but were cost-effective.<sup>163</sup>

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brackish water. Although aquatic vegetation is not necessarily associated with breeding, larvae often live in algae at edges of shaded forest streams.

<sup>158</sup> Ibid.

<sup>159</sup> CO 67/354/4, Anopheles (Malaria) eradication scheme, 1946, Colonial Office, the National Archives, UK, p. 4.

<sup>160</sup> Ernest P. Hodgkin, ‘The Transmission of Malaria in Malaya,’ p. 56.

<sup>161</sup> Ibid.p. 8.

<sup>162</sup> CO 67/354/6, Anopheles (Malaria) eradication scheme, Colonial Office, the National Archives, UK, p. 17.

<sup>163</sup> CO 859/216/2, Anti-malaria programme, Colonial Office, the National Archives, UK, , p. 7.

A noteworthy feature in 1946 was that Pulau Pinang was involved in the adaptation of naturalistic as well as cheaper modes of anti-larval control, which could be affordable by the small economy of the Peninsula. This naturalistic mode of control included a more detailed knowledge of the “breeding habits of the mosquitoes” unlike oiling.<sup>164</sup> This extended knowledge assisted in expanding the mode of control by providing an insight of ecological events.<sup>165</sup> Besides, following an experimental report based in Africa that the spread of malaria by *Anopheles maculatus* could be curbed by the combined use of DDT and BHC (gammexcine), this measure was also applied to control the rise of this epidemic, mostly in Butterworth, Sebarang Perai. These procedures were funded by the Colonial Development and Welfare Research Scheme.<sup>166</sup>

In 1950 the Municipal Health Department of Georgetown, on Penang Island substituted BHC wettable powder for oil in routine weekly larviciding programme, at a dosage rate of 4 ozs. per acre. Larva control was good in Georgetown. However, by 1953 this dosage no longer gave a satisfactory control.<sup>167</sup> Two laboratory colonies of *C. p. fatigans* were established, one from Georgetown and one from a part of Kuala Lumpur where no insecticides had been used. The Georgetown strain was found to have acquired a tenfold resistance to BHC as well as to Dieldrin to which it had not been exposed. But it showed no significant increase of resistance to DDT to which it has also not been exposed.<sup>168</sup>

In 1954, when both strains had passed through 10 generations in the laboratory without exposure to insecticides, the Georgetown strain was found to have lost much of its resistance to BHC. Other experiments were also conducted around Penang Island during that year and showed that *C. p. fatigans* had a low degree of susceptibility to DDT, but the insecticide had a marked instant effect and the biting rate was reduced to 45%. BHC killed

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<sup>164</sup>FD 1/7604, Minutes of Malaria Sub-committee: Research Unit Malaya, 1954-1959, Medical Research Council, the National Archives, UK, p. 14.

<sup>165</sup> CO 859/216/3, Anti-malaria programme, Colonial Office, the National Archives, UK, p.13.

<sup>166</sup> R. B. Macregor, *Report of the Medical Department, Federation of Malaya, 1949*, Kuala Lumpur, 1950, p. 8.

<sup>167</sup> Ibid.

<sup>168</sup> CO 859/216/3, Anti-malaria programme, Colonial Office, p.13.

*C. p.fatigans* which entered the treated huts for two weeks and biting rate was reduced to 27%. *C. p. fatigans* was readily killed by Dieldrin. Larvae of the mosquito were also less susceptible to DDT but were more easily killed by BHC and Dieldrin, particularly the latter.<sup>169</sup>

Heroic efforts made by the Government mutually with private individuals and institutions and local authorised personnel succeeded in abolishing malaria to a significant degree in the 1950s. These measures were taken: educating and motivating the residents to maintain the cleanliness in their houses and surroundings, ensuring a mosquito-free environment.<sup>170</sup> In addition to this, in 1952, the landlords of the area were compelled to keep mosquito-breeding areas under control. Also under the supervision of a Health Officer, health employers were granted permission to enter each and every resident's house for insecticidal work.<sup>171</sup>

Apart from the fact that house spraying<sup>172</sup> with residual insecticides are not equally effective against all kinds of mosquitoes, residual insecticides for malaria control have one important limitation common to most anti-mosquito measures; they must be used over a wide enough area. It is useless for one man to spray his house whilst his neighbours' houses remain unsprayed. Anophelines are not prevented from entering and biting by the presence of DDT or BHC; it is only after feeding that they rest on the treated walls.<sup>173</sup> Thus mosquitoes may become infected in unsprayed houses, and before they are killed by the insecticide, they may transmit malaria to the occupants of a sprayed house. For this reason, all the houses in one area should be sprayed, and the area should be as large as possible, unless it is so isolated as to be safe from invasion by infected mosquitoes from unsprayed areas.<sup>174</sup>

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<sup>169</sup> CO 927/142/6, Malaya: Interim Report to the Colonial Insecticides, Fungicides and Herbicides Committee, and the Colonial Medical Research Committee, in Experiments in Rural Malaria Control in Malaya 1948-1950, Colonial Office, p.18.

<sup>170</sup> MED/PG/159/54, Malaria control in SW.DD. Strict, Pejabat Daerah Barat Daya Pulau Pinang, p.14.

<sup>171</sup> Ibid. p.17.

<sup>172</sup> The cost of house spraying varies greatly with the conditions. Whereas in Malay kampongs the cost may be as high as \$2.50 per head per year, this figure might be reduce to perhaps \$1.00 when spraying estate labourers' lines.

<sup>173</sup> Ernest P. Hodgkin, 'The Transmission of Malaria in Malaya,' p. 49.

<sup>174</sup> CO 927/142/6, Malaya: Interim Report to the Colonial Insecticides, Fungicides and Herbicides Committee, and the Colonial Medical Research Committee, in Experiments in Rural Malaria Control in Malaya 1948-1950, Colonial Office, p.19.

The government had passed certain Acts and Rules such as *Akta Pekerjaan* in 1953,<sup>175</sup> to curb the mosquito menace and therefore the fatal disease. The Act and Rules were revolutionary and introduced considerable improvements in the Pulau Pinang Health Department.<sup>176</sup> These improvements came about by investigations, inspections, advice regarding the vector and propaganda through training. Also, quinine was distributed freely through the schools, post offices and police stations.<sup>177</sup>

Some of the challenges in preventing and controlling the malaria menace were associated with the hawkers and stalls present in the market areas. Eating shops and other similar businesses were a haven for mosquito breeding because of stagnation of water and ousted garbage. Below are several reasons why it is difficult to monitor hawker activities in 1955.<sup>178</sup>

- The hawkers' indifference to licenses, fuelled by their awareness of the difficulty of prosecution and of the small penalty on conviction.
- The increase in hawkers and stalls by nearly 50%, which led to non-maintenance of cleanliness in and around these stalls.
- The inactivity of police who possessed powers of action against unlicensed staff keepers and hawkers.<sup>179</sup>

Despite the campaign to create awareness about maintaining cleanliness in and around houses for one's own safety and protection, people still tended to ignore the requests. This is one of the hindrances which affected the success of the measures implemented. Yet, despite such challenges, Pulau Pinang managed to develop effective measures in curbing the disease

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<sup>175</sup> Though, this move witnessed severe protest and criticisms, especially from renowned medical practitioners and scientists. Dr. Macgregor (1950) criticized such a move as the act was only concerned about the labourers of the estate and ensuring only the estates to be mosquito free zone.

<sup>176</sup> Paul H. Kratoska, *Honorable Intentions Talks on the British Empire in South-East Asia Delivered at the Royal Colonial Institute, 1874-1928*, New York: Oxford University Press, 1983, p.38.

<sup>177</sup> FD 1/4282, General Research: drug resistance in malaria, by Dr Ann Bishop, Cambridge University, Medical Research Council, the National Achieves, UK, p. 12.

<sup>178</sup> MED/PG/605, Rural District Control P.W. Central, 1955, Perubatan dan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Penang Branch, Kuala Lumpur, p. 11.

<sup>179</sup> Ibid.

and reducing its prevalence and also treating the victims more effectively, so reducing the fatality rates.<sup>180</sup>

The Malayan Emergency from 1948 to 1960 had a significant impact on the prevention of malaria in Pulau Pinang.<sup>181</sup> This was obvious in 1952 in Seberang Perai, where anti-malaria efforts such as DDT and BHT spraying were planned for the month of February. In 1952, malaria thrived due to a guerrilla war between the communist insurgent and the military in the district of Butterworth, and this incident caused panic among the health authorities and anti-malaria managers in Butterworth because measures were neglected during first half of 1952. This shows clearly that the Malayan Emergency had an impact on the prevention of malaria in Pulau Pinang.<sup>182</sup>

## **Malaria Control in Rural Areas**

### **Before the Second World War**

The Straits Settlement Annual Report in 1923 suggested that malaria control<sup>183</sup> and anti-malarial measures initiated during the 1920s were primarily diverted towards rural areas Penang Island and Seberang Perai.<sup>184</sup> Regions which were abandoned like Tanjong Tokong, Ayer Itam, Sungai Glugor, Balik Pulau, Bayan Lepas, Teluk Kumbang, Sungai Pinang and Teluk Bahang, especially Tanjung Bungah and Ayer Itam were given significant focus, as these abandoned areas had higher chances of mosquito breeding.<sup>185</sup> These measures were

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<sup>180</sup> CO 859/216/4, Anti-Malaria Programme, Colonial Office, the National Archives, UK, p. 24.

<sup>181</sup> CO 859/216/2, Anti-malaria programme, Colonial Office, the National Archives, UK, p. 3.

<sup>182</sup> SUK451/1124, Annual Report Settlement of Penang, 1952, Pejabat Setiausaha Negeri Pulau Pinang, p.42

<sup>183</sup> Malaria control refers to a number of persons were involved in this aspect of malaria work, mainly health officers, estate medical officers and ancillary staff who were responsible for the application of oiling, subsoil drainage and various other methods aimed at the vector mosquito larvae.

<sup>184</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 125.

<sup>185</sup> Anonymous, *Various Mosquito Survey: Straits Settlements Seasonal Papers*, p. 627.

sponsored by the Colonial authority with the help of a large number of labourers who lived in the areas.<sup>186</sup>

From 1918 onwards, when notices under the Destruction of Mosquitoes Ordinance No 174 were distributed, anti-malarial measures carried out by the English Administration and the Health Department of Penang gained prominence in areas such Seberang Perai, Bukit Mertajam, Sungai Bakap, Bukit Tambun and others. There were about 90 notices issued under the ordinance, followed by actions compelling landlords to contribute monetarily towards anti-malarial measures. According to the ordinance issued, people or individuals trying to oppose or obstruct the anti-malarial procedures carried out by the employers or workers, would be held liable.<sup>187</sup>

However, this ordinance failed to yield effective results as it had prevented farmers from growing tapioca, based on the assumption that the roots of these plants caused blockages to the drains, and clogging water collected at one place had again become an area of mosquito breeding.<sup>188</sup> This narrow approach failed to address the real causes, encouraging more breeding places for the vectors.<sup>189</sup> In 1928, the Senior Sanitary Inspector in rural Pulau Pinang inspected 32,251 houses of the area.<sup>190</sup> Some of the residents had failed to maintain cleanliness in and around their houses and were issued warnings.<sup>191</sup> Despite repeated warnings and notices issued by the rural boards, and the health personnel visiting for inspections, around 130 inhabitants were accused and 106 residents were found guilty. They were presented with a fine of \$530, a huge amount at that time.<sup>192</sup>

Besides such reconstruction of the pre-existing measures, sporadic oiling was also conducted. Experiments such as kerosene infused with 5% DDT were adopted in the initial

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<sup>186</sup> FD 1/4282, General research: drug resistance in malaria, by Dr. Ann Bishop, Cambridge University, Medical Research Council, the National Achieves, UK, p. 13.

<sup>187</sup> Ibid.p.14 and p.15.

<sup>188</sup> RCP/MED/202/49, Annual Report of the Medical and Health Department of Penang, 1948, Resident Commissioner Penang, p.13.

<sup>189</sup> CO 859/216/2, Anti-malaria programme, Colonial Office, p. 3.

<sup>190</sup> Ibid.

<sup>191</sup> In this year alone, 1672 warnings were given to the residents so as keep their homes and surroundings clean. Later, another 750 warning notices were sent to stubborn inhabitants of the area by the health board of rural area, though of very little significance (2; 666).

<sup>192</sup> Ibid.

stages of re-occupation and were carried on for a prolonged time.<sup>193</sup> Anti-malaria oil along with DDT were used as an anti-larval measure, along with Paris Green (1% strength) and indoor sprays to halt the prevalence of the disease.

Interestingly, in the 1930s, anti-malarial drainage systems were introduced to the kampongs or villages, as ways to create drinking water and bathing wells. The village of Telok Bahang had its drainage and water from a self-owned *subsoil water supply* introduced in the later part of 1938, consisting of a concrete tank having a capacity of 6000 gallons. Anti-malaria drainage systems were also introduced in Tanjung Tokong, Ayer Itam, Sungai Glugor, Balik Pulau, Bayan Lepas, Teluk Kumbang, Sungai Pinang, Tanjung Bungah and Ayer Itam before the Second World War. Such drainage systems, introduced in rural areas in Penang Island and Seberang Perai, were an important prevention measure especially in rural areas.<sup>194</sup> The City Council of Georgetown also reported in 1934, that a campaign was also launched to encourage people to use mosquito nets, especially in rural areas.<sup>195</sup> The usage of mosquito nets was only popular before the Second World War. After the Second World War this method of prevention was abandoned by most people.<sup>196</sup>

In addition, to eradicate completely human fatality and the existence of the vector mosquitoes, the Health Department created the Mosquito Brigade.<sup>197</sup> This campaign brought some success in shrinking the incidence of the vector. According to the Municipal Council, the introduction of the Mosquito Brigade had managed to reduce the cases of malaria in Penang Island.<sup>198</sup>

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<sup>193</sup> CO 859/216/3, Anti-Malaria Programme, Colonial Office, p. 6. This file discussed about the three popular anti-malaria prevention measures in Southeast Asia. Subsoil drainage, open invert drains into which the subsoil drains discharge and bunds and tide-gate which excluded salt water and controlled *A. sondaicus*.

<sup>194</sup> SUK451/1124, Annual Report Settlement of Penang, 1951, Pejabat Setiausaha Negeri Pulau Pinang, p.42.

<sup>195</sup> The City Council of George Town, Malaysia, *Penang: Past & Present, 1786-1963. A Historical Account of the City of George Town since 1786*, p.69.

<sup>196</sup> *Ibid.*

<sup>197</sup> Mosquito Brigade consisted of mostly Tamil labourers. This brigade came into existence during 1908, recruited by the then Municipal Commissioner. By 1920s (the time period discussed above), boys replaced adults, due to the efficient carrying out of works by the former. This recruitment of boys or *Chokras*, as they were termed, increased with time, from 20 in 1920 to 45 in 1930 and 60 in 1931, whereas the adults declined from 100 to 64 and eventually 55 (2).

<sup>198</sup> CO 927/142/6, Research Committee: in Experiments in Rural Malaria Control in Malaya, 1948-1950, Colonial Office, the National Archives, UK, p. 26.



**Table 4.7** Total Numbers of Human Fatalities in Pulau Pinang, 1929-1939

<b>Years</b>	<b>Total Death</b>
1929	103
1930	89
1931	72
1932	52
1933	51
1934	25
1936	37
1937	32
1938	38
1939	25

Source: *Penang: Past & Present, 1786-1963. A Historical Account of the City of George Town since 1786*, Georgetown: City Council of George Town, 1966, p. 69.

Table 4.7 indicates the total number of human fatalities in Pulau Pinang from 1929 to 1939. After the introduction of the Malaria Brigade in 1928, and during 1936, there was a significant decrease in the number of fatality cases destroying areas of breeding mosquitoes. The number of deaths between 1929 and 1939 showed a considerable downward-trend, from 103 deaths to only 29 a decade later. This downward leaning is significant owing to the rise of residents in the area from 150,000 to 170,000 in 1940s in Pulau Pinang.<sup>199</sup>

After the Second World War

The Health Department was concerned primarily with the control of the vector species (malaria types) of mosquitoes. Weekly surveys were carried out regularly by the staff in rural areas and villages in Penang Island and Seberang Perai after the Second World War.<sup>200</sup> According to the “Malaria Control in South West District” file of 1954, prevention efforts in Pulau Pinang was focused on several districts and location which are; Ayer Hitam village, Penang Hill Station, Tanjung Bungah, Tanjung Tokong, Telok Bahang, Sungai Glugor and Sungai Nibong. As for Seberang Perai, the problem of malaria was occasionally

<sup>199</sup> *Penang: Past & Present, 1786-1963. A Historical Account of the City of George Town since 1786*, p. 69.

<sup>200</sup> SUK451/1124, Annual Report Settlement of Penang, 1951, Pejabat Setiausaha Kerajaan Pulau Pinang, p.14.

detected in Sungai Bakap, Bukit Mertajam and Butterworth where areas for the breeding of the vector species had been discovered. Significant numbers of breeding places of the nuisance types of mosquito were discovered in these areas and action was taken.<sup>201</sup>

The more densely populated the area is, the less the cost of implementing such measures.<sup>202</sup> According to the report by the Malaria Advisory Board of the Federation of Malaya in 1952, “anti-larval measures are based on the knowledge that if the breeding of the carrier species is prevented inside the inhabited area and in a zone about half a mile wide around its edge, malaria will disappear”.<sup>203</sup> In the case of intense breeding occurring in immediate proximity of a protected zone or where the prevailing vector species is *A. sundaicus*, the zone of anti-larval activity was enlarged. Measures which required more resources but less money to implement were ideal in cities and towns with their dense population. However, when the number of rooms per house increased, the cost involved also increased, in both anti-larval insecticide applications and the administration of drugs.<sup>204</sup>

In 1952, a considerable sum was invested in anti-malarial measures. \$3,440.09 was invested in abolishing the mosquitoes’ possible breeding areas. 21,662 feet of sewer pipes were destroyed and 72,927 gallons of anti-malaria oils comprising of solar oil, kerosene and diesel were sprayed to eradicate breeding areas.<sup>205</sup> Despite such measures, entire eradication of breeding places and the spread of the disease was not possible.<sup>206</sup>

Such anti-malarial measures were also implemented in urban areas as well. In fact, in urban areas, where it was densely populated, the popular anti-larval methods, sub-soil drainage, ditching and spraying larvacides in breeding places yielded outstanding results, thus becoming the most effective measures to adopt for a prolonged period. Regular application of such helped to eradicate the *Anopheline* mosquito, providing a higher degree

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<sup>201</sup> MED/PG/159/54, Malaria Control in S.W.D. District, Pejabat Daerah Barat Daya Pulau Pinang, p. 4.

<sup>202</sup> CO 927/142/5, Malaria: experiments in malaria control by DDT, Gammexane and Paludrine, 1949-1950, Colonial Office, p. 24.

<sup>203</sup> Malaria Advisory Board: Federation of Malaya, *Malaria Control by Modern Methods, Circular No. 7*, p. 8.

<sup>204</sup> Ibid.

<sup>205</sup> CO 859/216/2, Anti-Malaria Programme, Colonial Office, p. 13.

<sup>206</sup> CO 874/1093, Malaria Research, Colonial Office, the National Achieves, UK, p. 3.

of protection than that expected from such applications.<sup>207</sup> Anti-larval measures in the urban areas involved less economic expenditure, compared with rural areas, as the cost of the application was determined per individual in a specified area.

However, the measures carried out by the Health personnel had failed to eradicate the vectors completely because of the presence of large abandoned areas that needed investigation.<sup>208</sup> These areas were Balik Pulau, Jalan Titi Tras, Pantai Aceh, etc. In these areas, the personnel had assumed that mosquito breeding could not occur because of the lack of water canals there. However, the lack of an efficient canal system led the villagers to store water in containers, which became grave threats for the residents when the water stored had transformed into breeding zones of vectors.<sup>209</sup>

Shell Emulsion was also used as an anti-larval method by the Health Department in schools, hostels and offices along Teluk Ayer Tawar Road, Seberang Perai in 1956, due to the large incidence of the vector mosquitos there.<sup>210</sup> An aggregate of 50 gallons of shell emulsion was used as larvacide in the rural areas, including the newly identified kampongs.<sup>211</sup> Also, three gallons of kerosene oil was utilised for spraying at kampong wells such as in Bagan Dalam, a district in Butterworth.<sup>212</sup> But when it was discovered that there was a large risk associated with such a measure, this was immediately replaced by medicines and insecticides, especially in places of residence. Such actions enabled the department to prevent the breeding of vector mosquitos, thus checking the growth of the disease.<sup>213</sup>

The Health Department implemented serious procedures to counter the spread of the disease and other such diseases by conducting blood tests in schools.<sup>214</sup> The prudent action

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<sup>207</sup> Malaria Advisory Board: Federation of Malaya, *Malaria Control by Modern Methods, Circular No. 7*, p. 7.

<sup>208</sup> MED/PG/159/54, Malaria Control in S.W.D. District, Pejabat Daerah Barat Daya Pulau Pinang, p.14.

<sup>209</sup> Ibid.

<sup>210</sup> MED/PG/601/55, Rural District Council, Province Wellesley North, 1956, Pejabat Perubatan dan Kesihatan, p. 6.

<sup>211</sup> CO 927/142/5, Malaya: experiments in malaria control by DDT, Gammexane and Paludrine, Colonial Office, p. 9.

<sup>212</sup> MED/PG/605, Rural District Control P.W. Central, Pejabat Perubatan dan Kesihatan, p. 14.

<sup>213</sup> MED/PG/341/52, Malaria Advisory Board. 1952. Kementerian Kesihatan Malaysia, p. 2.

<sup>214</sup> CO 927/177/4, Colonial Medical Research Committee: malaria research; minutes of meetings, 1948-1950, Colonial Office, p.4.

of the health department and the administration were truly significant. Along with these, several other measures were also taken as detailed in Table 4.8

**Table 4.8** Other Anti-Malarial Measures undertaken in the Rural Areas in Seberang Perai, 1955

	<b>Number of earth drains cleaned</b>	<b>Number of acreage of grasses cut down</b>	<b>Amount of earth filling carried out</b>	<b>Number of de-silting carried out</b>	<b>Digging of new earth drains</b>
<b>New Villages</b>	326600 <i>feet</i>	251/2	5700 <i>cubic feet</i>	-	280
<b>Other RDCC Areas</b>	17556 <i>feet</i>	9	120 <i>cubic feet</i>	258 <i>feet</i>	280
<b>Cumulative amount</b>	344156 <i>feet</i>	341/2	5820 <i>cubic feet</i>	258 <i>feet</i>	280

Source: MED/PG/605, Rural District Council Province Wellesley Central, Perubatan dan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, 1955, p.20A.

Night trappings (around 14) were also carried out as an anti-malarial measure in the rural areas such as Juru Malay Kampong and Kampong Sekolah, and such trappings helped in the catching of different species of *Anopheles* mosquito. The spraying of DDT (200 mg/ft<sup>2</sup>) or Gammexcine (40 mg gamma/ft<sup>2</sup>) or administration of Paludrine 100 mg, one tablet per week, in the rural areas was effective in controlling the disease as well as the vector.<sup>215</sup> However, they were not so effective in eradicating the disease or *A. maculatus* vectors.<sup>216</sup> These observations were made through the prolonged experimental study of three years by the Institute for Medical Research with support from the Colonial Development and Welfare Funds.<sup>217</sup>

It was noted that infants born in these areas were rapidly infected. Besides that, a very small number of *maculatus* were caught, indicating the need for more effective procedures.

<sup>215</sup> MED/PG/605, Rural District Council Province Wellesley Central, Perubatan dan Kesihatan Pulau Pinang, p. 20A.

<sup>216</sup> Dr. H.M.O. Lester, *Federation of Malaya: Annual Report of the Medical Department for the Year 1952*, p.9.

<sup>217</sup> This experimental study by the Institute ceased to exist by the end of 1952 and was continued further by the Government of Negeri Sembilan.

In such a scenario, “residual insecticides offer a valuable and certainly the most practical method of combating rural malaria carried by maculates” though the results of the application of that particular method in other countries rendered less hope of complete eradication of *maculatus* vectors.<sup>218</sup> There was difficulty applying anti-larval measures in kampongs because the houses were widely dispersed. Such housing plans also make it difficult for the systematic organisation of the distribution and supervision of anti-malarial drugs. Thus, the only effective and financially practical mode of controlling the fatal disease in the kampongs was the application of residual insecticides.<sup>219</sup>

Besides this, the effectiveness of these anti-malarial measures was dependent on the particular specie of Anopheles mosquito present in the area and the size of the population or the area, etc.<sup>220</sup> For example, experiments carried out in Negeri Sembilan, showed that in-house spraying of DDT or Gammexane reduces the prevalence of *A. maculatus* vectors within a fairly stable population, and significantly affects the existence of parasites and spleen rates. In fact after the spraying activity had been carried out for two consecutive years, there was a substantial decrease in parasite and spleen rates among children.<sup>221</sup>

These measures have certain restrictions. One most important restriction of residual insecticides was that they must be sprayed within a wide area. It is not economical to apply residual insecticides for only one house, while leaving the rest - a sheer waste of money and resources. Besides, the presence of DDT and BHC does not prevent Anopheles mosquitos from entering or biting. However, the pragmatic actions like the usage of DDT or Gammexane instead of anti-malaria oil in 1950 to 1954, were remarkable in addressing and curbing mosquito breeding.<sup>222</sup>

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<sup>218</sup> CO 927/142/5, Malaria: experiments in malaria control by DDT, Gammexane and Paludrine, 1949-1950, Colonial Office, p. 17.

<sup>219</sup> Malaria Advisory Board: Federation of Malaya, *Malaria Control by Modern Methods, Circular No. 7*. Kuala Lumpur, 1952.

<sup>220</sup> Ibid.

<sup>221</sup> CO 927/177/4, Colonial Medical Research Committee: malaria research; minutes of meetings, 1948-1950, Colonial Office, p. 13.

<sup>222</sup> *Penang: Past & Present, 1786-1963. A Historical Account of the City of George Town since 1786*, p. 69.

The Health Department of Pulau Pinang also adopted residual insecticidal measures whereby in Ayer Puteh, 246 houses and 1,010 inhabitants were exposed to residual insecticides on 15<sup>th</sup> January 1955.<sup>223</sup> The average expenditure per person was \$2.08. In places called Pulau Rimau and Muka Head, insecticides with DDT Kerosene were used because of the presence of *A. maculatus*.<sup>224</sup> DDT kerosene was also used in Jalan Titi Tras, Sungai Rusa, Sungai Pinang and Pantai Aceh because of the discovery of new breeding areas of vectors in those areas. The effectiveness in eradicating malaria of the Health Department and its health officers was demonstrated when they implemented these measures costing \$35,000, in 1955.<sup>225</sup>

For rural areas of the island, DDT spraying was considered the best way to control the malaria vectors.<sup>226</sup> Even though, in such places, residents prefer drugs over the spraying of insecticides, yet at the request of the authorities, DDT spraying was given the utmost importance, based on certain conditions, such as:

- Once initiated, this measure must continue until the complete eradication of the disease and not just controlling it or diminishing its prevalence.
- Costs must not be less than \$1.00 per head per year, for maintaining the efficiency in spraying.
- Complete spraying must be carried out in the entire districts to yield better results in minimising the effect of infected individuals and their vectors.<sup>227</sup>

However, the lack of efficient training and techniques regarding the spraying of insecticides had resulted in a lack of success with these anti-malaria measures. Political motives also hindered the yielding of effective results, as certain insecticidal spraying and

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<sup>223</sup> MED/PG/159/54, Malaria Control in S.W.D. District, Pejabat Daerah Barat Daya Pulau Pinang, p.22.

<sup>224</sup> CO 927/142/5, Malaya: experiments in malaria control by DDT, Gammexane and Paludrine, Colonial Office, p. 24.

<sup>225</sup> CO 859/216/3, Anti-malaria programme, Colonial Office, p. 12.

<sup>226</sup> Ibid. p.14.

<sup>227</sup> Malaria Advisory Board: Federation of Malaya, *Malaria Control by Modern Methods, Circular No. 7*, p. 8.

other preventive measures were undertaken only to satisfy the local politicians.<sup>228</sup> This matter can be witnessed by the following sentence of the Malaria Advisory Board in 1952.

“In one kampong, where DDT spraying was commenced, the spleen rate was known to be only one percent. Spraying was done to please and satisfy local politicians.”<sup>229</sup>

**Table 4.9** Presence of Blood Films among Pupils Tested, 1946

Number of pupils examined	417
Number of pupils having positive blood film	93

Source: RCP/MED/ 315/47, Annual Report of Medical & Health Department, 1946, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, 1947, p.16.

In 1946, the malarial survey was conducted in six rural schools and the results, seen in Table 4.9 above, showed a considerable parasite presence in 93 among 417 children.<sup>230</sup> After the turn of the decade, during the 1950s, the decreasing incidence of malaria and effective control of the disease can be credited to the new governmental measures.<sup>231</sup>

Widespread usage of prophylactic drugs and the increasing utilising of DDT, both as an in-house insecticide and as an anti-larval measure, had proved to be effective. This decreased the incidence of fatality by a considerable amount.<sup>232</sup> Lester reflects that the number of cases of malaria undergoing treatment in Government Hospitals reduced to 16,041, with 260 fatal cases in 1954, compared with 18,325 and 353 deaths in 1951.<sup>233</sup>

<sup>228</sup> MED/PG/341/52, Malaria Advisory Board. 1952, Kementerian Kesihatan Malaysia, p. 13.

<sup>229</sup> Ibid.

<sup>230</sup> Ibid.

<sup>231</sup> CO 927/142/5, Malaya: experiments in malaria control by DDT, Gammexane and Paludrine, Colonial Office, p. 4.

<sup>232</sup> CO 859/216/4, Anti-malaria programme, 1951, Colonial Office, p. 13.

<sup>233</sup> H.M.O. Lester, *Federation of Malaya: Annual report of the Medical Department for the Year 1952*, p. 7.

**Table 4.10** Incidents of Malaria in Bagan Jermal and Bagan Ajam, 1948

<b>Month</b>	<b>Number of cases</b>
January-April	25
May	9
June	2
July	1
August	None
September	None
October	None
November	None
December	None
<b>Total</b>	<b>37</b>

Source: RCP/MED/202/49, Annual report of the Medical and Health Department, Penang 1948, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p.5.

Table 4.10 above shows incidents of malaria reported in rural areas like Bagan Jermal and Bagan Ajam of Seberang Perai in 1948. It was observed that the cases of malaria in the rural districts recorded the highest in the month of January-April. Prevention measures, like the spraying of oil, sucking of water and destruction of breeding areas, were carried out in Bagan Jermal and Bagan Ajam.<sup>234</sup> As a result, these cases gradually decreased in the subsequent months. Then in the month of July, only one case was reported. After that, there was no more cases.<sup>235</sup> This was one success with the measures conducted by the authorities to eliminate malaria in Bagan Jermal and Bagan Ajam in 1948. Any occurrences of cases of malaria in any rural areas in Penang Island and Sebearang Perai were immediately addressed to eliminate malaria among the residents of those particular areas.<sup>236</sup>

Preventive measures in Pulau Pinang by the Health Department were directed towards both urban and rural districts simultaneously. Anti-malarial measures included in-

<sup>234</sup> RCP/MED/202/49, Annual report of the Medical and Health Department, Penang 1948, Resident Commissioner Penang, p.5.

<sup>235</sup> Ibid. p. 5 and. p.7. The report give details on problems of malaria and anti-malaria programme in Bagan Jermal and Bagan Ajam.

<sup>236</sup> Ibid.



house inspections and supervision by health officials and supervisors and even through impositions of fines. As for the campaign on anti-malaria awareness, projection of films was carried out to spread the knowledge of the disease and its causes and to teach the significance of the preventive methods.<sup>237</sup> As the reports from the Malaria Advisory Board of the Federation of Malaya in 1952 stated,

All methods of malaria control depend to some extent on the co-operation of individuals, the degree of co-operation required being least with anti-larval measures and greatest with drug of the control measures which ensure their freedom from malaria.<sup>238</sup>

In addition, the anti-malarial drainage system was also completed in Seberang Perai in 1948, which was provided also to the shops and houses of the village.<sup>239</sup> Simpang Ampat and Seberang Perai South also had their self-owned water supply system, consisting of pump, service tank and pipe line.<sup>240</sup> Other areas drew water from a separate reservoir and pipe line from neighbouring villages or towns. All these measures were supervised by the Public Works Department, which began its re-functioning after the reestablishment of power of the British authorities in 1946.<sup>241</sup>

Thus, prior to 1948, it is observed that anti-malarial control in rural areas witnessed a difficult and problematic situation. After 1948, research, experiments, and further studies had introduced modern drugs and residual insecticides, which improved the effectiveness of the control.<sup>242</sup> Besides such measures, arrangements were made for sewage disposal, water supply and building plans, so as to ensure complete control of the disease and eradication of the vectors.<sup>243</sup> By the 1950s, malaria was no longer considered the grave threat that it had been in the 19<sup>th</sup> and early 20<sup>th</sup> century. The substantial number of studies and investigations

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<sup>237</sup> Malaria Advisory Board: Federation of Malaya, *Malaria Control by Modern Methods*, Circular No. 7, p. 9.

<sup>238</sup> Ibid.

<sup>239</sup> CO 927/142/6, Colonial Medical Research Committee, in experiments in Rural Malaria Control in Malaya 1948-1950, Colonial Office, p.12 and p.13.

<sup>240</sup> Ibid. p.14.

<sup>241</sup> Ibid. p.15.

<sup>242</sup> CO 859/216/2, Anti-malaria programme, 1950, Colonial Office, p. 22.

<sup>243</sup> Ibid

had resulted in effective control of mosquitoes in regions like Tanjong Tokong, Tanjong Bungah, Batu Feringgi and Gelugor.<sup>244</sup>

**Table 4.11** Number of Malaria Cases and Deaths Reported in Pulau Pinang from 1901 to 1955

Year	Number of Malaria Cases reported	Death	Death Rate per-100 patients
1901	15, 653	3, 756	24%
1910	14, 545	2, 763	19%
1920	12, 556	1, 381	11%
1925	9, 562	669	7%
1930	8, 525	426	5%
1940	3, 556	161	4.5%
1946	6, 654	198	3%
1950	1, 123	33	3%
1955	756	19	2.5%

Source: RCP/MED/202/49, Annual report of the Medical and Health Department, Penang 1957, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p.17

From Table 4.11, we can conclude that the prevention and treatment of malaria in the years from 1900 to 1957 experienced great success. The anti-malaria efforts by the Institute of Medical Research, such as DDT and BHT Spraying, installation of anti-malaria drainage system, sub-soil, drainage, ditching and other prevention had proven to be successful. For instance, the death rate per-100 patients was 24% in 1901 but it was reduced to only 2.5% in 1955. In addition, we can also observe the number of cases being reduced from 15, 653 cases reported in 1901 to only 746 cases reported in 1955.

<sup>244</sup> MED/PG/341/52, Malaria Advisory Board, Kementerian Kesihatan Malaysia, p.18.

## Treatment and Hospitals for Malaria Patients

### Penang General Hospital

Dr. Albert Tan, a medical doctor at the General Hospital in Penang in 1954, mentioned in his medical review on malaria concerning the experience of his malaria patients. According to Dr. Tan, a typical form of malaria attack starts with a feeling of intensive chilliness followed by three hours or more of high temperature. This is followed by the sweating stage soon after when the patient feels well.<sup>245</sup> After an interval of 48 to 72 hours, depending on the type of malaria parasite, he gets another similar attack of fever. These attacks, if untreated, last for a few weeks (except for the occasional death) but the attacks start again after varying intervals of time. These relapses, as they are called, are generally less severe and of shorter duration than the initial attack and ultimately, that is within a year or two, the infection tends to die out.<sup>246</sup>

According to Dr. Tan, normally malaria attacks may assume a variety of different forms and simulate a host of other diseases. That is one reason why it is important to examine the blood to establish the correct diagnosis. In the very chronic stages it may be possible for a person to have malaria parasites in the blood and yet be able to go about his normal duties. He would, however, be able to serve as a source of infection for mosquitoes to transfer and therefore act as a reservoir of contagion.<sup>247</sup>

The close relationship between the Penang General Hospital and the Institute for Medical Research, Kuala Lumpur on clinical and treatment aspects of malaria has been invaluable with better treatment for malaria patients in Penang Island and Seberang Perai.<sup>248</sup>

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<sup>245</sup> MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, p.13.

<sup>246</sup> Ibid. 10 and p.9.

<sup>247</sup> Ibid. 12.

<sup>248</sup> MAB 19/31, Treatment of Malaria, Institut Penyelidikan Perubatan, p.18.

Below is some of the research and work from Institute for Medical Research that is beneficial to understand the treatment and cure in Penang General Hospital:

- In 1920, Dr. W. Fletcher published his work on quinine.
- Several IMR workers implement the correct dosage of drugs for the local population.
- Dr. J. W. Field and his colleagues proved the suppressive value of atebirin (or mepacrine) against malaria, which was also a boon to the allies during World War II.
- In 1948, Dr. J. W. Field introduced the rapid method of examining thick blood films for malaria parasite which was of great assistance to doctors treating fever cases.
- I. M. R workers showed the presence of the various strains of drug-resistant malaria parasites against paludrine and more recently against chloroquine in the country.<sup>249</sup>

#### Traditional Medicine

During 1954, Dr. R. Hoeppli had conducted interviews on population in the rural areas to find out about traditional treatment. Based on his report, he reported in the following paragraph some the treatment that was adopted for the cure,

Black pepper is pounded together with garlic to form a paste. This paste was applied to the big toe by wrapping with a piece of cloth. This is usually applied about an hour before the fever attacks. When cure is expected, the patient is given water in which a piece of hot iron had been dipped, mixed together with freshly pounded ginger. If the treatment is unsuccessful, then the patient is perceived to be under the influence of an evil spirit. Then exorcism is performed on the patient suffering from malaria.<sup>250</sup>

This was carried out in the private residence of chief of the kampong. Before treatment by exorcism is applied, usually a dukun, a person with knowledge of Malay medicine, may be consulted who may first use some drugs for treatment. If this gives no improvement, then simple magic may be tried. In this case a “temadu”, an idol of the spirit

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<sup>249</sup> Ibid.

<sup>250</sup> MED/PG/46/54, British Red Cross Society General, Perubatan dan Kesihatan Pulau Pinang, p.16.

perceived to cause the disease, is made from sago palm pith and placed near the sick person. Then a charm is chanted.<sup>251</sup> Then the dukun chewed betel-nut and lime and spat the paste on the idol believing that the spirit of the disease will be induced to enter the idol. The idol is left three days in the house and is later abandoned by the side of a river, in the jungle or elsewhere. If this simple magic treatment is unsuccessful, then exorcism may be performed.<sup>252</sup>

The theoretical basis of this kind of treatment is the assumption that disease is caused by spirits and that the medium Bayoh (spirit- or witch-doctor) is able with the help of a Tou (friendly spirit or spirits which are in an especially close relationship with the medium) to cause the spirit of the disease to leave the patient's body. The activities of the medium (Bayoh) called perbayoh or berbayoh consist of a comparatively simple ceremony known as "Mingat a Pedih" (to attend a sick person), or, if it fails, increasingly elaborate ceremonies called "Menurun Tou, (leading away the spirit), Beyuda or Bergudah and Aiyun or Peraian. The word aiyun means cradle and refers to the wooden seat of a swing on which the patient sits.<sup>253</sup>

Other treatments include the use of powder made from roots of particular trees and leaves. This powder was applied on the abdomen of the patient. Then a lime-fruit is pierced around the spleen area, which is then kept suspended over the kitchen fire, until it dries and shrinks.<sup>254</sup> Children were rubbed with Jadam (a specie of bitter aloe) and water on the skin and around the spleen area. These methods continued to be used to treat malaria<sup>255</sup> until 1900 and even after that.<sup>256</sup>

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<sup>251</sup> Ibid. p.15.

<sup>252</sup> Ibid. p.18.

<sup>253</sup> RCP/ MU/ 21/47, Community Halls in Rural Areas, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p.17.

<sup>254</sup> FD 1/7604, Minutes of malaria sub-committee: research unit in Malaya, Medical Research council, Colonial Office, p. 22.

<sup>255</sup> Malaria was not discovered in the island until 1900, thus often its causes were not properly diagnosed or recognized. The primary reason behind malaria was mosquito (special specie of them), came to the knowledge of the people at a very later period, after 1900, after which war against mosquitoes began.

<sup>256</sup> IMR 159/28, Malaria advisory Board Minutes April 12th 1928, Institut Penyelidikan Perubatan, p.27.

## Medication for Malaria

Quinine was the earliest known remedy for the treatment of malaria. It was first used for fever by the Peruvian Indians who made a concoction of the bark of the cinchona tree. Brought to Europe by Spanish Jesuit priests, the value of the cinchona bark was attested in the 18<sup>th</sup> Century by surgeons of the East Indian Company including James Lind who used it for treating malaria in Bengal in 1765.<sup>257</sup> The first comprehensive studies from the Institute for Medical Research on quinine treatment were made by Fletcher in 1919, who reported that, though the drug had been alleged to be ineffective in treating malaria in the army, he had found quinine fully successful when he personally administered it.<sup>258</sup>

But despite administration of the quinine medicine, the situation hardly improved. The number of people suffering from malaria and the side effects of the medicine or injection was increasing and, along with it, serious human fatality. Ched felt that the administration of Intramuscular Quinine injections was the main reason behind such a deteriorating situation.<sup>259</sup> The reason behind such a scenario, as Ched observed, was lack of experience on the part of the medical staff and their inability to comply strictly to the rules of administering the injection, as laid down by the senior medical practitioners of the hospitals. Despite having adequate numbers of staff which included Assistant Surgeons and dressers in the General hospitals under the government of Federated Malay States, it was reported that there were numerous cases of abscesses and necrosis of muscles that rendered the patients into a severe and critical condition.<sup>260</sup>

Later synthetic remedies were tried, the first of which was plasmoquine (pamaquine). This drug was tested at the Institute for Medical Research, Kuala Lumpur by Fletcher and Kanagarayer in 1927, who found that it was a good gametocytocidal agent but that it was

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<sup>257</sup> MAB 19 /31, Treatment of Malaria, Institut Penyelidikan Perubatan, p. 38.

<sup>258</sup> Ibid.

<sup>259</sup> IMR 79/21, A note on "Quinine Injections" by Dr. W. F.A.T Ched, Institut Penyelidikan Perubatan, p.24.

<sup>260</sup> Ibid.

only slightly effective as a schizonticide. Atebrin appeared on the market soon thereafter, and trials were carried out at the Institute for Medical Research, Kuala Lumpur by Green in 1931. The drug was as effective as quinine but in smaller doses and without the critical side effect, which was a form of psychosis manifesting as restlessness and excitement.<sup>261</sup>

During the Second World War proguanil was discovered in Britain, opening up new possibilities in malaria therapy since this was the first non-toxic gemetocide for *falciparum* malaria. It was also effective against the tissues forms of *P. falciparum* present in the liver during the incubation period. Experiments with this drug began in Malaya in 1946 and were funded by the Colonial Medical Research Committee.<sup>262</sup> Another drug of importance in malaria therapy was chloroquine, which had been produced in Germany before the war under the trade name Resochin. Experiments with chloroquine in Malaya, which began soon after World War Two were promising, although it did not fully meet the expectations of clinicians as being the ideal drug.<sup>263</sup>

The new drug Atebrin or American drug SB7618, discovered in 1931, was found to be a potent schizonticide. Experiments with this prophylactic were carried out at the Institute for Medical Research, Kuala Lumpur by Green in 1932 and Wallace in Kedah in 1933. Atebrin was also administered as an experimental observation to certain patients which proved to be an immediate, powerful and precise remedy of malaria and thereby assumed a significant position in the region.<sup>264</sup> In hospitals, patients who were treated with Atebrin, followed with proper meals on a regular basis and rest, had recovered, in certain cases, if administered over sufficient time. Such measures were taken to ensure that the infection of malaria did not relapse and the anti-malarial drug required a considerable amount of time to take effect, so as to increase the immunity of the patients.<sup>265</sup>

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<sup>261</sup>MED/PG/341/52, Malaria Advisory Board, Kementerian Kesihatan Malaysia, p.16.

<sup>262</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia. p.4.

<sup>263</sup> Ibid.

<sup>264</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.24.

<sup>265</sup> Ibid.

In 1946, Paludrine was discovered as a non-toxic gametocide and active schizonticide, but some malaria parasites had become resistant to it. However, the experiments carried out by Grantham on the tea estate of Kenya proved that 100 mg of the medicine weekly failed to render full protection to humans, although the experiments and research work carried out in Malaya, with support from Colonial Medical Research Council, seemed to prove otherwise.<sup>266</sup> Here, the dosage of Paludrine, ranging within 100-300 mg weekly, reflected a positive result on the people of mild infection or those who had suffered from malaria during the Japanese invasion then developed a residual immunity.<sup>267</sup>

Also, the drug imposed had certain limitations. Malaria can be successfully suppressed when there is adequate presence at high-level concentrations of these drugs in the blood, which is needed to destroy the parasites. This requires regular intake of these prescribed drugs.<sup>268</sup> Most of the average people, as per the annual report of the Institute of Medical Research, tend to forget the dosage. This irregularity of doses for weeks results in the progress of malaria, and a failure of the effectiveness of the drugs. Also, prolonged usage of the drugs has its side-effects.

Drugs such as, proguanil and chloroquine, possess an advantageous position, over mepacrine (a low-cost drug, generally used for the masses in the kampongs because of its low price tag). In general, its side effects include the occurrence of mepacrine dermatitis, or even mepacrine psychosis is a possibility. This creates a negative image on the usage of the drug, despite its low cost.<sup>269</sup>

Though the tests of suppressive drugs have not yielded desired results, it was noted that the administration of proguanil, mepacrine and chloroquine once a week to less immune Asian residents, have effectively repressed malaria, rapidly reducing rates of parasite content

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<sup>266</sup> CO 927/142/5, Malaya: experiments in malaria control by DDT, Gammexane and Paludrine, Colonial Office, p.3 and p.4.

<sup>267</sup>Ibid. p.5.

<sup>268</sup> CO 927/142/6, Malaya: Interim Report to the Colonial Insecticides, Fungicides and Herbicides committee, and the Colonial Medical Research Committee, in Experiments in Rural Malaria Control in Malaya 1948-1950, Colonial Office, p.28.

<sup>269</sup> Ibid.



and spleen, in such groups. In fact, administration of Chloroquine yielded better results than the other two in treating malaria.<sup>270</sup>

In fact, administration of Chloroquine yielded better results, when compared with the other two, in treating malaria. In addition to this, the management provided regular meals and appropriate rest to patients who were staying in the hospital and noted overall health of the patients, especially the economically downtrodden, who were less capable of taking good care of themselves.<sup>271</sup> Through several challenges, Pulau Pinang had developed efficient measures to curb the disease and to control its prevalence. It also successfully treated the victims and recorded a reduction of fatality rates.<sup>272</sup>

The 1948 annual report of the Pulau Pinang Medical and Health Department clarified that throughout Penang Island and Seberang Perai there were 5 government hospitals offering free treatment to malaria patients from 1900 to 1957. These hospitals were; General Hospital Penang, Perak Road Hospital, Butterworth Hospital, Bukit Mertajam Hospital, Sungai Bakap Hospital and Balik Pulau Hospital. Many patients who were detected with malaria parasites were sent for treatment at these Hospitals, after knowing that its cause and its cure had been discovered.<sup>273</sup> Table 4.11 shows the number of patients suffering from malaria at the government hospitals of various districts in Pulau Pinang:

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<sup>270</sup> C0 859/216/2, Anti-malaria programme 1950, Colonial Office, p. 23.

<sup>271</sup> C0 874/1093, Malaria Research, Colonial Office, p. 25.

<sup>272</sup> Ibid.

<sup>273</sup> RCP/MED/202/49, Annual report of the Medical and Health Department, Penang 1948, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 11A.

**Table 4.12** Patients with Positive Malaria Parasites Detected through Blood Film Examination in Various Districts Hospitals, 1948

HOSPITALS	NO. OF PATIENTS	NO. POSITIVE FROM MALARIA PARASITES				TOTAL NO. OF EXAMINATIONS OF BLOOD FILMS.
		<i>Sub-tertian</i>	<i>Benign tertian</i>	<i>Quartan</i>	<i>Mixed infection</i>	
<b>General Hosp.</b>	8476	141	115	14	8	8476
<b>Prison Hosp.</b>	72	-	5	1	-	79
<b>Quarantine Stn. Pulau Jerejak Hosp.</b>	39	-	3	-	-	60
<b>Butterworth</b>	1856	76	64	2	-	1856
<b>Bukit Mertajam</b>	1341	226	234	9	15	1341
<b>Sg. Bakap</b>	7622	1440	340	-	-	7622
<b>Pathological Laboratory</b>	-	5	12	-	-	41
<b>Balik Pulau</b>	1094	7	438	-	-	1094
<b>Total</b>	<b>20500</b>	<b>1895</b>	<b>1211</b>	<b>26</b>	<b>23</b>	<b>20569</b>

Source: RCP/MED/202/49, Annual report of the Medical and Health Department, Penang 1948, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 11A.

In Seberang Perai, Bukit Mertajam Hospital had received the higher number of cases when compared with Butterworth Hospital, Seberang Perai. According to the report by Bukit Mertajam Hospital, the reason is because there are so many abandoned areas and paddy-field areas in Bukit Mertajam that became breeding places for mosquitoes. In Table 4.13, the incidence of patients treated for malaria in Bukit Mertajam hospital is shown.<sup>274</sup>

<sup>274</sup>MED/PG/130, Annual Report 1951, Bukit Mertajam, Kementerian Kesihatan Malaysia, Arkib Negara, Kuala Lumpur, p. 9.

**Table 4.13** Total Number of Cases treated for Malaria in Bukit Mertajam Hospital, 1951

<b>Month</b>	<b>Number of malaria cases</b>
January	13
February	13
March	16
April	16
May	29
June	35
July	34
August	49
September	18
October	15
November	8
December	15
<b>Total</b>	<b>161</b>

Source: MED/PG/130, Annual Report 1951, Bukit Mertajam, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, 1951, p. 9.

During the 1920s, the Municipality of Pulau Pinang took over, from the Infectious Diseases Hospital, the role of creating awareness on the dangers of malaria through the broadcasting of films and anti-mosquito campaign.<sup>275</sup> At the Government hospitals, the authorities used Sinton's methods to tackle the malaria menace. After a certain period it was discovered that those methods were not practical under some circumstances or in some regions. As such, the existing Sinton's methods were amended to suit of the region and circumstances.<sup>276</sup> Certain drawbacks of Sinton's methods which were faced in the Government hospitals were:

- The methods proposed by Sinton were developed for a well-organised hospital but the hospitals of Pulau Pinang and Malaya were disorganised.
- 30 grains a day of Quinine, as prescribed in the methods was not possible for the hospital staff to follow, as most of the Indian patients, especially Bengalis, who are sincerely following the orders of the staff, could not consume that particular

<sup>275</sup> CO 859/216/2, Anti-malaria programme, Colonial Office, p.14.

<sup>276</sup> Institute of Medical Research, *Annual Report of the Institute for Medical Research: Federation of Malaya, 1931*, Kuala Lumpur, 1950, p. 27.

dosage. This was due to their low body weight as compared with their European counterparts and the consumption of 30 grains had caused symptoms of cinchonism.<sup>277</sup> Therefore the administration of the dosage was reduced to not more than 20 grains a day.

- The results from administration of a mixture of magnesium sulphate with quinine was drastic. This mixture could be taken only by a handful of Europeans. Indians, natives and most of the Europeans were unable to tolerate the dosage comfortably at all.<sup>278</sup>

Such drawbacks led the hospital authorities to modify Sinton's formulae of drug administration, which were different for Europeans and rest of the patients according to their tolerance. For Indian in-patients, a primary dosage of calomel along with saline purgative were administered before regular consumption of alkaline and quinine.<sup>279</sup>

## Conclusion

Malaria has been known as a life-threatening disease in Pulau Pinang, since the early 19<sup>th</sup> centuries. The year 1829 witnessed nearly one-third of the population in Penang die from this disease. Malaya, being worst hit by the epidemic of malaria, can aptly be honoured for being the first country across the globe to have successfully applied the knowledge of the mode of transmission of malaria to its control in 1898. But before summarising the effect of the disease in Pulau Pinang and Malaya and the preventive measures including the treatment adopted, the fatal disease itself has been summarised below.

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<sup>277</sup> Institute of Medical Research, *Annual Report of the Institute for Medical Research: Federation of Malaya, 1949*, Kuala Lumpur, 1950, p. 14.

<sup>278</sup> FD 1/4282, General Research: drug resistance in malaria, by Dr. Ann Bishop, Cambridge University, Medical Research Council, p. 11.

<sup>279</sup>FD 1/7599, Minutes of Meetings: research on malaria, Medical Research Council, p. 7.

Malaria, a life-threatening disease caused by the transmission of a one-cell parasite known as *plasmodium* through blood, by the *Anopheles* mosquito, traces its origin thousands of years back. The prevalence of Malaria has been found in the Orphic poems written nearly 3000 years ago, ancient Egyptian civilisation, in the Mediterranean, India through Charaka Samhita, Greece as accounted by Hippocrates and several other civilizations existing before Christ. All the ancient civilisations diagnosed the infectious disease through severe fever and stagnated water near swampy areas.

Prior to the discovery of the mosquito as the prime carrier of malaria, physiologists from ancient times referred to stagnated water, swamps, and decomposed organic matter as the culprits. However, it was the discovery by the Italian malarialogists, Grassi, Bignami, Bastianelli, Celli, Golgi and Marchiafava, in 1898 that the transmission of human malaria by mosquitos was confirmed. Cox has provided a detailed study of the lifecycle of the *Plasmodium* parasite, giving a useful insight into the development of the species within the human body, describing the natural human-mosquito-human process, comprising of five stages. Diagnosis of malaria in ancient times, prior to the 20<sup>th</sup> century, mainly involved the particular symptoms associated with fever. But in modern times, with the advent of various means and further research giving in-depth knowledge of the disease, blood film tests (traditional method) and microscopic tests were conducted.

Pulau Pinang, once healthy during the occupation in 1786, gradually became *malarious* and in 1829 nearly one-third of its population went into the clutches of malarial death. Preventive measures, undertaken at the end of the 19<sup>th</sup> and initial period on the 20<sup>th</sup> century, included drainage of water collected in lands and felling of trees in jungles. Anti-malarial works were focused in rural areas such as Tanjong Tokong, Ayer Itam, Sungai Gelugor, Balik Pulau, Bayan Lepas, Teluk Kumbar, Sungai Pinang, Teluk Bahang and Tanjung Bungah. Rural areas provided abundant labourers, who were supervised to destroy breeding areas present in abandoned regions, which were numerous during the early 20<sup>th</sup> century. But such measures did not help the authorities in dealing with mosquito breeding

and the spread of the disease for a longer period. This was due to the existence of a new breed of *Anopheles* mosquito- *A. maculatus*.

The Municipal Commissioners in 1906 recruited a Mosquito Brigade comprising of workers tasked with the eradication of mosquito breeding from all of Pulau Pinang. Though these measures responded well in eradicating mosquito breeding to quite an extent, the medicinal dosage failed to yield completely effective results. Besides, lack of uniform administration of the measures and lack of proper knowledge of the disease, owing to lesser research studies, contributed further to the failure of complete control of the situation.

During the 1920s, authorised personnel discovered that the reason behind the failure of the complete eradication of mosquitos was the continuance of the thriving of these vectors inside empty cans, tins, coconut shells and vases. Thus, by the mid-20s, baked clay pipes replaced the former due to their prolonged durability. Moreover, further measures, such as creating awareness among the inhabitants regarding cleanliness, were carried out. Pioneer work regarding anti-malarial and anti-larval measures was initiated in Malaya during the 1930s, following WW I. Hodgkin (1956) outlined the measures that were carried out by the colonial authority in the island, briefly describing the transmission of malaria there. Another report suggests that the anti-malarial measures undertaken during the 1930s were primarily diverted towards rural Malaya.

Anti-malarial work during the period of the Japanese invasion and occupation - overthrowing the British colonial authority- showed a significant negligence. Comparison of the measures with other years was also difficult, owing to the lack of records kept during this period. As a result of considerable neglect in controlling the epidemic and significant delay in adopting DDT in-house spraying as a general public health measure, owing to invasion and the subsequent emergency period, there were large numbers of people affected by malaria and many fatality cases.

After the re-occupation of the British authorities over the Malaya peninsula and the formation of the Malayan Union and eventually the Federation of Malaya, anti-malarial works gained a new impetus. Experiments such as the spraying of kerosene infused with 5% DDT were adopted in the initial stages of re-occupation and were carried on for a prolonged time. In the villages, anti-malarial drainage systems were introduced to the kampongs and villages as ways to create safe drinking water and bathing wells.

Investigative measures regarding anti-malarial control, involving the study of chemical prophylactics and suppressive drugs and the importance of residual spraying with insecticides, took place during 1940s and beyond. Owing to numerous research studies and investigations, to expand the knowledge about malaria and its vectors and regarding the environment which encourage them to thrive, the 1950s Federation of Malaya, including Penang, witnessed a considerable improvement in controlling the disease as well as the prevalence of the veritable *Anopheles* mosquito.

As per the report of the Institute of Medical Research in 1954, weekly surveys were carried out regularly by the staff in the village area, thereby ensuring no breeding of the vector species. Antimalarial measures in kampongs faced difficulty compared with cities and towns, because of the numerous abandoned areas serving as breeding places to the vectors. Later, under the supervision of Haji Abdul Ghani bin Mohammad, the senior health officer, these areas such as Jalan Titi Tras, were utilised for farming purposes (except paddy, so as to prevent mosquito reproduction). Besides this, several other measures were employed: sewage, water supply and building plans were reformed, as part of the controlling of mosquito prevalence. New villages were recognised and several hospitals and camps under the supervision of the Health department were setup to look after the victims and ensure effective treatment.

Hence, with such development and sincere effort on the part of the Colonial authorities along with the Health Department, Institute for Medical Research and individuals, help was available to tackle the grave problem of malaria. Over the years, both the government and private individuals achieved success in eradicating the malaria menace and in controlling mosquito breeding, both from rural and urban regions. There were failures to address the same for various reasons, such as the negligence on the part of the officials, less awareness among residents about the disease and cleanliness, cost-effective measures and fund crises, the Japanese invasion and occupation in 1940, etc., but continuous research and deliberate actions aiming to control the malaria epidemic bore fruit during the latter part of 1950s.

Medication in Pulau Pinang and that of the whole of Malaya Peninsula generally involved scientific measures, such as drugs and injections, but in rural areas, where there was lack of scientific knowledge— people usually believing in natural medications and sometimes scientific ignorance led them to rely on blind faith, without any recognition of the actual facts. These methods continued to be used to treat malaria until 1900 and even after that, despite Government measures being undertaken.

The advent of the whole Federation of Malaya, as a leader in the investigation and anti-malarial measures during the 1950s, had a considerable effect on the controlling of the prevalence of the malaria vector, which in turn decreased the cases of malaria in the region. Besides anti-malarial medication, general management systems were also implemented by the Medical Authorities of Pulau Pinang, Federation of Malaya. The incidence of malaria recorded over the years showed a diminishing event, especially in the last few years of the period under consideration, when the work on anti-malarial measures rose immensely.

Besides, the associate management of hospitalised patients through the provision of regular meals and appropriate rest during the ongoing treatment, and for a certain period after



that, had also resulted in an improvement in the health of the patients, especially the economically downtrodden, who were less capable of taking good care of them-selves. Despite several challenges, Pulau Pinang developed efficiently in curbing the disease and controlling its prevalence and treating the victims effectively, thereby reducing the fatality rates.

University of Malaya

## CHAPTER 5

### HISTORY OF TUBERCULOSIS IN PULAU PINANG, 1900-1957

#### Introduction

The research in this chapter will focus on the history of tuberculosis in Pulau Pinang during British Colonial Administration from 1900 to 1957. The first part will focus on the historical background of the disease, the nature of the disease, and tuberculosis problems involving cases in Penang Island and Seberang Perai. The rise of tuberculosis in Pulau Pinang was attributed to the rise of slum dwellers and poor dwelling systems, caused by the difficulty each single family experienced in paying rent for a house. As a result, more and more people shared - living in one house, or lived in the slum areas. That space become more crowded, the level of sanitation dropped, and tuberculosis, being an airborne disease, was easily spread.

The second part of this chapter will focus on the role of non-profit organisations, the importance of the B.C.G. campaign and vaccinations and the significance of modern technology from the West such as X-rays. Non-profit organisations such as the Malayan Association for the Prevention of Tuberculosis, the Penang and Province Wellesley Association for the Prevention of Tuberculosis, the British Red Cross, the Turf Club, the Women's Service League and the Young Women's Christian Association (YWCA) played an important role in the prevention, treatment and reduction of tuberculosis cases in Penang Island and Seberang Perai. For example, the British Red Cross, along with the YWCA visited tuberculosis patients at their homes to determine early cases in order to discourage the disease from spreading further to other regions and patients. Finally, the research on this second section will continue to focus on the significance of western technology such as X-rays. As well as this, it will consider in more detail the inoculation of Bacillus Calmette-Guérin (BCG) among infants and school children in Penang Island and Seberang Perai.

In the final section of this chapter, the research will focus on the treatment and its challenges faced by government hospitals as well as safeguarding the welfare and well-being of the patients. This section will also have an emphasis on modern treatment facilities, and on the techniques applied in government hospitals such as the Penang General Hospital and Pulau Jerejak Tuberculosis Hospital. In addition, we will see the importance of separation and isolation of tuberculosis patients in Pulau Jerejak Tuberculosis Hospital, which had shown great success containing the spread of tuberculosis in Penang Island and Seberang Perai. However, there were challenges faced by government hospitals due to the lack of accommodation and hospital beds, which kept tuberculosis patients on the waiting list for weeks before being admitted to government hospitals to get their treatment.

## Historical Background of Tuberculosis

### Origin of the Disease

Until recently, the origin of *Mycobacterium tuberculosis*<sup>1</sup> was hidden somewhere in antiquity. The pathogen<sup>2</sup> was suspected to metamorphose together with human evolution.<sup>3</sup> However, modern studies reveal that the tuberculosis progenitor existed earlier than the origin of the modern human being, since the origin of *Mycobacterium prototuberculosis*<sup>4</sup> goes back 300,000 years, and humans only 200,000 years.<sup>5</sup> This *Mycobacterium prototuberculosis* along with the 'smooth tubercle bacilli' known as the *Mycobacterium Canettii* have now been traced to have originated from the Horn of Africa.<sup>6</sup> This brought scholars to the conclusion that 'tuberculosis' and its pathogen 'mycobacterium' originated in Africa. However, the evidence of tuberculosis in a not fully formed modern human has been

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<sup>1</sup> *Mycobacterium tuberculosis* is an obligate pathogenic bacterial species in the family Mycobacteriaceae and the causative agent of tuberculosis.

<sup>2</sup> A bacterium, virus, or other microorganism that can cause disease.

<sup>3</sup> Helen Bynum, *Spitting Blood: The History of Tuberculosis*, England: Oxford University Press, 2012, p.23.

<sup>4</sup> *Mycobacterium* is the single genus in the family Mycobacteriaceae, which belongs to the order Actinomycetales and the phylum Actinobacteria. This genus is divided into two main groups, including slowly and rapidly growing species, respectively. The tubercle bacillus, *Mycobacterium tuberculosis*, is the prototype of the first group

<sup>5</sup> Thomas Dormandy, *The White Death: A History of Tuberculosis*, London: Hambleton Press, 2000, p.31.

<sup>6</sup> *Ibid.* p.29.

found in a 500,000 year old *Homo erectus* fossil in Turkey.<sup>7</sup> Due to low density of host population, the transmission of tuberculosis at this time was slower, and a pathogen may find its host many decades later, after the first infection. The spread of host-pathogens became faster some 50,000 years ago when vast numbers of humans migrated from Africa to other parts of the world.<sup>8</sup>

In recent years, research showed that the best proof of the existence of tuberculosis in the modern human form came from an eight year old Inca mummy who lived in 700 AD.<sup>9</sup> For this case, "the radiographic picture of the lumbar spine showed evidence of Pott's disease, and the smears of the lesion revealed acid-fast bacilli".<sup>10</sup> Tubercle bacilli are known for remaining in viable form for many years in the tissues of human beings. Archaeological study attests that tuberculosis is an ancient disease that has plagued humans for years, and further research is expected to shed more light on these activities.<sup>11</sup>

The cause or pathogen of the rampant disease *Mycobacterium tuberculosis* was discovered by Robert Koch in 1882.<sup>12</sup> Koch was then working as a government advisor in the 1880s with the Imperial Health Department in Berlin whilst conducting his research into tuberculosis. This had eventually led to the discovery of the pathogens of the disease.<sup>13</sup> Prior to this discovery in 1882, tuberculosis was regarded as an inherited disease. After his discovery of the causative agent known as the *Mycobacterium tuberculosis*, an acid-fast bacillus, the perception about the disease changed.<sup>14</sup> In Robert Koch's own words, his research exposed the existence of "a foreign parasitic structure in the body which can possibly be indicted as the causal agent. This proof was possible through a certain staining procedure which has allowed the discovery of characteristic, although previously undescribed,

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<sup>7</sup> Christian W. McMillen, *Discovering Tuberculosis: A Global History, 1900 to the Present*, Yale: Yale University Press, 2015, p. 39.

<sup>8</sup> Ibid. p.40.

<sup>9</sup> Ibid. p. 81

<sup>10</sup> Ibid. p. 82.

<sup>11</sup> CO 859/210/5, Tuberculosis, National Achieves UK, 1951, p.8.

<sup>12</sup> Christian W. McMillen, *Discovering Tuberculosis: A Global History, 1900 to the Present*, p. 39.

<sup>13</sup> Thomas Goetz, *The Remedy: Robert Koch, Arthur Conan Doyle, and the Quest to Cure Tuberculosis*. London: Penguin Publishing Group, 2014, p.17.

<sup>14</sup> Saurabh Shrivastava, *Tuberculosis Control: An Indian Perspective*, New Delhi: SM Online Publishers LLC, 2014, .p.26.

bacteria.<sup>15</sup> Infection with *Mycobacterium tuberculosis* can range from latent bacilli that remain dormant or it can become infectious.<sup>16</sup> The American Thoracic Society had formed classification for tuberculosis which is illustrated in Table 5.1

**Table 5.1** Classification of the Disease: American Thoracic Society Classification System for Tuberculosis, 1956

Classification	Description
TB0	No exposure, no infection
TB1	Exposed to tuberculosis, infection status unknown
TB2	Latent infection, no disease (positive PPD tuberculosis)
TB3	Active tuberculosis
TB4	Inactive tuberculosis, healed or adequately treated
TB5	Possible tuberculosis, status unknown ('rule out' tuberculosis)

Source: CO 927/284, Tuberculosis research in Malaya, Colonial Office, The National Archives, UK, 1956, p.19.

Based on the above table 5.1, person who had not been exposed to the disease and not infected by the disease are categorised under TB0. Patients who had been infected by the diseases will be categorised from TB1 to TB4 depending on the severity of the infection.<sup>17</sup>

#### Understanding the Disease

It is seen that SouthEast Asia and the Western Pacific Region (including Pulau Pinang and the Malay Peninsula) show high rates of tuberculosis infection from 1900 to 1957. There are many reasons why the Malay Peninsula, including Pulau Pinang, is prone to tuberculosis. One important aspect is that the country's tropical climate hastens the spread of the disease.<sup>18</sup> Local climate conditions are inimical to tuberculosis when expelled from the human host. If infected sputum is kept in the dark at a temperature of 75 degree Fahrenheit, virulence will

<sup>15</sup> FD 1/6756, Treatment for tuberculosis, The National Archives UK, 1947, p. 19.

<sup>16</sup>Ibid. p.20.

<sup>17</sup> CO 927/284, Tuberculosis research in Malaya, Colonial Office, p.19.

<sup>18</sup> Christian W. McMillen, *Discovering Tuberculosis: A Global History, 1900 to the Present*, p. 74.

be maintained for about a year, but at a temperature of 85 degree Fahrenheit, the material loses virulence after a period of two to three months.<sup>19</sup>

Humidity has little effect on virulence; sunlight, on the other hand, is lethal in less than half an hour. The Malayan climate is an equitable one, of moderately high temperature and relative humidity. Such conditions result in a physiological relaxation of mucosa of the respiratory tract and a diminution in vase motor tone.<sup>20</sup> A dry climate, with wider daily and seasonal temperature variation, will be more stimulating to the young person, provided the person is healthy, circulation is good, and debility from toxæmia is not marked. When a deficiency in health is encountered, however, tuberculosis is more easily contracted.<sup>21</sup>

Another reason for the prevalence of tuberculosis in Pulau Pinang in 1900 to 1957 is the primitive lack of sanitation, overcrowded housings, and poor ventilated living. In order to treat disease like tuberculosis caused by sanitation problems, the British tried the 'slum clearance scheme' from 1920s onward.<sup>22</sup> Since the changes were few it failed to make a huge impact. In fact, slum clearance that aimed to improve the housing system and dwelling and to curb the spread of diseases failed to meet its objective in Pulau Pinang.<sup>23</sup>

The World Health Organization defined pulmonary tuberculosis as "a patient with tuberculosis disease involving the lung parenchyma";<sup>24</sup> while extrapulmonary tuberculosis was defined as "a patient with tuberculosis of organs other than the lungs (e.g. pleura, lymph nodes, abdomen genitourinary tract, skin, joints and bones, meninges)". Both of these types of tuberculosis carry their own distinctive symptoms. However, in the initial stages, the signs of contracting tuberculosis may remain the same.<sup>25</sup>

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<sup>19</sup>Lenore Manderson, *Sickness and the State: Health and Illness in Colonial Malaya, 1870-1940*, London: Cambridge University Press, 2002, p. 43. and p.47.

<sup>20</sup> Ibid.

<sup>21</sup> CO 927/284, Tuberculosis research in Malaya, National Achieves UK, 1953, p.4.

<sup>22</sup> Lenore Manderson, *Sickness and the State: Health and Illness in Colonial Malaya, 1870-1940*, p.21.

<sup>23</sup> *The Malay Mail*, 16<sup>th</sup> September, 1932, p.2.

<sup>24</sup> FD1/4559, Committee on tuberculosis in war-time: Scottish sub-committee research, the National Achieves, UK, 1947, p.18.

<sup>25</sup> FD 1/4566, Tuberculosis: UK distribution of both human and bovine types of tubercle bacilli; non-pulmonary tuberculosis, Medical Research Council, The National Achieves, UK, 1947, p.5.

There are many clinical and laboratory techniques that can detect tuberculosis quickly. Having said that, there are various methods through which these techniques are carried out based on the appearance of certain signs and symptoms.<sup>26</sup> The signs which cause a suspicion of tuberculosis, that require testing are: unexplained weight loss, loss of appetite, night sweats, fever, fatigue or weakness, coughing for more than three weeks, coughing green sputum, coughing blood, shortness of breath, chest pain, low grade fever and chill etc.<sup>27</sup> When a person shows some or all of these signs, then a complete medical examination would be conducted on that patient. A background study of the patient's country of origin, ethnicity, and the presence of other medical conditions can help determine whether the patient has tuberculosis.<sup>28</sup> Based on the life cycle of the bacteria, it can be reasoned that there may be several months' gap from when the disease was contracted until the disease has developed physically in the body, in the case of pulmonary tuberculosis. For extrapulmonary tuberculosis, the manifestation of the disease may take longer period.<sup>29</sup>

Initially the patient will suffer from a dry cough which would later develop into sputum and into haemoptysis (blood in sputum).<sup>30</sup> Sputum is generally yellow in colour, but it is neither malodorous nor thick. When haemoptysis occurs, it must be treated since tuberculosis patients have a tendency to develop bronchiectasis or residual cavities that attack the blood vessels and air passages. In advanced tuberculosis, there can be bloody sputum whereby massive blood release can lead to shock, asphyxia (air blockage and lack of oxygen), and death.<sup>31</sup> Although chest pain is not prominent in pulmonary tuberculosis, repeated coughing may cause chest-musculoskeletal pain. Also pulmonary patients experience significant loss of appetite, fatigue, weakness and weight loss or cachexia (or weakness and wasting away of body and strength).<sup>32</sup>

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<sup>26</sup> FD 1/4571, Tuberculosis: British report, Medical Research Council, The National Archives, UK, 1948, p. 3.

<sup>27</sup> *The Straits Times*, 15<sup>th</sup> March, 1947, p.14.

<sup>28</sup> CO 825/84/3, Visit to South East Asia: Professor Heaf, Adviser on Tuberculosis to Colonial Office and Ministry of Health, Colonial Office, The National Archives UK, 1951, p. 11.

<sup>29</sup> Ibid.

<sup>30</sup> MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, , Arkib Negara Malaysia, Kuala Lumpur, p.12.

<sup>31</sup> Ibid.

<sup>32</sup> CO 927/284, Tuberculosis research in Malaya, Colonial Office, The National Archives, UK, 1951, p.9.

Other mild symptoms also include irritability, depression and headache. By 1932, reports showed that pulmonary tuberculosis became one of the major predicaments in Pulau Pinang.<sup>33</sup> Over the years, space became more crowded, causing poor ventilation and increased sanitation issues. These factors encouraged the spread of airborne diseases like tuberculosis and death from tuberculosis increased.<sup>34</sup> By 1940, tuberculosis was contributing to more than 25% of the death toll in Pulau Pinang. By the time the colonialism closed, pulmonary tuberculosis was considered to be the most serious disease in Malay Peninsula.<sup>35</sup>

As for patients who suffer from extrapulmonary tuberculosis which affects many parts of the body, there are a wide range of symptoms. Some of these symptoms are not specific and some symptoms are difficult to diagnose during the early stages.<sup>36</sup> Also, extrapulmonary tuberculosis may infect a single organ or it may infect many organs. The infection of other organs besides the lungs starts from "*lungs, the primary site of inoculation, by lymphatic and haematogenous routes, to the pleura, lymph nodes, kidneys, and other genitourinary organs, bone, and central nervous system*".<sup>37</sup> In extrapulmonary tuberculosis, the following organs are affected most of the time as portrayed in Table 5.2. It shows that the most commonly affected sites of extrapulmonary tuberculosis were lymphatics and then followed by pleura.

**Table 5. 2** Common Sites of Extrapulmonary Tuberculosis, 1954

Site	Percentage Extrapulmonary Cases
Pleura	20-25
Lymphatics	20-40
Genitourinary	5-18
Bone/Joint	10
Central Nervous System	5-7
Abdominal	4
Disseminated	7-11

Source: CO 859/216/1, Anti-tuberculosis programme, Colonial Office, The National Archives, UK, 1954, p.16.

<sup>33</sup> RCP/MED/ 315/47, Annual Report of Medical & Health Department, 1946, p.2.

<sup>34</sup> Ibid. p.3.

<sup>35</sup> CO 859/210/5, Tuberculosis, Colonial Office, p. 12.

<sup>36</sup> FD 1/354, Tuberculosis: chemotherapy, Medical Research Council, p. 17.

<sup>37</sup> Thomas Dormandy, *The White Death: A History of Tuberculosis*, London: Hambledon Press, 2000, p.41.



Patients with the pleura type have tuberculosis in the membrane around the lungs. The symptoms for pleura extrapulmonary tuberculosis include prolonged coughs, chest pain, fever, night sweats, and cachexia (or weakness and wasting away of body and strength). Lymphatic extrapulmonary tuberculosis occurs in various parts of the body, but occurrence of this disease is very common in the cervical or supraclavicular chains.<sup>38</sup> Symptoms of lymphatic tuberculosis are limited to swelling of lymph nodes. Genitourinary extrapulmonary tuberculosis occurs in the kidneys, prostate gland, endometrial area (lining of uterus or womb) and epididymis (tube connecting the testicle to male reproductive organ).<sup>39</sup> Symptoms often include urinary tract disorders in both men and women. In women, genitourinary tuberculosis often leads to uterus infection; while for men it causes prostatitis and epididymitis.<sup>40</sup>

Extrapulmonary tuberculosis in the bones and joints is also common.<sup>41</sup> Often known as the Pott's disease, the symptoms include back pain, collapse of vertebrae, and paraspinal abscesses (related to disk). The discovery of the frozen 700 AD Inca mummy that was suffering from an illness similar to tuberculosis was such example of Pott's disease.<sup>42</sup> Other extrapulmonary tuberculosis attacks are of the nervous system, abdomen, and other disseminated hematogenous. The sufferers experienced the same symptoms of coughs, fever, abdominal pain, night sweats, etc. that are deadly in the long run. The end of colonialism saw the rising number of extrapulmonary tuberculosis cases in Pulau Pinang.<sup>43</sup>

In both pulmonary tuberculosis and extra-pulmonary tuberculosis, it is perceived that the main cause was *Mycobacterium* or the pathogen bacteria entering the lungs.<sup>44</sup> In pulmonary tuberculosis, the lungs virtually always remain as the portal for the pathogen to enter the body. The pathogen bacilli are released by pulmonary patient into the atmosphere

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<sup>38</sup> IMR 254/ 27, Tuberculosis Investigation, Institut Penyelidikan Perubatan, Arkib Negara Malaysia, Kuala Lumpur, 1956, p. 3.

<sup>39</sup> Ibid.

<sup>40</sup> Thomas Dormandy, *The White Death: A History of Tuberculosis*, p.39.

<sup>41</sup> Ibid. p.18.

<sup>42</sup> Helen Bynum, *Spitting Blood: The History of Tuberculosis*, p.29.

<sup>43</sup> FD 1/4574, Tuberculosis, Medical Research Council, p.29.

<sup>44</sup> CO 825/84/3, Visit to South East Asia: Professor Heaf, Adviser on Tuberculosis to Colonial Office and Ministry of Health, Colonial Office, The National Archives UK, 1951, p. 22.

through aerosolisation of pulmonary secretion through coughing, sneezing, singing, and even speaking.<sup>45</sup> Aerosol droplets dry quickly, and it leaves the nuclei of bacilli residue suspended in the air for as much as several hours. Transmission occurs when other human inhales droplet nuclei containing tuberculosis bacteria. The strength of the pathogen bacilli depends on the expulsive force of the cough and the presence of cavitation in the lungs.<sup>46</sup>

Tuberculosis has always been a disease which is difficult to diagnose unless the disease is in its advanced stage. Tuberculosis is also known to be a cunning disease. In its initial stage, it starts off harmless with minor symptoms such as cold and cough that resembles a common cold.<sup>47</sup> However, the cough eventually becomes malevolent, growing stronger and more painful. Then the cough starts to extract blood with each spasm. This is followed by loss of appetite, fatigue, dullness, lethargy, and loss of energy. The body will gradually wither from within the patient, who finally succumbs to the disease. If tuberculosis becomes latent or if the immune system can build a defensive system or the patient takes care of his health at an early stage of tuberculosis, then it is likely for the patient to not develop complications in the long run.<sup>48</sup>

However, when the patient is left untreated at an early stage, tuberculosis can lead to several complications. In pulmonary tuberculosis, lung infection often leads to bronchitis, epituberculosis, and enlarged hilar lymph nodes.<sup>49</sup> Haematogenous spread of bacilli via circulating blood is the other serious complication that comes out from pulmonary tuberculosis. This can lead to miliary tuberculosis and tuberculosis meningitis. For children, this is far more complex and could often leads to fatality.<sup>50</sup>

However, there was a fall in death rates which was very obvious after the Second World War that it was due to the use of many modern treatments in hospitals in Penang Island

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<sup>45</sup> Ibid. p.24.

<sup>46</sup> CO 927/284, Tuberculosis research in Malaya, Colonial Office, p. 12 and p.13.

<sup>47</sup> Christian W. McMillen, *Discovering Tuberculosis: A Global History, 1900 to the Present*, p.151 and p.162.

<sup>48</sup> Ibid. 166.

<sup>49</sup> Lee B. Reichman and Earl S. Hershfield, *Tuberculosis: A Comprehensive International Approach*, Second Edition. New York: CRC Press, 2000, p. 59.

<sup>50</sup> Lloyd N. Friedman, *Tuberculosis: Current Concepts and Treatment, Second Edition*, New York: Taylor & Francis, 2000, p.33.

and Seberang Perai. Even though the population was increasing steadily in the Federation of Malaya from 1947 until 1957, it was observed that there was a steady decline in the death rate from tuberculosis. On the other hand, the incidence of new cases was on the rise. This was largely because cases were discovered earlier and modern treatment was much more effective in treating the disease.<sup>51</sup>

In 1929, there were about 1,144 of tuberculosis cases which were treated in the hospitals of Penang Island and Seberang Perai. Out of these, 323 patients succumbed to the disease.<sup>52</sup> The number of patients in the advanced stage of the disease seeking for treatment at the hospital was still very large, while those who are in the early stages were less likely to seek treatment. It is unfortunate that little could be done for these advanced cases. However, every patient was carefully examined and artificial pneumothorax treatment given when possible.<sup>53</sup>

Penang Island and Seberang Perai showed an improvement in reduction of tuberculosis or other infectious diseases after the 'slum clearance scheme'. In 1932, pulmonary tuberculosis continued to pose as one of the chief problems for preventive and curative measures in this country.<sup>54</sup> In 1938, reports from Penang said that slum dwellers and poor dwelling systems continued to increase every year in this region. One reason was that it was difficult for each single family to pay the rent for a house. As a result, more and more people shared to live in one house or live in the slum areas. That space became more crowded, insanitation increased, and airborne diseases like tuberculosis became more common and easily spreadable.<sup>55</sup>

The file from the Resident Commissioner, Pulau Pinang municipal, reports of 1938 show that out of 599 licensed houses, "72 were overcrowded by at least ten percent, eight by

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<sup>51</sup> CO 927/86/5, Malaya: tuberculosis survey, Colonial Office, p.8.

<sup>52</sup>RCP/MED/202/49, Annual report of the Medical and Health Department, Penang 1948, Resident Commissioner Penang, p. 6.

<sup>53</sup> Ibid.

<sup>54</sup> FD 1/4551, Committee on tuberculosis in war-time: including report of mass radiography Unit, Medical Research Council, The National Achieves, UK, 1953, p.10.

<sup>55</sup> Lenore Manderson, *Sickness and the State: Health and Illness in Colonial Malaya, 1870-1940*, p.43.

more than 100 percent and one by more than least ten percent".<sup>56</sup> Death from tuberculosis tremendously increased because of the resultant insanitary living. By 1940, tuberculosis was causing more than 25% of the death rate in Penang Island and Seberang Perai. After the Second World War, housing related infections continued to be the main issue in Penang. The colonialism period in Malaya, especially after 1946, saw tuberculosis as the biggest killer in the region. For the next 15 years, tuberculosis continued to be the biggest killer in the country.<sup>57</sup>

However, there was a fall in death that was obvious after the Second World War due to the use of many modern treatments in hospitals of Penang Island and Seberang Perai. Even though the population was increasing steadily in Penang Island and Seberang Perai from 1947 until 1957, it could be observed that there was a steady decline in death rate from tuberculosis. On the other hand, the incidence of new cases was on the rise.<sup>58</sup> This was largely because cases were discovered earlier and modern treatment was much more effective in treating the disease. There was a general improvement in the health conditions of tuberculosis patients. Death rate can be regarded as the index of the extent and severity of tuberculosis in the Federation of Malaya. The results of surveys by the new clinical and radiology examination also help in the assessment of the extent of the disease.<sup>59</sup>

Most Chinese believed that anxiety was one of the major causes of the disease, and perceived that absolute freedom from worry was necessary to affect a cure. In the *Straits Echo & Times of Malaya*, on March 15, 1947, on the issues of tuberculosis patient's suicide with the title "Patients in Tuberculosis Ward". It stated, "*Sir – It is not strange to see another tuberculosis patient has committed suicide in the tuberculosis ward*<sup>60</sup>. *The mere fact is they are not being looked after at all and such patients should be given more care and attention.*

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<sup>56</sup> Ibid. p.31.

<sup>57</sup> FD 1/355, Tuberculosis: general correspondence; reports; Midhurst Sanatorium trials, Medical Research Council, The National Archives UK, 1953, p.13.

<sup>58</sup> SUK451/1124, Annual Report Settlement of Penang, 1951, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p.31.

<sup>59</sup> A.A. Cameron, *Federation of Malay Report of the Medical Department for the Year 1957*, Kuala Lumpur: Government Press, Kuala Lumpur, 1957, p.17.

<sup>60</sup> According to a report tuberculosis the Public Relations officer Penang, the Patient who committed suicide was Lee Hong Lim, age 30.

*If more care and action is taken to such patients no such thing will happen.*<sup>61</sup> There were more cases of attempted suicide, and a special team of staff members were appointed to deal with this issue.<sup>62</sup>

To curb the problems of tuberculosis in Malaya, the Tuberculosis Advisory Board (including Pulau Pinang), was formed in 1947. The Tuberculosis Advisory Board comprised both medical representatives and members from all sections of the public. There was also a voluntary unofficial Association for the Prevention of Tuberculosis which had branches or affiliated societies in every State and Settlement.<sup>63</sup> Its membership was expanded in 1948, and meetings were held twice a year.<sup>64</sup> They worked towards bringing improvements for tuberculosis treatment in the country. Table 5.3 below illustrates the Membership of Tuberculosis Advisory Board.

**Table 5.3** Memberships of Tuberculosis Advisory Board, 1947

Director, Medical Services, Federation of Malaya – (Chairman)
Ten members – one from each State or Settlement. (Kedah and Perlis sending one representative)
Four members from the Federal Legislative Council appointed by the High Commissioner
One member nominated by the Rotary Clubs.
One member nominated by the Central Welfare Council
Four medical members – one nominated by the British Medical Association (Malaya Branch), one member nominated by the Alumni Association of the College of Medicine, and two medical officers in the public service.
Three Department Officers representing, Education, Public Relations and Welfare

Source: Struthers, E.A, *Federation of Malaya, Annual Report for the Medical Department for the year of 1951*, Kuala Lumpur, 1951, p.29.

In addition, there were also medical measures conducted by the government and various voluntary associations. These measures comprised various treatments which were given to patients during that period, including streptomycin, Purified Protein Derivative, isoniazid, paraaminosalicylic acid, X-ray radiography and chemotherapy. A vigorous

<sup>61</sup> RCP/ PUB/ 519/ 47, Reports on patients in T. B Ward, Penang, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 1A.

<sup>62</sup> Ibid.

<sup>63</sup> *The Straits Times*, 13<sup>th</sup> March, 1948, p. 16.

<sup>64</sup> Struthers, E.A, *Federation of Malaya: Report of the Medical Development for the Year 1950*, Kuala Lumpur: Government Printers, 1953, p. 14.

*Bacillus Calmette–Guérin* (BCG) inoculation campaign began in 1951 and continues to the present day. The end of colonialism saw the country introducing the National Tuberculosis Control Programme in 1961.<sup>65</sup>

### **The Role of Non-Profit Organisation**

The Malayan Association for the Prevention of Tuberculosis (MAPTB)

As the government could not provide sufficient effective action to deal with the increasing rate of tuberculosis, there were non-government organisations and civic-minded community leaders who had initiated measures to improve the health conditions of the people.<sup>66</sup> One of the organisation was the Malayan Association for the Prevention of Tuberculosis (MAPTB), which was formed on 27th June 1948 and was responsible for launching an anti-tuberculosis movement in the Federation of Malaya.<sup>67</sup> The areas in which this Association gave assistance from its formation till 1957 included:

- i. The provision of more beds for tuberculosis patients.
- ii. The provision of diagnostic centres for tuberculosis; it was considered an urgent necessity to have more X-ray facilities in all chest clinics and hospitals.
- iii. Construction of isolated tuberculosis hospitals for tuberculosis patients who were suffering from chronic ailments, beyond curability. This allowed for more beds in other clinics and hospitals for use by those who are at a curability stage.<sup>68</sup>
- iv. Construction of sheltered workshops for those patients who have chronic infections.

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<sup>65</sup> IMR 254/ 27, Tuberculosis Investigation, Institut Penyelidikan Perubatan, Arkib Negara Malaysia, Kuala Lumpur, p.19 and p.21.

<sup>66</sup> 248/PTI, Tuberculosis- The Penang's Province Wellesley Association for the Prevention of Tuberculosis, Pejabat Penerangan Pulau Pinang, Arkib Negara Malaysia, Cawangan Pulau Pinang, p. 4A.

<sup>67</sup> Ibid.p.5.

<sup>68</sup> Ibid.p.6

- v. Providing an allowance for treatment to the poor and the more needy tuberculosis patients in order to ensure that the patients could be given the full course of treatment for recovery.<sup>69</sup>

The MAPTB had estimated that the risk of contracting tuberculosis among healthy individuals increased fourfold from 1947 to 1957.<sup>70</sup> The elected government became more responsible towards their people's health. In fact, the elimination of tuberculosis was included in the manifesto of the Alliance Party that took over the government, and the Ministry of Health was made to be more responsible for its citizens.<sup>71</sup> The MAPTB also started its own state associations in places like Pulau Pinang, Perak. The MAPTB Penang association was launched in 1950, and by 1974, MAPTB Penang started their own mobile X-ray services. In Perak, the MAPTB started the Tuberculosis Rehabilitation Centre in 1951.<sup>72</sup>

Over the years, MAPTB has even started a public lottery system, so funding several developments for tuberculosis treatment. They continue to build tuberculosis hospitals and laboratory facilities, provide X-ray machines, build tuberculosis sanatoria and isolated tuberculosis centres.<sup>73</sup> The MAPTB also continues to provide a relief scheme to assist tuberculosis patients who need help to continue their hospital treatment. Steps were being made by MAPTB to provide better housing and living conditions, and instructions pertaining to the maintenance of a proper nutritional regimen were distributed.<sup>74</sup>

A campaign of tuberculosis awareness and prevention was carried out in schools, infant welfare clinics, dispensaries and elsewhere to educate the public about how the disease may be avoided.<sup>75</sup> The Malayan Association for the Prevention of Tuberculosis gave a great deal of financial assistance, and schemes were designed to prevent the spread of this disease. It continued to derive its funds mainly from the Lotteries Board and from public donations.<sup>76</sup>

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<sup>69</sup> Ibid.

<sup>70</sup> Ibid.

<sup>71</sup> *The Straits Times*, 13 May, 1951, p. 10.

<sup>72</sup> MED/PG/20/57, the Penang & Province Wellesley Association for the prevention of Tuberculosis, Jabatan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Pulau Pinang, p. 13.

<sup>73</sup> *The Straits Echo and Times of Malaya*, 10 April, 1952, p.9.

<sup>74</sup> Ibid.

<sup>75</sup> RCP/MU/239/47, Tuberculosis Advisory Board, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 19.

<sup>76</sup> *The Strait times*, 23 July, 1952, p.16.

## Penang and Province Wellesley Association for the Prevention of Tuberculosis

After the inception of the MAPTB, the Penang and Province Wellesley Association for the Prevention of Tuberculosis is formed for prevention tuberculosis in the state of Pulau Pinang and was a subsidiary of MAPTB. MAPTB supported its newly formed division by giving two cheques of \$5,000 each to the Honorable Treasurer of the Penang and Province Wellesley Association for the Prevention of Tuberculosis. Out of the sums received, \$5,358 were paid out to families of Tuberculosis patients each, monthly. The Chairman of the Province Wellesley Association for the Prevention of Tuberculosis (PWAPTB) also raised funds for the cause.<sup>77</sup>

The Association also held a 'Dance ceremony' at the E. & O. Hotel on 1<sup>st</sup> March 1952 for tuberculosis and the net income collected during the ceremony came to \$2,178. The Penang Island and Seberang Perai also had a Jubilee fund, which was likewise utilised for the cause of tuberculosis.<sup>78</sup> By 1952, the Jubilee fund was reported to be getting exhausted. However, the cause for tuberculosis was still supported by the Association through the contributions received from the MAPTB, which was \$160 per month.<sup>79</sup> Other associations such as the Turf club, the Woman's Service League, the Young Women Christian Association (YWCA) had also contributed to the fight against tuberculosis which is discussed in detail in the following sections.<sup>80</sup>

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<sup>77</sup> MED/PG/20/57, The Penang & Province Wellesley Association for the prevention of Tuberculosis, Jabatan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Cawangan Pulau Pinang, p. 6. and p.7.

<sup>78</sup> Ibid.

<sup>79</sup> SOC4/793/49, Minutes of Meetings of the Province Wellesley Association for the Prevention of Tuberculosis, Resident Commissioner Penang, Arkib Nagara Malaysia, Kuala Lumpur, p. 14.

<sup>80</sup> RCP/MED/666/ 49, Penang & P. W Association for the prevention of Tuberculosis, Resident Commissioner Penang, p. 16.



## Turf Club

Penang Turf Club is a horse racing club which was established in 1864. It was formed to host horse-racing events that took place on two consecutive weekends every two months.<sup>81</sup> There are no records to confirm that the Turf Club was helping in the fight against tuberculosis since its formation till the end of the war. However, after the Second World War, it was noted that the Club had been actively involved in the anti-tuberculosis cause.<sup>82</sup>

It was reported in 1949 that a hefty amount of \$4,499.85, payable to the Government by the Penang Turf Club, was given to the Penang Anti Tuberculosis Fund and also included an additional amount derived from the horse racing events. Apparently, in 1951, the Turf Club made a generous contribution of \$5,326.19 to the Penang and Province Wellesley Association for the Prevention of Tuberculosis.<sup>83</sup> As part of the affluent group of the society, they made a charitable contribution towards the welfare of the people and tuberculosis patients who needed help. By the mid-1950s, the Turf Club had started the 'Penang Anti-Tuberculosis Campaign', a funding program that encouraged contributions towards the fight against tuberculosis. The Club itself contributed the sum of \$3,000 at the opening ceremony of the campaign.<sup>84</sup>

## Women's Service League

The Women's Service League of Malaya was founded after the Second World War in 1946.<sup>85</sup> This League was founded by women with the intention of cleaning up the mess that has been left behind 'by men of the nations'.<sup>86</sup> There were prominent members like

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<sup>81</sup> *The Straits Times*, 17 March, 1951, p. 23.

<sup>82</sup> RCP/PG/1244/ 49, Contribution by Penang Turf Club of Penang anti-T.B fund, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p.39.

<sup>83</sup> *The Straits Echo and Times of Malaya*, 19 September, 1951, p.14.

<sup>84</sup> RCP/ MED/ 1480/47, Penang Tuberculosis Campaign, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 29.

<sup>85</sup> *The Straits Echo and Time of Malaya*, 14 November, 1947.

<sup>86</sup> *The Malay Mail*, 17<sup>th</sup> July, 1951, p. 17.

Rahim Bee bt Pakir Mydin in the Women's Service League, who also helped in the formation of the organisation. Mydin herself was generous by nature and, most of the time, was engaged in financial help for the poor and needy. The membership of the league composed mainly of Malays, although the presence of other ethnic communities cannot be denied. The Women's Service League made numerous visits to houses to find cases of tuberculosis early and then bring those patients to the hospitals as part of the prevention of the spread of tuberculosis.<sup>87</sup>

#### Young Women's Christian Association (YWCA)

During the British colonialism, Pulau Pinang was the first town among the States and Straits Settlement of Malay Peninsula to be chosen for the Young Women's Christian Association (YWCA) and its associated programs. This YWCA started when in 1909, Miss Fairburn, a British Missionary, opened the door of her home in Dato Keramat Road, Penang Island, to attend to the needs of young women.<sup>88</sup> Fairburn acted as the President, Secretary, and Treasurer and started the association. Initially, the members engaged themselves in Bible reading and prayer in groups, but it later expanded to other activities. After Miss Fairburn left, Mrs. Dewar, a Major's wife, took over and the First World War saw them knitting for soldiers.<sup>89</sup>

From 1924, rest rooms were opened under the care of Mrs Khoo Gek Tuan. Later the association also build the "the tower" to support the growing needs of hostels and women employment. Afterwards, the hostel was torn down, but rebuilt after the Second World War.<sup>90</sup> Records of the YWCA from 1941 to 1946 were lost during the war, and their activities during this time remain unknown. However, some data from personal accounts has been recovered from old members like Miss Ivy Sabapathy and has been able to contribute to reports of the activities of the YWCA during the war period.<sup>91</sup>

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<sup>87</sup> Ibid. 18.

<sup>88</sup> MED/PG/253, Hospital Visiting Committee 1949, Pejabat Daerah Barat Daya Pulau Pinang, Arkib Negara Malaysia, Cawangan Pulau Pinang, p. 15.

<sup>89</sup> RCP/ MED/ 1480/47, Penang Tuberculosis Campaign, Resident Commissioner Penang, p. 21.

<sup>90</sup> Ibid.

<sup>91</sup> *The Straits Times*, 14 August, 1953, p. 6.

Records recovered after 1946, show that the YWCA was actively involved in the fight against tuberculosis. For a start, domiciliary visiting of tubercular houses was started by ladies of the YWCA under the leadership of Mrs. Cheah Inn Kiong together with some local private practitioners who had expressed their willingness to assist voluntarily. Mrs. Cheah In Kiong, was a nurse who was trained from the Tuberculosis Committee to visit houses and residents suspected to be tuberculosis patients. Helpful people like Dr. K. Mohd. Ariff looked after the patients for free for this organisation.<sup>92</sup> Domiciliary visitation and domiciliary treatment of people suffering from tuberculosis was seen as an effective way to treat the disease, as well as helping the patients, with the assistance of family members and other people.<sup>93</sup>

These domiciliary visits had enable the volunteers to probe further into the cases and to know the stage of tuberculosis infections of the patients.<sup>94</sup> Through domiciliary studies, suggestions were made that patients at the advanced stage and possibly incurable could be put to rest (euthanised), instead of spending more money or letting them to spread the infection to others.<sup>95</sup> However, no particular case of being euthanised has been recorded. The YWCA can be attested as the most successful non-profit organisations for helping in the fight against tuberculosis. In fact, the YWCA was the first organisation which had successfully run the domiciliary for tuberculosis.<sup>96</sup> Although other organisations like the Women's Service League were recommended by authorities to set up or make domiciliary visits in Pulau Pinang for the anti-tuberculosis cause, they remained unsuccessful.<sup>97</sup> However, the ladies of the YWCA had successfully set up domiciliary residents.

They were also responsible for visiting patient's houses and had succeeded in the investigation of the infectious conditions prevailing at that time.<sup>98</sup> It was discovered during

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<sup>92</sup> RCP/MED/1480/47, Penang Tuberculosis Campaign, Resident Commissioner Penang, p. 20.

<sup>93</sup> RCP/ MU/ 239/47, Tuberculosis Advisory Board, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 13.

<sup>94</sup> Ibid.

<sup>95</sup> RCP/MED/1480/47, Penang Tuberculosis Campaign, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 4.

<sup>96</sup> Ibid.

<sup>97</sup> RCP/MED/ 315/47, Annual Report of Medical & Health Department, 1946, Resident Commissioner Penang, p. 7.

<sup>98</sup> *The Straits Times*, 11 May, 1947, p.17.

these studies that a good deal of medical assistance was required by tuberculosis patients.

The ladies' reports were very informative. One of the reports recorded this,

A Chinese shoemaker age 26 married, wife and two children in poor health. The man is in hospital with open Tuberculosis Financial position not too bad. Maintained by father who keeps a shoe store, while wife does some sewing. Housing conditions were very bad and dilapidated. Major part of the house used for storing iron bars. The whole family sleeps in one room, on a raised platform. Six, including children, share the same bed. There is heavy leakage of the roof immediately over the bed. Ventilation is poor. There is a tiny window which is closed at night. There is scarcely any sunlight. Latrine, cooking stove, dining room all are in one small room. These ladies want medical advice which they can impart to these people. They also want some doctors and some place where they can send the people. It has been found that the suspected persons are all too poor to seek medical attention. The ladies [YWCA] want to be able to send them to some doctors.<sup>99</sup>

Members of YWCA like Mrs. Cheah Inn Kiong's report shows that on extreme day of helping tuberculosis patients, YWCA used as much as \$542.04 in a day (13<sup>th</sup> May, 1949). This expenditure covers both food (\$478.04) and transportation (\$64.00). Regular visits to Pulau Pinang were made by the YWCA helpers.<sup>100</sup> A statistical analysis shows that in 1947, the YWCA visited 1,300 tuberculosis patients who have received treatment at their respective home. The total expenditure was a huge figure.<sup>101</sup>

The YWCA visited poor tuberculosis patients and families with food regularly and there are cases where many families were supported with the supply of Ovaltine.<sup>102</sup> In addition eggs, along with Ovaltine and condensed milk, were donated anonymously and this made a significant contribution towards the anti-tuberculosis cause.<sup>103</sup> The Penang Tuberculosis Committee carried on its good work under the Chairmanship of Dr. Ong Huck Chye, J. P.C. H., and they garnered much help from Mrs. Kiong and her voluntary helpers. Both organisations continued to carry out domiciliary visits. It was also reported that the

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<sup>99</sup> Ibid.

<sup>100</sup> MED/PG/20/57, The Penang & Province Wellesley Association for the prevention of Tuberculosis, Jabatan Kesihatan Pulau Pinang, p. 14.

<sup>101</sup> RCP/MED/1480/47, Penang Tuberculosis Campaign, Resident Commissioner Penang, p. 3.

<sup>102</sup> PRP45/50, Penang Settlement Welfare Fund Committee, Jabatan Penerangan, p. 18.

<sup>103</sup> Ibid.

Social Welfare Department and the Women's Service League also joined to provide assistance in later years.<sup>104</sup>

So, it was the Young Women's Christian Association who had pioneered numerous visits to houses to trace early cases of tuberculosis and to bring these patients to hospitals with their fight against the spread of tuberculosis. And, it could be said that their acts had been worthwhile and successful.

### **The Importance of the B. C. G. Campaign and Vaccinations**

Bacillus of Calmette and Guérin, or Bacille de Calmette et Guérin, (BCG) is a vaccine that provides immunity towards or protection against tuberculosis.<sup>105</sup> BCG is prepared from a strain of virulent bovine tubercle bacillus, which has been attenuated by successive transplantation on bile-potato. Its virulence is reduced but it is still apt to create small local regressive tuberculous nodes, tuberculin and bacillary allergy and immunity against virulent super-infections.<sup>106</sup> In the beginning 'Calmette and Guerin'<sup>107</sup> recommended periodical transfers on bile-potato to maintain the non-pathogenicity of BCG and to prevent an eventual return to higher virulence but the Pasteur Institute of Paris<sup>108</sup> claimed that their BCG remained non-pathogenic even when transplanted for years on ordinary potato.<sup>109</sup>

A control of non-pathogenicity is done through subcutaneous injection of milligrams of potato culture into guinea-pigs, which are then allowed to live for at least six months. To control the slight virulence i.e. the antigenic value of the culture, two guinea-pigs are injected intradermally with 0.01 mg. each.<sup>110</sup> The inoculation is followed 12-14 days later by the

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<sup>104</sup> RCP/MED/1480/47, Penang Tuberculosis Campaign, Resident Commissioner Penang, p. 3.

<sup>105</sup> Thomas Dormandy, *The white death: a history of tuberculosis*, p.28. Bacillus Calmette-Guérin (BCG) vaccine is a vaccine primarily used against tuberculosis.

<sup>106</sup> CO 859/210/5, Tuberculosis, Colonial Office, p.11.

<sup>107</sup> Léon Charles Albert Calmette (1863 – 29 1933) a French physicist, and his assistant (later his colleague) Jean-Marie Camille Guérin (1872 – 1961), a veterinarian bacteriologist were known for developing the BCG vaccine to fight against the pathogen *Mycobacterium tuberculosis*.

<sup>108</sup> Launched in 1888, the Pasteur Institute of Paris or Institut Pasteur is a non-profit organization that aims to bring development in science, research, and development through the study of biology, microorganisms, various diseases, and vaccines. Over the years, the institute has actively engaged in studying tuberculosis, poliomyelitis, tetanus, HIV, etc.

<sup>109</sup> CO 859/210/5, Tuberculosis, Colonial Office, p.11.

<sup>110</sup> Helen Bynum, *Spitting Blood: The History of Tuberculosis*, p.23.

formation of a small module, about 3-4 mm. in diameter which disappears in 2-3 weeks. As long as the BCG culture produces this slight tuberculous node, it is considered satisfactory for vaccination. For the oral vaccine, 3 Sauton cultures (15 gm.) were separated from the liquid and then crushed by rotation with stainless steel bars in a flat flask and this was then resuspended in 1 ml of diluted Sauton.<sup>111</sup>

The result is a suspension containing 5 mg. per ml. The suspension is then filled into vials of 2 ml. each (10 mg.). The oral administration was three such vials, given on alternate days within the first ten days after birth.<sup>112</sup> As for the method of vaccine using scarification, suspensions containing 75 per mg. each were used. Grasset of Geneva claims that the use of a detergent such as Tween 80,<sup>113</sup> as in Dubos medium, produces a better dispersion of the organisms during the growth, as compared with the Pasteur Institute technique, in which it is impossible to estimate how many bacilli are contained in the vaccine. The immunising potency of liquid BCG vaccine prepared by the '*Tween 80 method*'<sup>114</sup> *remains high compared with others.* However, the Pasteur Institute prepares dry BCG vaccine in vials containing 5 doses for vaccination by scarification and its advantage is that it can be stocked for several months, without losing its vitality.<sup>115</sup>

The BCG Campaign started in the Federation of Malaya including Pulau Pinang in 1951. The campaign was mainly carried out in schools, infant welfare centres, outpatient departments of hospitals and also in health clinics in certain rural areas. Response from the public was satisfactory.<sup>116</sup> In 1954, 109,129 people were tuberculin-tested and of those 50,024 received BCG Vaccinations. In addition, 12,105 new born babies were also vaccinated.<sup>117</sup> In 1956, the BCG Campaign was still being carried out in the Federation of Malaya. Selected groups of the population, namely school children, newborn babies and

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<sup>111</sup> IMR 254/ 27, Tuberculosis Investigation, Institut Penyelidikan Perubatan, p.18.

<sup>112</sup> MED/PG/328/49, T. B Hospital Pulau Jerejak, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p. 13.

<sup>113</sup> MED/PG/410/ 51, B.C.G. Clinic, Kementerian Kesihatan Malaysia, p. 4.

<sup>114</sup> CO 859/210/6, Tuberculosis: treatment tuberculosis vaccine, Colonial Office, p.3.

<sup>115</sup> MED/PG/410/ 51, B.C.G. Clinic, Kementerian Kesihatan Malaysia, p. 4.

<sup>116</sup> Ibid.

<sup>117</sup>R.E. Anderson, *Federation of Malaya, Report of the Medical Department for the year 1954*, Kuala Lumpur: Government Printer, p. 12.

certain members of public institutions, were tuberculin tested and vaccinated. In 1956, 108,632 people were tuberculin tested and of these 37,131 received BCG Vaccination. In addition, 14,427 newborn babies were also vaccinated.<sup>118</sup>

As for the setting up of BCG institutions, Dr. Haji Abdul Ghani, the Health Officer of Pulau Pinang reported that a BCG clinic was opened at the Bayan Lepas Infant Welfare Centre from 25th February 1952. This place had not conducted BCG work previously. Also, the Penang General Hospital had their official BCG clinic opened at the A.P. room General Hospital in 1952.<sup>119</sup> The centre and the hospital had scheduled the timetable for tuberculosis testing and BCG vaccination.

The sessions for BCG treatment and vaccine in General Hospital Penang were held on Tuesdays and Fridays from 8:30 am to 12 pm.<sup>120</sup> Tuesdays were the days on which B.C. tuberculin testing was done, and on Fridays they read the result of the tuberculin test, and the giving of the BCG inoculations was performed.<sup>121</sup> This clinic was intended for male adults only. Women and children of pre-school age should be referred to the Women's and Children's Clinic, Macalister Road on Tuesday (Tuberlin Testing) and Fridays (Inoculation) from 2.15 pm to 4.00pm.<sup>122</sup> From 1951, it was also suggested to the Health Officer of Seberang Perai that a nurse should be sent to Kepala Batas for BCG training. In this way, a new BCG clinic was able to be opened in Kepala Batas in the future.<sup>123</sup>

Teams from Penang Island, Seberang Perai and other States were also given training in the use of BCG vaccine. From 1951 onwards, steps were also taken to use the vaccine as a preventive measure to form part of the routine work of the Maternity Hospital, Women's and Children's Clinics and schools.<sup>124</sup> In addition, outdoor clinics for the treatment of adults were opened in all the bigger towns. BCG vaccines were also expected to reach even the

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<sup>118</sup> Ibid.p.16,

<sup>119</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p. 7.

<sup>120</sup> MED/PG/410/ 51, B.C.G. Clinic, Resident Commissioner Penang, p. 6.

<sup>121</sup> Ibid.

<sup>122</sup> MED/PG/208 Vaccinations, Kementerian Kesihatan Malaysia, p. 4.

<sup>123</sup> MED/PG/234 B.C.G. Training, Kementerian Kesihatan Malaysia, p. 3.

<sup>124</sup> Ibid.

most remote and isolated areas, but this was only possible when colonialism came to an end. However, the government knew that the BCG vaccine would not come out as the ultimate way of stopping tuberculosis. Various other circumstances such as the condition of housing, economic matters and other general issues were all considered important in fighting against the disease.<sup>125</sup>

### **Awareness Campaign Against Tuberculosis**

The campaign against tuberculosis was conducted by the government by creating an awareness for the need to improve housing and general sanitation, with the demolition of slums, the building of cottages and tenements and the establishment of open spaces.<sup>126</sup> Various measures were conducted by the colonial government in order to avert the spread of tuberculosis in Pulau Pinang.<sup>127</sup> Such preventive measures were conducted mainly by educating the public; by means of films, posters, leaflets and informal talks to explain to the people approaches which maintain cleanliness and personal hygiene with a view to avoiding infection and restricting its spread.<sup>128</sup>

As for the established tuberculosis committees, the health campaign was assigned to the Sub-Committee in the Perak Road Settlement which was co-opted to serve on the Tuberculosis Committee of Penang on December 9<sup>th</sup>, 1947, and has been responsible for the publicity section ever since.<sup>129</sup> This publicity was through the medium of the Press, Radio Malaya, posters, cinema slides and a mobile P.A. Van. The van had been donated by the Tuberculosis Committee. The local press was the main publicity channel, and the sub-committee acted as an agent or liaison office between the Press and the Tuberculosis Association.<sup>130</sup>

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<sup>125</sup> MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, p.11.

<sup>126</sup> Ibid.

<sup>127</sup> RCP/ MU/ 239/47, Tuberculosis Advisory Board, Resident Commissioner Penang, p.3.

<sup>128</sup> *The Straits Echo and Times of Malaya*, 12 June, 19451. p. 3.

<sup>129</sup> RCP/ MED/ 1480/47, Penang Tuberculosis Campaign, Resident Commissioner Penang, p. 3.

<sup>130</sup> RCP/ MU/ 239/47, Tuberculosis Advisory Board, Resident Commissioner Penang, p. 7.



Press releases were issued based on the minutes of the committee meetings, since the press reporters had ready access to the President of the Tuberculosis Association. The press had been directed to assist in giving publicity to the work of the Association and they always responded positively.<sup>131</sup> At the beginning of that year, slogans were drafted by the S.P.R.O. and approved by the Committee. Local dailies publishers were approached regarding the free use of a section of their advertisement space for the publication of these slogans in the local papers. The success of this kind of publicity depended entirely upon the co-operation of the Press, and also the Post Office for stamping slogans on all letters passing through their hands. Radio Malaya also broadcast talks on tuberculosis that year.<sup>132</sup>

As well as this, the Chairman of the Tuberculosis Committee took the opportunity to broadcast a talk informing the listeners about the opening of the Tuberculosis Association. The Chairman also spoke about the vision, goals and objectives of the association. The broadcast talks were aired on the day before to an inaugural public meeting.<sup>133</sup> Posters and leaflets in all languages were procured from P.R. Headquarters and extensively distributed to clubs, associations, coffee shops and eating-houses. Bus operators were also approached and some of them assisted by displaying smaller posters in the interior of their buses. The Manager of the Municipal Transport Department was also approached.<sup>134</sup> These posters were printed by the P.R. Department for the K.L. Public Health Committee. Cinema hall managers were contacted to screen cinema slides which were prepared by the Department free of charge, e.g., the latest slide about the Peking play 'Lady Sable Cicada'.<sup>135</sup>

The Department's mobile P.A. Van was fully utilised in the rural and municipal areas to publicise the dangers of the disease. Special scripts which had been approved by the Hon. Secretary of the Tuberculosis Committee were delivered in the local language to audiences.

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<sup>131</sup> *The Straits Times*, 23<sup>rd</sup> March, 1953.

<sup>132</sup> *Ibid.*

<sup>133</sup> RCP/MED/666/49, Penang & P. W Association for the prevention of Tuberculosis, Resident Commissioner Penang, p. 15.

<sup>134</sup> *Ibid.*

<sup>135</sup> *The Straits Times*, 14<sup>th</sup> May, 1953, p. 8.

This was followed by the distribution of leaflets. The Van screened special tuberculosis films at local fairs in aid of the tuberculosis fund.<sup>136</sup>

The advent of the emergency and the need for extensive publicity on Emergency matters had fully occupied the sub-committee's time. Generally speaking, the S.P.R.O. was always co-opted to serve on various Committees involved in organising fairs and concerts. The latest concert organised by the committee was the Peking play 'Lady Sable Cicada'.<sup>137</sup> As part of those associations which seek earnestly to fight against tuberculosis, the sub-committee loyally assisted the Hon. Secretary of the Tuberculosis Association and the Department in the distribution of membership forms to various firms, clubs and associations in the Settlement throughout the colonial days.<sup>138</sup>

There were also many ways through which awareness was raised for the prevention of tuberculosis by other non-profit organisations. For instance, there were poster competitions to spread awareness, and prizes were distributed to encourage people to join the awareness campaigns.<sup>139</sup> In 1949, the Chairman reported that the Sub-Committee had selected five suitable posters, which were inspected by the Committee, and it was agreed that the prize money should be given to the successful competitors. One poster competition was held in Georgetown on 13<sup>th</sup>, May, 1951. The first prize winner received \$25, second prize received \$15, third prize received \$10 and two consolation prizes worth \$7.50 each were also given to these winners of the poster competition.<sup>140</sup>

As part of spreading awareness of the dangers of tuberculosis, dance competitions were also conducted by such associations and organisations as the Cabaret Girls' Association at Wembley, City Lights on 14<sup>th</sup> August, 1949 and the St. George's Girls' School Society at

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<sup>136</sup> RCP/ MED/ 1480/47, Penang Tuberculosis Campaign, Resident Commissioner Penang, p. 5A.

<sup>137</sup> Ibid.

<sup>138</sup> RCP/MED/666/ 49, Penang & P. W Association for the prevention of Tuberculosis, Resident Commissioner Penang, p.3A.

<sup>139</sup> *The Straits Times*, 15<sup>th</sup> April, 1949, p.3.

<sup>140</sup> 248/PTI, Tuberculosis- the Penang Province Wellesley Association for the Prevention of Tuberculosis, Pejabat Penerangan Pulau Pinang, p.12.

Wembley on 2<sup>nd</sup> September, 1949.<sup>141</sup> The Chairman attended the competition and participated as one of the committee members for these dances, which were being held on behalf of the Association.<sup>142</sup>

### **The Significant of X-Ray and Early Detection of Tuberculosis**

The X-Ray is a form of electromagnetic radiation with very high energy and very short wavelength. The X-Ray process was developed by a German physicist Wilhelm Conrad Röntgen in 1895, and is generated through a cathode ray tube.<sup>143</sup> The X-rays and light rays from the cathode ray tube produce shadows that cause fluorescence and a chemical reaction on a photographic film. X-Rays of the chest have been considered as a very important diagnostic tool in checking pulmonary tuberculosis.<sup>144</sup> X-Rays of the chest can help attest to various pulmonary tuberculosis signs and symptoms such as pleural effusion, collapse of lung, branchiactasis, miliary symptoms, calcification of the pulmonary region.<sup>145</sup>

In 1951, an average of 80 new cases per month were X-rayed at the clinic. The average fee collected was \$260 per month.<sup>146</sup> In 1951, the Tuberculosis Association had to buy X-ray films from the Kodak Co. of Singapore. The monthly order was for 25 packets costing the Association \$233.80 per order. In the month of June some damaged films were received, but these were later replaced by the Kodak Co. without any loss to the Association. Sensing the importance of X-ray machines, Dr. Bynoe suggested more public X-ray services during the 1950s.<sup>147</sup> The increasing use of diagnostic X-ray facilities was able to confirm the high incidence of this disease. Depending on X-ray diagnosis, 6,451 cases were admitted to

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<sup>141</sup> SOC4/793/49, Minutes of Meetings of the Province of Wellesley Association for the Prevention of Tuberculosis, Resident Commissioner Penang, Kuala Lumpur, p. 2A.

<sup>142</sup> CO 927/86/5, Malaya: tuberculosis survey, Colonial Office, p. 10.

<sup>143</sup> FD 1/354, Tuberculosis: chemotherapy, National Achieves UK, 1948, p.13.

<sup>144</sup> Ibid.

<sup>145</sup> MED/PG/20/57, The Penang & Province Wellesley Association for the prevention of Tuberculosis, Jabatan Kesihatan Pulau Pinang, p.8A.

<sup>146</sup> MED/PG/SDT/52, X-Ray Examination of the General Public, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 21.

<sup>147</sup> FD1/68, X-raying of MRC staff exposed to tuberculosis, Medical Research Council, p. 3A.

government hospitals for pulmonary tuberculosis with 956 deaths as compared with the previous year which had 5,847 cases with 968 deaths.<sup>148</sup>

In addition, the Penang General Hospital is also actively investigating specimens of suspected tuberculosis patients with smear diagnosis techniques, culture diagnosis, nucleic acid amplification diagnosis, drug sensitivity testing.<sup>149</sup> After diagnosing, the radiology and pathology departments of Penang General Hospital would do a follow-up with routine investigations for tuberculosis patients. Daily medications are administered by nurses under the watchful eye of a staff nurse. To quell the disease effectively, patients who were diagnosed with tuberculosis were made to visit the chest clinic of the Penang General Hospital regularly. Those who default from this treatment were traced by staff and brought to the hospital for the necessary treatment.<sup>150</sup>

## **Hospitals and Treatment for Tuberculosis Patients**

### **Government Hospitals, Dispensaries and Treatment**

Government Hospitals and Dispensaries in Penang Island and Seberang Perai were the main centers for tuberculosis patients to receive their treatment. During the period of 1900 to 1957, there were six Government hospitals in Pulau Pinang which offered treatment and admission for tuberculosis patients. The said government hospitals were General Hospital Penang, Pulau Jerejak Tuberculosis Hospitals, Perak Road Hospital, Butterworth Hospital, Bukit Mertajam Hospital and Sungai Bakap Hospital.<sup>151</sup> These government hospitals and dispensaries were responsible for various diagnosis systems, vaccination, immunisation, and treatment together with financial help and clinical facilities. However financial help and clinical facilities did not originate from the government hospitals alone.<sup>152</sup>

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<sup>148</sup> MED/PG/SDT/52, X-Ray Examination of the General Public, Resident Commissioner Penang, p. 21.

<sup>149</sup> RCP/PUB/ 519/ 47, Reports on patients in T. B Ward, Penang, Resident Commissioner Penang, p. 14.

<sup>150</sup> FD 1/6756, Treatment for tuberculosis, Medical Research Council, p. 6.

<sup>151</sup> MED/PG/2/ 52, T. B Hospital & Leper Settlement, Pulau Jerejak Daily State, Kementerian Kesihatan Malaysia, p.5A.

<sup>152</sup> MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian kesihatan Malaysia, p.11.

Medications used in hospitals for tuberculosis treatment vary from time to time. Initially, Streptomycin was popular (in the late 20<sup>th</sup> Century). But by 1900 Streptomycin had failed to become an effective treatment. As such, intrathecal injections of Purified Protein Derivative (PPD) were administered after the government's approval. After the administration of this PPD treatment, the number of patients receiving treatment was apparently declining.<sup>153</sup> A case study on this treatment showed that patients made an unexpected recovery in hospitals in Penang Island and Seberang Perai after they received the PPD treatment. Many of the patients' lives were prolonged through this treatment.<sup>154</sup> After the success of this treatment, the authorities begin to use a combination of intrathecal PPD and streptomycin, to treat some patients. Despite the risks involved, the results of these combinations were considered more favourable compared with the results of using streptomycin alone.<sup>155</sup>

This however changed in the early 1920s, where both pulmonary and glandular tuberculosis were treated with sanocrysin. Sanocrysin is an injection of double thiosulphate of gold and sodium and was widely used in hospitals in Penang Island and Seberang Perai. The outcome of using this treatment had improved by the end of the decade.<sup>156</sup> An annual report of 1927 (distributed in 1928) by the Institute of Medical Research, Kuala Lumpur, stated that two patients who received sanocrysin treatment in 1927 showed improvement in health through the increase in weight, sputum remaining free from tubercle bacilli and clinical signs of disease in the lungs were disappearing.<sup>157</sup> X-ray examination showed a great improvement of the condition of the lungs; and at their own request the patients were discharged from Butterworth Hospital in February, 1928, after four months of treatment.<sup>158</sup>

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<sup>153</sup> IMR 254/ 27, Tuberculosis Investigation, Institut Penyelidikan Perubatan, p.10.

<sup>154</sup> Ibid.

<sup>155</sup> RCP/ PUB/ 519/ 47, Reports on patients in T. B Ward, Penang, Resident Commissioner Penang, p. 4.

<sup>156</sup> IMR 254/ 27, Tuberculosis Investigation, Institut Penyelidikan Perubatan, p.14.

<sup>157</sup> CO 927/284, Tuberculosis research in Malaya, Colonial Office, p.25.

<sup>158</sup> Ibid.

According to the Straits Settlement Annual Report for the year of 1926, there were several treatments for tuberculosis patients which were widely used in hospitals in Penang Island and Seberang Perai. The said treatments were sanocrysin treatment, pneumothorax treatment, Para-aminosalicylic acid (PAS) therapy and Pneumo-peritoneum. In 1929, there were 1,144 cases of pulmonary tuberculosis treated in Penang Island and Seberang Perai hospitals. Out of these, 323 were reported to have succumbed to the disease.<sup>159</sup>

It is obvious that tuberculosis patients, after the treatment, showed their ignorance towards tuberculosis issues and failed to return for follow-up treatments. One of them, a Tamil coolie, failed to revisit for re-examination.<sup>160</sup> Another returned at monthly intervals, and in June 1929, was found to have relapsed. He was readmitted into hospital, and a second course of sanocrysin treatment began. In this way, the relapse was to some degree arrested; his weight increased, and the cough diminished; but the sputum still contained tubercle bacilli, and the prospect of a cure seemed remote.<sup>161</sup>

Their cases were not the only examples of ignorance towards the importance of tuberculosis treatment. There were many cases reported as slightly improved or as stationary, which ultimately relapsed in spite of continued treatment.<sup>162</sup> It can be concluded from this small series of cases that sanocrysin did seem to decelerate the course of the disease in the Asiatic patient, and offered little hope of cure.<sup>163</sup> The authorities came to know about the failure of using sanocrysin treatment alone, and by 1931, patients presenting symptoms like the case of tuberculosis adenitis of the cervical glands were treated subsequently by both X-ray and ultraviolet-light therapy concurrently with the administration of sanocrysin.<sup>164</sup>

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<sup>159</sup> CO 927/86/5, Malaya: tuberculosis survey, Colonial Office, p.19.

<sup>160</sup> CO 877/55/3, Medical training: study leave for courses on tuberculosis diseases, Colonial Office, The National Archives, UK, p.13.

<sup>161</sup> CO 927/446, Medical research Malaya: brief for visit of Mr Manson to South East Asia, Colonial Office, The National Archives, UK, 1950, p.14.

<sup>162</sup> FD23/1077, Epidemiology of tuberculosis: papers, notes and correspondence concerning proposed research, Medical Research Council, p. 5A.

<sup>163</sup> IMR 254/ 27, Tuberculosis Investigation, Institut Penyelidikan Perubatan, p.23.

<sup>164</sup> Ibid p. 20.

The 1946 medical annual report of Pulau Pinang reported that most tuberculosis patients were treated with pneumothorax treatment (insertion of needle or chest tube to remove the air deposited in the lungs that makes the latter to expand and collapse) after the Second World War.<sup>165</sup> In fact, there were as many as 20 patients out of 121 receiving pneumothorax treatment in 1946. This treatment would continue for as long as four years until the patient recovered. In 1948, there were reports of active continuance of pneumothorax treatments at Penang General Hospital. Over one hundred patients (including some outpatients) were receiving active treatment by artificial pneumothorax or pneumoperitoneum.<sup>166</sup> The increase in number of patients caused the management of the hospitals to become more concerned with managing and organising the lists of patients who were receiving treatment.<sup>167</sup>

Pneumothorax treatment is made to relieve the pressure on the lungs among pulmonary patients. This treatment allows air to escape from the chest, so stopping the expansion of the lungs leading to their subsequent collapse. There are three ways to carry out this treatment: needle inserting, chest tube insertion, and surgery.<sup>168</sup> The first two - needle and chest tube insertion - were performed by inserting a needle or a tube between the ribs and allowing air to escape. The needle normally sucked out the air manually, while in the tube method, the chest tube was often attached to a suction device. When these two methods failed, surgery was sought. Surgery was performed by making small incisions into the lungs by using a tiny fibre-optic camera and narrow long-handled surgical tools.<sup>169</sup>

By 1948, there are also reports of streptomycin therapy application in Government Hospitals in Penang Island and Seberang Perai. However, this was unsuccessful as there were

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<sup>165</sup> RCP/MED/315/47, Annual Report of Medical & Health Department of 1946, Resident Commissioner Penang, p.12.

<sup>166</sup> RCP/ PUB/519/ 47, Reports on patients in T. B Ward, Penang, Resident Commissioner Penang, p.16.

<sup>167</sup> Ibid.

<sup>168</sup> RCP/MED/666/ 49, Penang & P. W Association for the prevention of Tuberculosis, Resident Commissioner Penang, p.18.

<sup>169</sup> 248/PTI, Tuberculosis- The Penang's Province Wellesley Association for the Prevention of Tuberculosis, Pejabat Penerangan Pulau Pinang, p.9.

only a few cases that remained suitable for this treatment.<sup>170</sup> The streptomycin therapy is usually successful with tuberculosis patients in the early stages.<sup>171</sup>

The experiments on streptomycin showed it to be having inhibitory influence, when tested on guinea pigs by Feldman, Hinshaw, and Mann; and also in mice by Youmans and McCarter. Later, this experiment by Hinshaw and Feldman was conducted on human beings in 1945,<sup>172</sup> and proved to have inhibitory influence on the pathogen. Since then, it has been used as part of tuberculosis treatment, as part of stemming the growth of the pathogen. As for Pulau Pinang, based on X-ray reports, reports show that patients normally came to hospital only when they reached the advanced stage, and many pulmonary patients were in 'fibrocaceous type with cavitation'. Also, it is observed that using streptomycin to treat these patients was unsuccessful.<sup>173</sup>

Research and investigation by the Institute of Medical Research, Kuala Lumpur was also vital in providing better medications and treatments for tuberculosis patients in Hospitals in Penang Island and Seberang Perai. There were numerous techniques carried out for the treatment of tuberculosis in Pulau Pinang.<sup>174</sup> At the outset, the government started the BCG vaccination program. After the vaccination, the government and other voluntary groups also ensured the outcome in terms of immunisation. It can be stated here that in experiments on animals (e.g. rabbits), repeated injections of heat killed tubercle bacilli and would produce a moderate degree of immunity against infection with highly potent organisms.<sup>175</sup>

This method was used experimentally in the hospitals by inoculating tuberculin negative patients. Active immunisation with whole tubercle bacilli may have usefulness in the protection of tuberculin negative individuals who are exposed to tuberculosis. Persons with naturally acquired reactivity to tuberculosis or bearers of old or latent tuberculosis

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<sup>170</sup> Ibid. p.18.

<sup>171</sup> CO 927/284, Tuberculosis research in Malaya, Colonial Office, p.17. Streptomycin was discovered by Schatzm Bugie, and Waksman in 1944, in their experiments which was to stem the growth of tubercle bacilli in vitro.

<sup>172</sup> Ibid.

<sup>173</sup> CO 927/86/5, Malaya: tuberculosis survey, Colonial Office, p.28.

<sup>174</sup> RCP/ MU/ 239/47, Tuberculosis Advisory Board, Resident Commissioner Penang, p.10.

<sup>175</sup> CO 859/210/6, Tuberculosis: treatment tuberculosis vaccine, Colonial Office, p.14.



lesions can acquire infection and progressive clinical disease. However, evidence shows that BCG and other attenuated strains are more effective than heat-killed tubercle bacilli in experimental animals.<sup>176</sup>

According to Mrs Inn Kiong in 1948, there were 1,209 tuberculosis cases in Penang Island and Seberang Perai. Her reports show that it was a very serious situation and that the public should be made to realise it. Since it was a public cause, “*everybody can assist. Those who can afford should come forward with donations. Those who cannot give money can lend a helping hand. We on our part could seek the co-operation of the members of the Public Relations Department in giving effective publicity to this Movement to remove one of the greatest threats to public health*”.<sup>177</sup>

**Table 5.4** Admissions, Discharges dan Deaths of Tuberculosis Patients in Pulau Pinang, 1953

<b>Hospital</b>	<b>Admission</b>	<b>Discharge</b>	<b>Death</b>
<b>General Hosp, Penang</b>	461	343	8
<b>TB Hospital, Pulau Jerejak</b>	302	285	12
<b>Perak Road</b>	36	30	2
<b>Butterworth</b>	51	37	5
<b>Sungai Bakap</b>	66	38	7
<b>Total</b>	916	733	29

Source: MED/PG/258, Accommodation for T. B. Patients, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p. 2.

According to Table 5.4 above, it was reported that there were 916 admissions of cases of tuberculosis in hospitals throughout Pulau Pinang in 1953. These showed a slight decrease in cases compared with 1, 209 recorded in 1948.<sup>178</sup> Also, this showed that the prevention efforts and works done by the non-profit organisations in Penang were being effective in reducing tuberculosis cases in Penang Island and Seberang Perai during the 1950s.<sup>179</sup> According to the file of the Penang and Province Wellesley Association for the Prevention

<sup>176</sup> IMR 254/ 27, Tuberculosis Investigation, Institut Penyelidikan Perubatan, p.17.

<sup>177</sup> RCP/MED/202/49, Annual report of the Medical and Health Department, Penang 1948, Resident Commissioner Penang, p.23.

<sup>178</sup> MED/PG/258, Accommodation for T. B. Patients, Kementerian Kesihatan Malaysia, p. 2.

<sup>179</sup> RCP/ PUB/ 519/ 47, Reports on patients in T. B Ward, Penang, Resident Commissioner Penang, p.17.

of Tuberculosis, the greatest success of reducing tuberculosis cases in Penang Island and Seberang Perai was not achieved until after the Second World War.<sup>180</sup>

However, it is difficult to determine the number of tuberculosis cases that existed among the general population and the number of deaths for which it was responsible, as a good percentage of deaths outside of hospitals were not recorded by medical practitioners.<sup>181</sup> Then, after the Second World War, there were proper statistics showing the number of tuberculosis patients that were admitted into the hospitals of the Federation of Malaya and Pulau Pinang. Starting from 1948, hospital statistics showed 6,510 admissions for tuberculosis, with 1,918 deaths, compared with 7,328 admissions and 2,182 deaths in 1947.<sup>182</sup>

According to the Annual Report of the Health and Medical Department of Pulau Pinang, the condition of hospitals in Penang Island and Seberang Perai for treating tuberculosis patients was satisfactory after the Second World War in 1946. The hospitals were provided with good facilities to conduct modern treatment, and, to a less specialised degree, in all the larger hospitals.<sup>183</sup>

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<sup>180</sup> RCP/MED/666/ 49, Penang & P. W. Association for the prevention of Tuberculosis, Resident Commissioner Penang, p.19.

<sup>181</sup> MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, 1951, p.12.

<sup>182</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.13.

<sup>183</sup> Ibid. p.14.

**Table 5.5** Racial Incidence of Diseases among Hospital In-patients, 1951

<b>DISEASES</b>	<b>CHINESE</b>		<b>INDIANS</b>		<b>MALAYS</b>		<b>OTHERS</b>	
	<b>Adm.</b>	<b>Deaths</b>	<b>Adm.</b>	<b>Deaths</b>	<b>Adm.</b>	<b>Deaths</b>	<b>Adm.</b>	<b>Deaths</b>
Malarial (Classified)	358	33	538	18	114	1	32	1
Dysentery and Enteritis	270	31	280	27	29	2	19	-
Pneumonia	244	84	391	56	48	4	17	2
Pulmonary Tuberculosis	707	200	356	109	64	9	17	5
Beri-beri	99	7	92	13	16	3	3	-
Appendicitis	77	5	35	-	12	1	19	-

Source: MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.25.

Table 5.5 above demonstrates the racial incidence of diseases suffered by the hospital in-patients in Penang Island and Seberang Perai in 1949.<sup>184</sup> In this table, we can see that the number of patients suffering from pulmonary tuberculosis was the highest and it also shows the higher number of deaths were among Chinese and Indians. During that period, it was also reported that the former was living in the urban areas and the latter in the rural areas.<sup>185</sup> So, the probable explanation for the high number of deaths is that both urban and rural areas have poor sanitation and poorly ventilated living conditions which contributed to the higher likelihood of contracting disease.<sup>186</sup>

However, Malays were suspicious of hospitals and so they rarely came to register at the hospital during the colonial period. Also, they perceived that the hospitals were full of 'pork-eating infidels', so no Malay could be encouraged to enter such a place for medical treatment, even if it was a case of life and death.<sup>187</sup> The best they could be persuaded to do

<sup>184</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, p. 21 and p.23.

<sup>185</sup> Chai Hon Chan, *the Development of British Malaya 1896-1909*, Kuala Lumpur: Oxford University Press, Second Edition, 1969, p.202.

<sup>186</sup> Crofton John, *Modern Drug treatment in Tuberculosis*, London: Health Horizon limited, 1969, p.44.

<sup>187</sup> RCP/ PUB/ 519/ 47, Reports on patients in T. B Ward, Penang, Resident Commissioner, p.9.

was to be treated as out-patients". Thus other races constituted the major number of patients in hospital, which the Malays considered as the dying house. So, Malays came as out-patients to receive treatments and did not prefer to stay in any hospitals on Penang Island and Seberang Perai.<sup>188</sup>

### Penang General Hospital

Penang General Hospital was the main government hospital in the state and was the referral centre for all tuberculosis patients in Pulau Pinang from 1900 until 1957. Tuberculosis was one of the most common medical complaints in the Penang General Hospital. As far as the beds could permit, early cases suitable for active treatment were admitted to the hospital. In addition, advanced cases that required nursing were also looked after at the hospital.<sup>189</sup> Patients with chronic ailments, including pulmonary and extrapulmonary cases were sent to the Tuberculosis Hospital, Pulau Jerejak. More than a quarter of the hospital beds in Malaya during the colonial period were occupied by tuberculosis patients, and most of them were in advanced stages. There was high demand for hospitals beds among tuberculosis patients.<sup>190</sup>

Looking at the modern treatment given to the patients, the Penang General Hospital can be regarded as being successful in treating tuberculosis when compared with the days before the introduction of modern medicines.<sup>191</sup> In Pulau Pinang, most patients who went to hospital were already in the advanced stage of the disease, and the chances of recovery or cure remained poor. The cure for tuberculosis is proper medical attention, rest, good food, and freedom from mental worries, but such administration becomes more difficult at the advanced stages.<sup>192</sup> During the colonial period, the hospital was often overcrowded. In the tuberculosis ward, some beds had to be placed along a section of the corridor. Beds were

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<sup>188</sup> *The Straits Times*, 16<sup>th</sup> July, 1947, p.18.

<sup>189</sup> 248/PTI, Tuberculosis- The Penang Province Wellesley Association for the Prevention of Tuberculosis, Pejabat Penerangan Pulau Pinang, p.16.

<sup>190</sup> RCP/ MU/ 239/47, Tuberculosis Advisory Board, Resident Commissioner Penang, p.14.

<sup>191</sup> MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, p.32.

<sup>192</sup> RCP/ PUB/271/47, Problems of Rural Province Wellesley, Resident Commissioner Penang, p.17.

placed as far apart as possible and the average distance between two beds aimed to provide comfort.<sup>193</sup>

The Penang General Hospital which was run by the government was also understaffed. Even after the war, the tuberculosis ward was under the charge of only two dressers assisted by four attendants in the morning shift, by two dressers and two attendants in the afternoon shift, and one dresser and one attendant on the night shift.<sup>194</sup> There were many who deserved the highest praise for carrying out their duties faithfully, under trying conditions of service, amidst the background of labour strikes for better living wages, high cost of living, and general dissatisfaction over salary schemes in all Government Departments. Also, there were a few who did not carry out their duty in the proper manner, and were instead carried away by the tide of materialism, greed and selfishness.<sup>195</sup>

For diagnosis purposes, patients on admission were X-rayed to enable the Medical Officer (MO) to find out the extent of the lesions, and treatment of the disease was carried out accordingly. Treatments such as artificial pneumothorax and streptomycin. were later given to patients who needed care. Calcium injections were also given upon the orders from the MO. Periodic X-rays and blood sedimentation tests were carried out.<sup>196</sup> Tuberculosis was becoming the disease which has the most patients in hospitals in Penang Island and Seberang Perai, second to malaria from 1946 to 1957. Table 5.6 below shows the different diseases suffered by patients who were admitted into Penang General Hospital in 1951. Based on this table, malaria is recorded the highest admission 261 patients, followed by tuberculosis which recorded the second highest admission of 90 patients.<sup>197</sup>

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<sup>193</sup> Ibid.

<sup>194</sup> RCP/ PUB/ 519/ 47, Reports on patients in T. B Ward, Penang, Resident Commissioner Penang, p.1.

<sup>195</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.24.

<sup>196</sup> MED/PG/507, X-Ray Examination of the General Public, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p. 4.

<sup>197</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.8.

**Table 5.6** Patients with Different Diseases Admitted in Penang General Hospital, 1951

<b>Diseases</b>	<b>Admissions</b>	<b>Deaths</b>	<b>Mortality %</b>
Malaria	261	8	3%
Pulmonary Tuberculosis	90	8	9%
Dysentery	33	3	9%
Diarrhoea	70	14	20%
Pneumonia and Bro-Pneumonia	48	10	3%
Bronchitis	82	-	-
Venereal Diseases	84	-	-
Injuries & other conditions due to external causes	332	10	3%
Beri-Beri	149	-	-

Source: MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.8.

#### Pulau Jerejak Tuberculosis Hospital

The Pulau Jerejak Tuberculosis Hospital was situated in two separate camps on the Western side of the island of Pulau Jerejak.<sup>198</sup> In 1920s, each of the camps was attended by medical officers; one resident medical officer oversaw the Settlement and another medical officer supervised the Leper Camp. Every week, the Tuberculosis Medical Officer of the Penang General Hospital visited the Settlement Camp to review all the new cases. He also checked up on the progress of all old cases and advised on the type of treatment.<sup>199</sup>

There were mainly three camps during the colonial period.<sup>200</sup> Camp I and Camp III were situated on the eastern side of the island, where the sea forms a calm bay. The hills, thickly replete with trees which form the major portion of the island, lie just behind the camp.

<sup>198</sup> MED/PG/105/52, Annual Report 1951, T. B. Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, p.5.

<sup>199</sup> Ibid.p.6.

<sup>200</sup> MED/PG/258, Accommodation for T. B. Patients, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, 1951, p.3.

The usual calmness of the sea in this bay eliminates the danger of brine laden moist breeze affecting the lungs of the patients. The hills which form the immediate background of the camps break the intensity and force of the monsoon winds.<sup>201</sup>

The tuberculosis hospital at Pulau Jerejak had many limitations mainly due to its location. Firstly, Pulau Jerejak, is situated in an island, and all the camps were situated on the sea coasts with rocky shores to receive patients from the motorboats. Better construction of the area was therefore needed since it was very inconvenient to transfer stretcher cases from the motorboat to the shore in the absence of a pier. Female patients were especially very nervous to board the boat as they always feared that they might fall into the sea.<sup>202</sup>

The Pulau Jerejak Tuberculosis Hospital also started the use of sanocrysin treatment for tuberculosis patients before the Second World War,<sup>203</sup> and by the 1940s, most of the pulmonary patients were also treated with the pneumothorax treatment.<sup>204</sup> From the 1950s onwards, Pulau Jerejak Tuberculosis Hospital started to follow specialised treatments, as well as general treatment to increase their vitality. These specialised treatments given to the tuberculosis patients consisted of:

- a) Streptomycin injections.
- b) Para-aminosalicylic acid (PAS) therapy.
- c) Pneumo-peritoneum.<sup>205</sup>

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<sup>201</sup> Ibid. p.4 and p.5.

<sup>202</sup> MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, p.9. and p.10.

<sup>203</sup> MED/PG/258, Accommodation for T. B. Patients, Kementerian Kesihatan Malaysia, p.12.

<sup>204</sup> MED/PG/328/49, T. B Hospital Pulau Jerejak, Kementerian Kesihatan Malaysia, p.2.

<sup>205</sup> Ibid.

**Table 5.7** Different Types of Medications on the basis of different Tuberculosis Ailments in Pulau Jerejak, 1951

Number of cases given streptomycin injections	186
Number of cases given para-aminosalicylic acid (PAS)	60
Number of laryngitis cases given streptomycin	30
Number of cases given pneumo-peritoneum weekly	100
Number of cases where haemoptysis was controlled by pneumo-peritoneum	20
Total number of cases haemoptysis cases	37
Number of cases X-rayed Chest (X- rays are taken at least once in 6 months for each patient)	590
Number of cases X-rayed Extremities and spine	16
Total	606

Source: MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.16.

Table 5.7 above portrays the different types of treatment used to treat the different tuberculosis ailments at Pulau Jerejak Tuberculosis Hospital in 1951. It shows that the highest number of the cases were treated with streptomycin injections.<sup>206</sup> The usual course of streptomycin given for each patient was only 20 grams. When the stocks of para-aminosalicylic acid (PAS) were scarce, the concurrent administration of PAS along with streptomycin could not be achieved in many cases.<sup>207</sup> However towards the end of the year, the concurrent administration of PAS and streptomycin would be continued when they received enough stocks of PAS.<sup>208</sup> Patients were usually discharged from the hospital after their sputum was negative for 3 to 6 months, and X-ray results were favourable. Then, the patients were directed to attend the follow-up clinic once a month in the Penang General Hospital.<sup>209</sup>

Patients who had to take pneumo-peritoneum refills after discharge continued to receive them at the General Hospital Outpatient Clinic.<sup>210</sup> As for vaccination and diagnosis,

<sup>206</sup> MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, p.16.

<sup>207</sup> IMR 254/ 27, Tuberculosis Investigation, Institut Penyelidikan Perubatan, p.2.

<sup>208</sup> Ibid.

<sup>209</sup> CO 717/196/10, Tuberculosis sanitorium at Pulau Jerejak, Penang, Colonial Office, The National Archives, UK, 1951, p.26.

<sup>210</sup> MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, p.3.



the use of the B.C.G. vaccination was introduced at Pulau Jerejak Tuberculosis Hospital in 1949.<sup>211</sup> Tuberculin reactions in school children were being investigated during this time, and screening of positive reactors was introduced. X-ray and clinical examinations of all school teachers were conducted. Since most of the complicated tuberculosis cases were transferred to Pulau Jerejak Tuberculosis Hospital, the hospital had built the best X-ray facilities compared with the hospitals in Pulau Pinang.<sup>212</sup>

From the 1950s onward, it was estimated that the Pulau Jerejak Tuberculosis Hospital Camp I had 14 wards. Camp II, which was located opposite the centre of the bay provided lodging for 9 families of Hospital Servants and a school teacher; and Camp III had 7 wards. A Phillip's X- Ray apparatus was installed in Camp III, where X-ray photos could then be taken. There was also an operating theatre attached to Camp III, and Ward 7 of Camp III was set aside for very ill patients who required special nursing.<sup>213</sup>

There was a school attached to Camp II to cater for the needs of the children of the hospital workers. The camps also provided places of worship for all communities. Other facilities like motorboats were made available to the hospital.<sup>214</sup> The motor boats ran every day from the 1950s onwards, between Pulau Jerejak and the Marine Depot of Glugor, conveying patients, relatives and friends of the inhabitants, to and from the island.<sup>215</sup> On Sunday the motor boats made two special trips from Victoria Jetty of Penang Island, transporting visitors and deliveries for patients.<sup>216</sup>

In 1951, it is reported that Pulau Jerejak Tuberculosis Hospital received an average of 342.17 patients per day and register an average death rate of 64 per day.<sup>217</sup> The details are portrayed in Table 5.8 below

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<sup>211</sup> Ibid.

<sup>212</sup> CO 859/216/1, Anti-tuberculosis programme, Colonial Office, The National Archives, UK, 1951, p.21 and p.22.

<sup>213</sup> MED/PG/188/ 51, Pulau Jerejak- Health Inspection Visits, Kementerian Kesihatan Malaysia, p.6 and p.8.

<sup>214</sup> CO 927/86/5, Malaya: tuberculosis survey, Colonial Office, p.19.

<sup>215</sup> MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, p.1 and p.2.

<sup>216</sup> Ibid.2.

<sup>217</sup> MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, p.1A.

**Table 5.8** Average Daily Patients, Total of Patients Admitted and Deaths at Pulau Jerejak, Tuberculosis Hospital, 1951

Hospitals	Average Daily No. of Patients.	Total No. of Patients Admitted.	Deaths	Deaths per 100 Admissions.
<b>Tuberculosis Hospital</b>	342.17	286	64	22.37
<b>Total :</b>	342.17	286	64	22.37

Source: MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.1A.

Among these deaths, the mortality can be seen to be higher among the Chinese and the Indians compared with other ethnic races like the Malays (Tables 5.8 and 5.9).

**Table 5:9** Racial Incidence of Certain Diseases among Hospital In-patients, 1951

Diseases	Chinese		Indians		Malays		Others	
	Admis-Sions	Deaths	Admis-sions	Deaths	Admis-sions	Deaths	Admis-sions	Deaths
Pulmonary Tuberculosis	226	56	50	6	8	2	2	-

Source: MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.3.

Also, there were formal issues like patients being admitted into the Pulau Jerejak Tuberculosis Hospital without a proper diagnosis to prove that the person had been infected with tuberculosis.<sup>218</sup> The proper procedure was to admit these cases to a medical ward where they could be transferred to a tuberculosis ward if necessary.<sup>219</sup> This had resulted in endless waiting lists for admission into the tuberculosis wards and it became extremely difficult to reserve emergency beds if admission was not done via the Chest Clinic. This matter accounted for the shortage of accommodation.<sup>220</sup>

<sup>218</sup> CO 717/196/10, Tuberculosis sanitorium at Pulau Jerejak, Penang, Colonial Office, p.10.

<sup>219</sup> MED/PG/258, Accommodation for T. B. Patients, Kementerian Kesihatan Malaysia, p.16.

<sup>220</sup> Ibid.17.

In Pulau Jerejak Tuberculosis Hospital, the patients received their food at the regular hour in accordance with orders issued by the MO. Between 5:30 am to 6:30 am, plain porridge with salt was served followed by a cup of tea with milk at about 8:00 am.<sup>221</sup> One raw egg was served to all patients and extras were given according to the instructions from the Medical Officer. In special cases, Milo or Ovaltine were also served. The mid-day meal consisted of vegetables and some beef, or pork, or duck's egg or fish or salted fish. The last meal for the day was served at 5:00 pm and the menu was similar to the mid-day meal.<sup>222</sup>

Similar meals were served to other patients at Pulau Jerejak Tuberculosis Hospital with the exception of eggs, milk and beverages like Ovaltine and Milo, which were additional items in the diet of the tuberculosis patients only. Some more fortunate patients received additional food from their relatives.<sup>223</sup> Rations were also cooked in communal kitchens and served to patients. About 12% of patients, whose general physical condition permitted, were allowed to cook meat and vegetables (curry) for themselves.<sup>224</sup>

Popular hobbies among them were fishing, painting, gardening and vegetable growing, tailoring, knitting and making of fish nets. The members of the British Red Cross Society visited the camps once a week and trained the patients in various handicrafts as diversional therapy. There was a common club for patients in Camp III where indoor games are encouraged. A similar recreation club was introduced in Camp I. A small library was also attached to Camp III, fairly well stocked with books.<sup>225</sup>

Other efforts were encouraging women to take up training in fine embroidery at Messrs Singer Sewing Machine Corporation so that on their return, they could teach the patients at Pulau Jerejak Tuberculosis Hospital.<sup>226</sup> There were no patients who could do embroidery at this hospital. The full course was three months but one could be proficient in

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<sup>221</sup> MED/PG/328/49, T. B Hospital Pulau Jerejak, Kementerian Kesihatan Malaysia, p.4.

<sup>222</sup> Ibid.

<sup>223</sup> MED/PG/188/ 51, Pulau Jerejak- Health Inspection Visits, Kementerian Kesihatan Malaysia, p.1.

<sup>224</sup> MED/PG/328/49, T. B Hospital Pulau Jerejak, Kementerian Kesihatan Malaysia, p.2A.

<sup>225</sup> MED/PG/46/54, British Red Cross Society General, Kementerian Kesihatan Malaysia, p.13

<sup>226</sup> Ibid.

a single month. The total cost of the training was about \$40 per month i.e. \$20 for fee and about \$20 for materials. This expenditure was described as an “*Occupational Therapy*”,<sup>227</sup> which later turned out to be profitable for tuberculosis institutions as well as for the less serious patients to develop occupations in the future.

The Pulau Jerejak Tuberculosis Hospital was well-known for treating tuberculosis patients and was increasing in popularity in North Malaya. However, the hospital had a major shortage of accommodation due to the increasing number of patients. Because of the space constraints of the hospital, constant repairs and alterations had to be carried out. The main desire was for the expansion of accommodation for patients at Pulau Jerejak Tuberculosis Hospital and the upgrading of hospital and clinical facilities.<sup>228</sup> By the end of the Second World War in 1946, a report from the medical authorities in Pulau Pinang pointed out that the buildings at the hospital were very old and needed major repairs and renovations. Several buildings were without doors and windows and the woodwork was on the verge of collapse. Accidents happened occasionally when floorboards and staircases collapsed. It was also reported that during heavy showers the rain water beat into the wards to the detriment of the tuberculosis patients.<sup>229</sup>

Increase in population led to the number of patients rising from 100 in January 1949 to 200 in August 1949. There were other issues like sanitation, like many other hospitals of Pulau Pinang. Installation of modern sanitation in these camps was seriously considered during this time.<sup>230</sup> The sanitation system of the Pulau Jerejak Tuberculosis Hospital, like other hospitals in Penang Island and Seberang Perai, was very poor at that time. The hospital used the simple arrangement of a bucket system, which was then emptied into the sea. The

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<sup>227</sup> Ibid.14.

<sup>228</sup> MED/PG/188/ 51, Pulau Jerejak- Health Inspection Visits, Kementerian Kesihatan Malaysia, p.12.

<sup>229</sup> MED/PG/328-49, T. B Hospital Pulau Jerejak, Kementerian Kesihatan Malaysia, p.2.

<sup>230</sup> Ibid.

toxic wastes of the hospitals were thus thrown into the sea at that time, which consequently caused infectious diseases to be spread further.<sup>231</sup>

The Pulau Jerejak Tuberculosis Hospital also suffered from water scarcity since the water supply came from a reservoir which was fed from subsoil wells, and another reservoir which drew its supply from a catchment area, but pipeline facilities were poorly maintained during this time.<sup>232</sup> An annual report of 1950 shows that during the drought in March 1950, 225 tons of water at \$6/= a ton, had to be bought and transported by a water boat for the use of patients and staff. During March and April 1951, 341 tons of water had to be brought over at \$6/= a ton to relieve water scarcity. The country did show that they received adequate rainfall, but inadequate reservoir provision had contributed to water scarcity in the hospital.<sup>233</sup> Table 5.10 shows the amount of rainfall received in Malaya from 1947 to 1951.

**Table: 5.10** Rainfall received in Malaya and Scarcity of Rainfall owing to Lack of Reservoir, 1947-1951

<b>Rainfall</b>	
1947	2751 mm
1948	1610 mm
1949	2507 mm
1950	2262 mm
1951	2358 mm

Source: MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.3A.

In 1951, there were also incidents of patients falling into the water and dying while trying to reach the hospital. People arriving by *sampan* (small wooden boat) were reported to have been dashed into pieces near the hospital camps on several occasions.<sup>234</sup> Facilities like motorboats were made available to Pulau Jerejak Tuberculosis Hospital from 1950s

<sup>231</sup> CO 717/196/10, Tuberculosis sanitorium at Pulau Jerejak, Penang, Colonial Office, p.34.

<sup>232</sup> MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, p.2.

<sup>233</sup> Ibid. p.3A.

<sup>234</sup> MED/PG/188/ 51, Pulau Jerejak- Health Inspection Visits, Kementerian Kesihatan Malaysia, p.10.

onward, when two or more of such boats were running around the hospital conveying patients, relatives and friends to and from the Island.<sup>235</sup>

Unfortunately, Pulau Jerejak Tuberculosis Hospital did not only have a problem with patient accommodation but also with a shortage of hospital quarters for the hospital attendants. Only on 11<sup>th</sup> December, 1954, additional bed space was made available in the tuberculosis hospital of Pulau Jerejak, an addition to the existing 400. This enabled more tuberculosis patients to gain admission to the hospital.<sup>236</sup>

Table 5.11 shows the breakdown of facilities of Pulau Jerejak Tuberculosis Hospital in 1954. It shows there was a shortage of hospital quarters for the attendants.<sup>237</sup>

**Table 5.11** Breakdown of facilities available in Pulau Jerejak Tuberculosis Hospital, 1954

No.	Items	In hand	Required	Remarks
1.	Bed Space	100		50 in Camp I, all males. 30 males and 20 females in Camp III.
2.	Bedsteads	100	--	Enough in hand to supply.
3.	Mattresses	100	--	Enough in hand to supply
4.	Pillows	150	--	Enough in hand to supply.
5.	Bed Sheets	200	--	Enough in hand to supply
6.	Pillows Cases	300	--	Enough in hand to supply
7.	Blankets	100	--	Enough in hand to supply
8.	Pyjamas Jackets	200	--	Enough in hand to supply
9.	Pyjamas Trousers	200	--	Enough in hand to supply
10.	Lockers	100	--	Enough in hand to supply
11.	Chairs	100	3	Enough in hand to supply
12.	Staff:- Hosp. Assistants & Male Nurses	0		Quarters available for one married man and two bachelors.
13.	Hosp. Attendants	0	19	Quarters for the additional 19 is not available. If this is going to be built at least 10 should be married quarters out of the 19, 3 should be female attendants.

Source: MED/PG/258/52, Accommodation for T. B. Patients, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, 1955, p.26.

<sup>235</sup> Ibid.

<sup>236</sup> MED/PG/258/52, Accommodation for T. B. Patients, Resident Commissioner Penang, p.7A.

<sup>237</sup> Ibid.p.26.

## The Shortcomings in Treating Tuberculosis Patients

The Government hospitals had their shortcomings when dealing with tuberculosis patients. Pulau Pinang had a serious shortage of accommodation. This problem was not confined only to the hospitals, but also existed in the daily life of the inhabitants of Malaya.<sup>238</sup> Housing facilities with healthy living conditions were hard to find. Many areas remained over-populated, with less space for the people. Under these conditions, it is not surprising that tuberculosis became again a growing menace to the health of the population. Among many issues faced by Penang General Hospital, accommodation remained the main issue when it came to allocation for tuberculosis patients.<sup>239</sup>

In 1948, the Chief Medical Officer, Dr. J. G. Davies, who oversaw tuberculosis in Penang General Hospital announced the dire need to increase accommodation in Pulau Pinang.<sup>240</sup> More accommodation was needed for hospital staff as well as facilities for patients. Speaking of the needs and convenience of the hospital staff, Davies states that,

the existing of two rooms on the Ground Floor A Block [for the Chest Clinic], one further room is required. The most suitable room for this purpose is that at present occupied by the Lady Almoner. The present P. P. Room would be retained for that purpose and a third P. P. table could be installed. The other room at present used by The Medical Officer – in – Charge Tuberculosis would then become the Officer occupied by the Supervisor Chest Clinic and the Assistant Medical Officer. In this room a Screening X-ray apparatus would be required and it would be necessary to be able to block out the room while Fluoroscopy was in progress. The Lady Almoner's room would then be used as the Officer of the Medical Officer in Charge Tuberculosis.<sup>241</sup>

The Tuberculosis Advisory Board also demanded that the government extend the provision of funds for the accommodation of tuberculosis patients. Also, the board urged the government to respond to the need to provide more beds for the treatment and for isolation

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<sup>238</sup> MED/PG/426, T. B cases going to Australia for Treatment, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.14.

<sup>239</sup> SUK33/2311, Annual Report Settlement of Penang, 1952, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.13.

<sup>240</sup> RCP/ PUB/ 519/ 47, Reports on patients in T. B Ward, Penang, Resident Commisioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 10.

<sup>241</sup> MED/PG/258, Accommodation for T. B. Patients, Kementerian Kesihatan Malaysia, p. 5.

of tuberculosis patients.<sup>242</sup> Such issues led to long waiting lists. The patients were required to wait for a long time before they could be admitted into hospital. A report dated 29<sup>th</sup> August 1954 shows that many patients who were on waiting lists were mainly from the third class male patients in Penang General Hospital. The lists can be seen in Table 5.12.<sup>243</sup>

**Table 5.12** Tuberculosis Patient's Waiting Lists in Pulau Pinang, 1951

Hospitals	Males	Females
General Hosp. Penang	59	1
Pulau Jerejak	21	2

Source: MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.4.

However, there were no waiting lists for the other government hospitals around Seberang Perai. The approximate time a male patient must wait for entry into the Penang General Hospital was 2–2½ months and for Pulau Jerejak was one month.<sup>244</sup> Approximately, forty patients were receiving chemotherapy as out-patients, while awaiting admission in Penang General Hospital. There was practically no delay in admitting second class males and all female patients. In other words, there was no waiting list for the first and second class male or female patients or for third class female patients.<sup>245</sup> Any patient whose general condition was terrible was admitted immediately as were all cases of miliary tuberculosis or tuberculosis meningitis or any case whose chances of recovery would be seriously prejudiced by having to wait for admission.<sup>246</sup> Thus, the hospital was suffering not only from infrastructural facilities, but also from deeply embedded class segregation where people were or were not treated according to their social standing.<sup>247</sup>

<sup>242</sup> Ibid.

<sup>243</sup> MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, p.4.

<sup>244</sup> MED/PG/258, Accommodation for T. B. Patients, Kementerian Kesihatan Malaysia, p.2.

<sup>245</sup> MED/PG/105/52, Annual Report 1951, T. B Hospital, Pulau Jerejak, Kementerian Kesihatan Malaysia, p.18.

<sup>246</sup> Ibid.

<sup>247</sup> SUK451/1124, Annual Report Settlement of Penang, 1951, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.38.



**Table 5.13 Tuberculosis Patients admitted to Hospitals in Pulau Pinang, 1952**

<b>Hospital</b>	<b>Males</b>	<b>Females</b>
General Hosp., Penang	92	70
Pulau Jerejak	330	70
Perak Road	30	-
Butterworth	14	-
Sungai Bakap	30	7
Total:	496	147
Grand Total	643	

Source: MED/PG/258, Accommodation for T. B. Patients, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p. 4.

Looking at the needs of the patients, there were a lack of facilities like waiting rooms, beds, pillows and accommodation for third class tuberculosis patients. And it is more difficult to provide such amenities due to the lack of funds.<sup>248</sup> Davies reported that the third-class tuberculosis patients were not given enough attention and so requested that the whole of the third Floor “C” Block in Penang General Hospital should be converted to a ward for the third-class tuberculosis patients. The reason behind this was to accommodate the first and second class tuberculosis patients somewhere else (new or old accommodation), and to avoid sending patients who could recover to the tuberculosis hospital in Pulau Jerejak.<sup>249</sup> Such measures were conducted in order to treat the patients in Pulau Pinang itself, instead of transferring them to areas where more patients had accumulated.<sup>250</sup>

At Penang General Hospital, further cases of heart disease, cancer of the lung and pneumonia were also being admitted to tuberculosis wards after a casual examination had been conducted.<sup>251</sup> This led to a shortage of beds and accommodation in tuberculosis wards. There are actual tuberculosis patients who were not able to receive admission for treatment

<sup>248</sup> Ibid.

<sup>249</sup> CO 717/196/10, Tuberculosis sanatorium at Pulau Jerejak, Penang, Colonial Office, p.6.

<sup>250</sup> CO 927/86/5, Malaya: tuberculosis survey, Colonial Office, p.14.

<sup>251</sup> Ibid.

because of the lack of beds in Bukit Mertajam hospital. As stated by V.V. Narayanan, (Medical Officer at Bukit Mertajam hospital):<sup>252</sup>

After investigations I came to diagnose 3 cases of Pulm. Tuberculosis amongst male patients, and 2 cases among female patients, 3 of them are sputum positive and bilateral. There are no beds available in Sungai Bakap Hospital. If these patients are discharged they return to their houses (usually crowded like Laborer's Qrs.) and could be a source of infection to many young children. I cannot retain them for more than a few days in the General Medical Ward. Further I have no T. B. beds at present. I shall be grateful if you could help me by accommodating them in Pulau Jerejak.<sup>253</sup>

Since there were many shortcomings in the General Hospitals ability to treat tuberculosis patients, many private associations and voluntary organisations had helped in the fight against the disease in Penang Island and Seberang Perai. In addition, some communities started to set up hospitals to handle infectious diseases.<sup>254</sup> The establishment of the Lady Templer Hospital for tuberculosis was one such example. This hospital was established on the outskirts of Kuala Lumpur and was launched in October 1954.<sup>255</sup> The hospital was expected to bring better facilities for the treatment of the acute cases by surgery. Although the hospital is a government hospital, it was built and maintained by voluntary funds under a Board of Governors.<sup>256</sup>

There were also other community health care centres in Penang Island which served the cause of tuberculosis like the Hospital Lam Wah Ee.<sup>257</sup> This hospital was set up by the Chinese community in 1883 in Jalan Tan Sri Teh Hwe Lim, Penang Island. They started with traditional medicines and facilities, but later move towards allopathic medicines. The hospital was financed by public donations and rents collected from properties, which were donated by philanthropists. By the end of the 1950s, with the move into the new era, the hospital was actively involved in setting up branches for tuberculosis treatment like 'Pulmonary Lung

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<sup>252</sup> MED/PG/130, Annual Report 1951, Bukit Mertajam, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.4.

<sup>253</sup> Ibid. p.5.

<sup>254</sup> 248/PTI, Tuberculosis- the Penang's Province Wellesley Association for the Prevention of Tuberculosis, Pejabat Penerangan Pulau Pinang, p.6.

<sup>255</sup> Ibid.

<sup>256</sup> CO 927/284, Tuberculosis research in Malaya, Colonial Office, p.7.

<sup>257</sup> SUK33/2311, Annual Report Settlement of Penang, 1952, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.37.

Function Analysis'. Other privately-run hospitals like the Penang Adventist Hospital. (established in 1924) also helped in the interests of numerous diseases like tuberculosis.<sup>258</sup>

### **Financial Aid and Allowances given to Tuberculosis patients and their families**

The Treatment Allowance Scheme was introduced to ease the burden of tuberculosis patients and the financial burden to their respective families. However, not every tuberculosis positive patient could receive this allowance due to lack of funding. And each year, there was an increasing number of tuberculosis patients from the 1920's to the 1950's. Thus, not all tuberculosis patients were able to receive such aid.<sup>259</sup> By the end of the 1920s, Mrs. Cheah Inn Kiong reported that 27 families were receiving relief – 25 fully and two partially. Such families, which were victims of tuberculosis, were usually from the poor.<sup>260</sup> Table 5.14 illustrates the food and health relief were that were given to 27 families as part of the treatment scheme.<sup>261</sup>

**Table 5.14** Materials and Facilities Provided to 27 Family Groups in Pulau Pinang, 1949

<b>Materials and Facilities Provided</b>	<b>Expenditure</b>
Eggs for the Settlement	\$163.73
Foodstuffs and eggs etc.	586.96
Transport allowance	120.00
Total	870.69

Source: RCP/ MED/ 1480/47, Penang Tuberculosis Campaign, Resident Commissioner Penang, Arkib Negara Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.16.

The poor patients and family members were usually served with several health foods such as powdered milk, Ovaltine, Scotts Emulsion and eggs. As written in a case study, in 1949, the Tuberculosis Association in Pulau Pinang had spent less than \$10 per family for

<sup>258</sup> Ibid.

<sup>259</sup> 248/PTI, Tuberculosis- The Penang's Province Wellesley Association for the Prevention of Tuberculosis, Pejabat Penerangan Pulau Pinang, p.2.

<sup>260</sup> RCP/ MED/1480/47, Penang Tuberculosis Campaign, Resident Commissioner Penang, p.7.

<sup>261</sup> Ibid. p.16.

every distribution. This does not include the milk and Scotts Emulsion provided in the hospitals.<sup>262</sup> The following food aid was given to poor patients and families treated in the hospital:

- a) 1 katty of Mee or Rice Noodles
- b) 1 katty of ground nuts
- c) 1 katty of green peas (“lek-tau”)
- d) 1 katty of ikan bilis or dried prawns
- e) 1 katty of shredded meat (“bah-hu”)
- f) 1 tin of butter, 2 tins dried milk, and 10 duck eggs
- g) Occasionally, when supplies permitted, 1 bottle of Scotts Emulsion

This shows that the patients were not only given clinical help, but were also supported with various dietary supplements and treatment for health.<sup>263</sup>

As for Dependent’s Relief Schemes, this was funded by formal organisations through financial assistance or fund raising. One of these formal organisations known as the Malayan Association for the Prevention of Tuberculosis provided financial assistance to the dependents of tuberculosis patients to enable the dependents to visit the patients in hospital.<sup>264</sup>

In 1949, another scheme called the domiciliary scheme was introduced in Pulau Pinang, Ipoh, Kuala Lumpur and Johor Bharu for the treatment of pulmonary tuberculosis. Similar schemes were being made to launch in Seremban and Kota Bharu. In each place the general idea of the scheme was the same.<sup>265</sup> The Central Welfare Council provided the funds for the provision of food and additional bedding for the patients which had allocated a sum of \$100,000 to be spent on domiciliary anti-tuberculosis work throughout the Federation.

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<sup>262</sup> MED/PG/20/57, The Penang & Province Wellesley Association for the prevention of Tuberculosis, Jabatan Kesihatan Pulau Pinang, p.9.

<sup>263</sup> Ibid. p.10.

<sup>264</sup> RCP/ MED/ 1480/47, Penang Tuberculosis Campaign, Resident Commissioner Penang, p.14.

<sup>265</sup> RCP/ PUB/ 519/ 47, Reports on patients in T. B Ward, Penang, Resident Commissioner Penang, p.3.

Medical practitioners were giving their voluntary services and requested the Government to fund the relatively small items which were required for the working of these schemes, and to pay for the incidentals for these staff members, such as travelling expenses.<sup>266</sup>

The typical items required for each town in which the scheme was being launched was the cost of two health nurses, one laboratory assistant and one attendant. The total estimated cost of this, together with incidental expenditure was approximately \$10,000 a year. It was requested that a provision of \$60,000, a year, for the staff for domiciliary tuberculosis schemes to be allocated for expenditures during 1948.<sup>267</sup> The amount which was likely to be required in the next year should then be not more than \$30,000. In the 1949 estimation, \$60,000 was to be provided as a Federal vote for these schemes. It was hoped that after 1949, these schemes would have proved their worth, and that provision in future years would be made in the State estimates.<sup>268</sup>

## **Conclusion**

The effort to eradicate tuberculosis in Penang Island and Seberang Perai was largely performed by their respective governments to help prevent the spreading of tuberculosis. These organisations had set up Diagnosis Clinics and provided Florescent Screening Rooms to trace those with tuberculosis so that they could be treated as quickly as possible. In addition, a Treatment Allowance Scheme was also implemented to ease the burden of tuberculosis patients and the financial burden on their respective families. However, not every tuberculosis positive patient received this allowance because there was a lack of funding.

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<sup>266</sup> RCP/PUB/271/47, Problems of Rural Province Wellesley, Resident Commisioner Penang, p. 6.

<sup>267</sup> SUK/412/2311, Annual Report Settlement of Penang, 1948, Pejabat Setiausha Kerajaan Negeri Pulau Pinang, p.43.

<sup>268</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p. 10A.

When the government could not provide sufficient effective action to deal with the increasing rate of tuberculosis, there were non-governmental organisations and civic-minded community leaders who had initiated measures to improve the health of the people. The Federation of Malaya (Pulau Pinang included) had a Tuberculosis Advisory Board, which was created in 1947 to deal with this disease. The Tuberculosis Advisory Board contained both medical representatives and members from all sections of the public, and there was also a voluntary unofficial Association for the Prevention of Tuberculosis which had branches or affiliated societies in every state and settlement. In addition to the formal institutionalised system fighting the tuberculosis cause, there were also medical measures taken up by the government and various voluntary associations.

The non-profit organisations that helped with the cause of tuberculosis through funding and other help, like provision of food and care to the poor and needy patients, include the 'Malayan Association for the Prevention of Tuberculosis', the 'Penang and Province Wellesley Association for the Prevention of Tuberculosis' and the 'Turf Club', which was a horse racing club established in 1864. The Malayan Association for the Prevention of Tuberculosis (MAPTB), which began on 27th June 1948, was responsible for launching an anti-tuberculosis movement in the Malay Federal States. The association also helped tuberculosis by providing finance. As for the Turf Club, although no records have attested to the Turf Club helping the cause of tuberculosis since its foundation till the end of the war, the last period of colonialism saw the Club being actively involved in the tuberculosis cause.

Apart from these associations, a series of other measures were taken to prevent the spread of tuberculosis in Pulau Pinang by the colonial government and the people. There was the Sub-Committee in the Perak Road Settlement which was co-opted to serve on the Tuberculosis Committee of Penang in 1947 and was tasked with the leading of tuberculosis awareness campaigns. The Committee actively engaged in the work through the medium of the Press, Radio Malaya, posters, cinema slides and a mobile P.A. Van. Every endeavour

towards tuberculosis preventive education was made by means of films, posters, leaflets, informal talks, etc., to educate the people in methods of cleanliness and personal hygiene with a view to avoiding infection and limiting the spread of the disease. There were also many other ways through which awareness was raised. For instance, there were systems like poster competitions and prizes were distributed to encourage people to join the awareness campaign in 1949. Dance competitions were also held later.

The Women's Service League of Malaya was founded after the Second World War in 1946. The Women's Service League and Y.W.C.A. (Young Women's Christian Association) also made numerous visits to houses to trace early cases of tuberculosis, so that patients with the disease could be brought to hospitals. This was to help stop its incidence from becoming worse, as it could be fatal. In 1947, there were 13,000 tuberculosis patients who received treatment at their respective homes. Mrs. Cheah In Kiong, was a nurse who was trained others at the tuberculosis Committee to visit houses and residents who were suspected to be suffering from tuberculosis.

The adoption of modern technology from Europe helped with the detection and prevention of Tuberculosis in Pulau Pinang. X-rays, discovered by a German Physicist, Wilhelm Rontgen in 1895, were widely adopted all around the world to detect Tuberculosis cases. The X-ray technique was first used in Penang General Hospital and Pulau Jerejak Tuberculosis Hospital for diagnosis in 1908. X-rays became very common after the Second World War. After the 1950s, X-ray use became even more regular. By the end of the 1950s, there was an average of 80 cases per month that were being X-rayed. Various medications such as streptomycin, Purified Protein Derivative, isoniazid and paraaminosalicylic acid were given to patients, together with treatments of X-ray radiography and chemotherapy.

X-Rays of the chest can help confirm various signs of pulmonary tuberculosis such as pleural effusion, collapse of lung, branchiactasis, miliary symptoms and calcification of the pulmonary region. Some of these diagnoses were also applied in Pulau Pinang in the

colonial period. In fact, X-ray equipment was used for diagnosis in both Penang General Hospital and Pulau Jerejak. X-rays, however, became common only during the 1950s. They used various treatments which were given to patients at that time, including streptomycin and Purified Protein Derivative,

Disease, however, cannot be cured by spreading awareness alone. Thus, there were clinical campaigns like the Bacillus of Calmette and Guérin or Bacille de Calmette et Guérin (BCG) Campaign, which started in the entire Federation of Malaya in 1951. BCG is a vaccine that provides immunity or protection against tuberculosis. The campaign was mainly carried out in schools, infant welfare centres, outpatient departments attached to hospitals and certain rural areas. Response from the public was satisfactory. In 1954, 109,129 people were tuberculin-tested and of those 50,024 received BCG Vaccinations. In addition 12,105 newborn babies were also vaccinated.

In 1956, the BCG Campaign was still being carried out in the Federation of Malaya. Selected groups of the population, namely school children, newborn babies and certain members of public institutions, were tuberculin tested and vaccinated. In 1956, 108,632 people were tuberculin tested and of these 37,131 received BCG Vaccination. In addition, 14,427 newborn babies were also vaccinated. Other modern clinical treatments included early diagnosis through X-rays, and this treatment was also taken up. X-Rays of the chest were considered as a very important diagnostic tool in checking for pulmonary tuberculosis.

Government hospitals and dispensaries in Penang Island and Seberang Perai were the main centres for tuberculosis patients to receive their treatment. During the period of 1900 to 1957 there were six government hospitals in Pulau Pinang which offered treatment and admission for tuberculosis patients. These hospitals were General Hospital Penang, Pulau Jerejak Tuberculosis Hospitals, Perak Road Hospital, Butterworth Hospital, Bukit Mertajam Hospital and Sungai Bakap Hospital. These government hospitals and dispensaries were



responsible for various diagnosis systems, vaccination, immunisation, and treatment together with financial help and the clinical facilities.

Penang General Hospital was the main government hospital in the state and was the referral centre for all tuberculosis patients in Pulau Pinang from 1900 until 1957. Tuberculosis was one of the most common medical complaints received in the Penang General Hospital. As far as the beds could permit, early cases suitable for active treatment were admitted to the hospital. In addition, advanced cases that required nursing were also looked after in the hospital. Patients with chronic ailments, including pulmonary and extrapulmonary cases were sent to the Tuberculosis Hospital Pulau Jerejak. More than a quarter of the hospital beds in Malaya during the colonial period were occupied by tuberculosis patients, and most of them were in advanced stages. There was high demand for hospital beds among tuberculosis patients. Despite providing such medications, these hospitals - Penang General hospital and Pulau Jerejak Tuberculosis Hospital, along with the patients - continued to face various issues.

These issues included a dearth of accommodation, lack of availability of facilities like waiting rooms, shortage of beds and accommodation for third class tuberculosis patients, rooms in need of repair, poor sanitation and a shortage of boats for transport. However, laying aside the difficulties, the facilities available in these hospitals were able to bring down the tuberculosis mortality rate by the time colonialism came to a close in Penang Island and Seberang Perai. To overcome this weakness, the British Colonial Government suggested that private hospitals be more socially responsible and also support the treatment of TB patients. As a result, private hospitals such as Lam Wah Ee and Seventy Day Adventist Hospital build separated wards.

According to the Penang Medical Report in 1953, 370 tuberculosis patients received treatment in private hospitals in Pulau Pinang, and this shows that private hospitals also championed the prevention of TB in Pulau Pinang. All these prevention and treatment

efforts, as well as the introduction of modern technology and medicine from the west like X-ray, B.C.G vaccinations, Streptomycin, Para-aminosalicylic acid (PAS) and other medications reduced the death rates from as high as 64% in 1900 to only 17% in 1955. This proves that working together and proper coordination between the Colonial Government, State Departments, NPO's and Private Hospitals was very important.

University of Malaya

## CHAPTER 6

### HISTORY OF LEPROSY IN PULAU PINANG, 1900-1957

#### Introduction

Leprosy is a chronic, infectious disease and is known to be of the oldest diseases in history, being mentioned by various ancient writers in their texts. The first part of this chapter will focus on the origin of the disease and the history of the disease in the region. The objective of this part is to understand the historical background of leprosy, the transmission of the disease, enactments and laws for compulsory segregation and the importance of the establishment of early treatment quarantine camps like Sungai Buloh Leper Settlement, Pulau Jerejak Leper Settlement and Singapore Leper Settlement. Compulsory notification, isolation and segregation of leprosy patients was necessary according to the Leper Enactment Act 1926 and Leprosy Ordinance No. 673 (Chapter 194), which made it clear that leprosy patients were prohibited from staying in any private residence without a permit from the District Hospital Medical Officer. Leprosy patients who did not follow this rule were to be arrested under section (6)11.

The second part of this chapter will focus on the importance of the Pulau Jerejak Leper Settlement as a treatment centre in the region and the education, employment, problems and limitations it encountered. Pulau Jerejak Leper Settlement was in the south-eastern part of Penang, and was the leper asylum in the island from 1871. The cost for construction was supported by successful Chinese merchants. Pulau Jerejak Leper Settlement was a successful treatment centre for leper patients, and received, treated, and cured over 20 thousand leper patients over the time span from 1900 to 1957. It also received leper patients

from other states like Singapore and the Federated and non-Federated States in the Malay Peninsula.

In the final section of this chapter, the discussion will focus on the treatment of leper patients in the Pulau Jerejak Leper Settlement and the rehabilitation of ex-leper patients who were released from there. The medication used was important to treat, cure and heal their leper patients. Before the Second World War, Hydnocarpus Oil was a popular and effective medicine which had cured most lepers of their disease. After the Second World War, sulphones became the popular and most effective drugs to treat and cure leper patients. The idea behind rehabilitation was that the person affected by leprosy should be restored back to normal social life, or as near to that as possible. Even though a leper was certified cured and free from leprosy, the disease had a significant impact on his physical and mental health. The new rehabilitation camp for former leper patients who were discharged from the Pulau Jerejak Leper Settlement, called Jawi New Village, located in Seberang Perai, achieved great success in rehabilitation of former leper patients.

## **History and Nature of the Disease**

### **Early History of Leprosy**

Leprosy is one of the oldest and most feared diseases. The origin of this disease can be traced back thousands of years. It is believed that leprosy was referenced in an ancient document in an Egyptian papyrus<sup>1</sup> which was written circa 1500 – 1550 B.C. However, a recent research on the geographical origin of leprosy indicates that it may have originated from the middle of the Far East regions.<sup>2</sup>

Indian writings dated around 600 B.C described leprosy being found. History speaks of the disease being transferred from India to Europe by Alexander the Great and his troops.

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<sup>1</sup> Papyrus can also refer to a document written on sheets of papyrus joined together side by side and rolled up into a scroll, an early form of a book.

<sup>2</sup> FD 1/8599, NIMR: Drs Rees' and Hawking's research on leprosy, Medical Research Council, The National Archives, UK, 1951, p.13. and p.16.

During that period, the disease was not clearly known, neither was there any treatment available.<sup>3</sup> It had then spread to regions, now known as European Countries such as Spain, through the Roman Empire between the fourth and fifth centuries. Leprosy as a disease had also been described in literature of the past, as early as the ancient days of the Papyrus of Rameses.<sup>4</sup>

Researchers and scholars have observed that leprosy was also referred to in the Code of Hammurabi in Babylon. Ancient writers such as Confucius in China also referred to leprosy in their writings. Based on all the writings and analyses made, it can, as already stated, be reasoned that leprosy originated in the middle of the Far East regions.<sup>5</sup> In 625 A.D., Britain established the very first hospital for those suffering from leprosy. Not long after, leprosy had spread to the Baltic countries,<sup>6</sup> and made its way into countries like Iceland and Greenland. During the Dark and the Middle Ages, leprosy was most prominent in the northern part of Europe. But it started to experience a decline in the 14th century. The decrease continued until the 15th century.<sup>7</sup>

In America, it was believed that leprosy entered the country through the ingress of slaves originating from the West Indies. This belief came from the observation that leprosy was a common disease among the black population. Similarly, leprosy had been transmitted to the South Pacific region through the increasing number of traders who were ignorant of the disease. According to best estimates, nearly a quarter of the people in New Caledonia were struck by the disease within the first two years of its introduction.<sup>8</sup>

The flow and movement of leprosy had to be closely followed as it was an important step towards obtaining information about its epidemiology. During the 19th century, leprosy was found to have caused serious damage in the Pacific Islands. Hawaii was the first country

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<sup>3</sup> FD 1/7613, Committee: Conference on Leprosy, Medical Research Council, The National Archives, UK, 1950, p.3.

<sup>4</sup> The Code of Hammurabi is a well-preserved Babylonian law code of ancient Mesopotamia, dating back to about 1754 BC. It is one of the oldest deciphered writings of significant length in the world.

<sup>5</sup> FD 23/952, Leprosy research in Sungei Buloh. Malaya: papers, notes and correspondence: report visit by Dr J A Mc Fadzean from March 1957 to March 1959: memorandum on the work of the Leprosy Research Unit between February 1959 and December 1960, Colonial Office, The National Archives, UK, 1951, p.3 and p.4.

<sup>6</sup> The three countries in northern Europe on the eastern coast of the Baltic Sea: Estonia, Latvia and Lithuania.

<sup>7</sup> CO 927/559, Leprosy research: Malaya, Colonial Office, the National Archives, UK, 1956, UK, p.8.

<sup>8</sup> FD 1/7613, Committee: Conference on Leprosy, Medical Research Council, the National Archives, UK, 1949, p.3 and p.4.

in the Pacific Islands to have experienced leprosy. It was strongly believed that the cause was the migration of the Chinese into the island.<sup>9</sup> Leprosy also spread rapidly at the Pacific Islands because the inhabitants had low immunity. Besides having poor immune systems, the ignorance of the inhabitants about the disease had fuelled the rapid spread of this disease.<sup>10</sup>

### Defining the Disease

Leprosy is one of the oldest communicable diseases that have long afflicted mankind since time immemorial. The disease is mainly caused by a bacterium known as *Mycobacterium Leprae* which affects the nerves and skin of patients. Leprosy is a slow spreading disease and, on average, it takes between two and three years of incubation before it manifests itself. Leprosy is likely to occur at any stage and at any age, ranging from infants to the elderly. It was reported that a case of leprosy has occurred in an infant who was no more than two months old. This is the youngest reported case.<sup>11</sup>

Leprosy is generally transmitted from one person to another through droplets from the nose and mouth. If a leper came into close contact with normal healthy people, the latter might get contaminated. This is especially the case for family members and others who are living close to the infected person. They are at the greatest risk of being infected by the disease. However, once the leper starts to receive regular treatment, he becomes non-infectious. In recent times, there have been studies which show that the disease can also be transmitted by insects.<sup>12</sup>

If the disease can be identified in its initial stages and proper treatment administered, the patients can be completely cured and can go back to living their normal lives. The main treatment available for leprosy was Multi Drug Therapy (MDT). One of the factors that had

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<sup>9</sup> FD 1/7617, Committee: Leprosy Sub-committee and Panels, 1955-1960, Medical Research Council, The National Archives, 1960, p.16.

<sup>10</sup> Haridas, G, *Proceedings of the Alumni Association of the King Edward VII College of Medicine*, Singapore: Business Managers & Publishers, 1949, p.173 and p.176.

<sup>11</sup> CO 859/105/4, British Leprosy Relief Association: statement on future policy, Colonial Office, The National Archives, UK, 1955, p.3 and p.12.

<sup>12</sup> Green R, *Fifty Years of Medical Research in Malaya, 1900-1950*, Kuala Lumpur: Institute of Medical Research, 1950, p.138 and p.142.

caused the rapid spread was the climate. The disease was found to have spread in areas where the humidity of the air was higher. Other reasons could be the sociability and promiscuity of the inhabitants in these countries.<sup>13</sup>

According to the International Leprosy Congress which was held in Cairo in 1938, leprosy can be classified into various stages based on differing degrees of severity. The international leprosy congress first classified the disease into lepromatous and neural, by using the symbols L.1, L.2 and L.3 for lepromatous, and N.1, N.2 and N.3 for neural, in order of increasing severity. In the event of a patient having mixed cases, various combinations of symbols were used, such as L.3, N.2. This entirely depended on the severity of the types of lesion.<sup>14</sup> The lesions which affect the eyes are one of two possible types whereby the first symptom is degeneration of the nerve attached to the cornea,<sup>15</sup> while a second case is described by the abnormal sunken structure of the eyes which includes both the iris and ciliary muscles.<sup>16</sup>

Of the two types of leprosy defined by the International Leprosy Congress in 1938, neural leprosy consists of two sorts of nerve lesions. The first type of neural leprosy is caused by the degeneration of the nerve trunks by the bacilli. This type of leprosy may not be permanent, and if it is detected early and the patient gets treatment, then the disease starts to recede in the early stages of neural lesions anaesthesia.<sup>17</sup> However, if it is undetected or the patient remains untreated, and infection is allowed to persist, fibrosis may occur, leading to the impairment of the nerve fibre, which may also be permanently damaged. When this happens, then the affected muscles will be permanently paralysed. The patient will experience a loss of all sensation in the affected tissues.<sup>18</sup> Gradually ulcers would begin to

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<sup>13</sup> Ibid.

<sup>14</sup> Haridas, G, *Proceedings of the Alumni Association of the King Edward VII College of Medicine*, p.78.

<sup>15</sup> This is the transparent front part of the eye that covers the iris, pupil, and anterior chamber.

<sup>16</sup> Green R, *Fifty Years of Medical Research in Malaya, 1900-1950*, p.135.

<sup>17</sup> CO 927/559, Leprosy research: Malaya, Colonial Office, p.8.

<sup>18</sup> FD 1/8599, NIMR: Drs Rees' and Hawking's research on leprosy, Medical Research Council, p.11.

form on the feet and hands and in areas of small bones in the body, such as the fingers and toes. This phenomenon is popularly known as “Main en griffe”.<sup>19</sup>

In the Pulau Pinang region, slightly raised skin lesions of various sizes that were typically pale or slightly red, hairless and ‘numb to touch’ were considered as the common form of the disease. In such cases, the lesions often contained lepta bacilli. When this was discovered, it was better to isolate the patient and to administer treatment to prevent the spread of lepromatous lesions in the body. Those patients who had minor tuberculoids, and were continuously showing negative results when tested, would receive treatment as outpatients.<sup>20</sup>

Another situation related to leprosy was the Mitsuda reaction. This reaction was the result of a lepromin skin test to determine the type of leprosy the person had. The reaction exists in the form of leproma. A positive finding indicates cell-mediated immunity, while a negative finding suggests a lack of resistance to the disease and also indicates a worsened prognosis.<sup>21</sup> This type of reaction is similar to the reaction in tuberculosis which is known as Mantoux. To perform this test, an intra-dermal injection is given to the patient and the reaction is monitored every 24 to 48 hours.<sup>22</sup> When the reaction is observed at three to four weeks, it is called a Mitsuda reaction, and the positive results indicate that the immune system is capable of mounting an efficient cell-mediated response. A 60 percent outcome would be labelled as pure neural leprosy. A 100 percent outcome would mean it was a case of tuberculoid leprosy. Similarly, if the percentage showed a negative value, then it was a case of lepromatous leprosy.<sup>23</sup>

As mentioned, leprosy is a disease which affects the skin, peripheral nerves and eyes. However, leprosy is not recognised until skin lesions appear. A leper will have one or more skin patches with a definite loss of sensation.<sup>24</sup> This means that he cannot feel anything when

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<sup>19</sup> Ibid.

<sup>20</sup> FD 1/7613, Committee: Conference on Leprosy, Medical Research Council, p.13 and p.16.

<sup>21</sup> Ibid. p.18.

<sup>22</sup> Haridas, G. *Proceedings of the Alumni Association of the King Edward VII College of Medicine*, p.176.

<sup>23</sup> Ibid. p.178.

<sup>24</sup> Stages of processing of the senses in human and animal, such as vision, auditory, vestibular, and pain senses.



touch is applied to those areas. The skin patches are generally pale or reddish copper in colour.<sup>25</sup> The patches on the skin do itch, nor do they hurt. These patches can be present on any part of the body.<sup>26</sup>

The diagnosis of the disease depends on two examinations: clinical and bacteriological. Clinical examination is more important in tuberculoid cases, and bacteriological examination is more helpful in diagnosing lepromatous examples. Various skin tests can be performed when there are suspicions about the existence of the disease.<sup>27</sup> It was easy to recognise the tuberculoid type of leprosy, as there would be conspicuous lesions on the skin. However, it was most difficult to identify the early stages of this leprosy on patients with light-coloured skin. Sometimes the symptoms of the disease may be overlooked, especially among children. As such, a more detailed examination would be required for these cases.<sup>28</sup>

It is also important to know which the symptoms are of leprosy, and which are not. According to a report by the World Health Organisation, the following are not signs of leprosy: i) skin patches where there is no loss of sensation (normal feeling), which itch, and are white or black in colour. ii) birth marks iii) skin patches which spread fast in the body and also disappear suddenly.<sup>29</sup>

In clinical examinations, the indications of leprosy are: i) visible and palpable skin changes ii) sensory alteration in the skin iii) trophic changes in the skin such as sweat function or loss of hair iv) thickening and tenderness of peripheral nerves. Other signs of leprosy include coloured nodules in the skin, shiny diffused thickening of the skin without any loss of sensation.<sup>30</sup> The period of incubation for leprosy may vary from a few months to many years. The formation of primary lesions varies across different age groups and types of

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<sup>25</sup> Ductile metal with very high thermal and electrical conductivity.

<sup>26</sup> FD 1/7613, Committee: Conference on Leprosy, Medical Research Council, p.17.

<sup>27</sup> Ibid.

<sup>28</sup> CO 927/560, Minutes of Conference on Leprosy Research, London, July 1955, Colonial Office, The National Archives, UK, 1955, p.21 and p.22.

<sup>29</sup> Ibid.

<sup>30</sup> Muir E., *Manual of Leprosy*, Edinburgh: E & S Living Store Ltd, 1948, p.79 and p.80.

clothing worn. Signs of infection are initially seen on the face and buttocks, and surfaces of the extensors are more prone to trauma<sup>31</sup> than the flexors.<sup>32</sup>

In some cases, the abnormal coloration of the skin may regress and disappear without any trace. Diagnosis will be very difficult in these cases. When the immune system of the patient weakens due to malnutrition or inter-current infections, then the disease defeats the body's immune system and leads to a situation of lepromata. But when the immune response of the patient is regained, it can bring about the healing of the disease.<sup>33</sup> The condition of lepromata can occur at any time during the course of the disease. This is due to the acute febrile reaction where the body's defence mechanism makes an attempt to destroy the bacteria. Usually the lepra reaction is of a continuous process and may continue for a long period of time in the patient. During this situation, if the patient gets completely exhausted, he will finally succumb to death. Another situation where leprosy leads to the demise of patients is that of renal failure.<sup>34</sup>

It is known that leprosy is a disease which is caused by the bacterium *Mycobacterium leprae*. This bacterium has similar characteristics to the tuberculosis bacterium (*Mycobacterium tuberculosis*), but tuberculosis and leprosy are two different types of diseases. The bacterium *Mycobacterim leprae* is a strong acid-fast organism which is rod-shaped and has parallel sides and rounded ends.<sup>35</sup> This kind of bacterium occurs in large numbers in the lesions of lepromatous leprosy and are usually grouped together, similar to that of a packet of cigars, arranged in a palisade. *Mycobacterium leprae* mainly attacks the nerve trunks of the hand, feet and skin which then lead to the creation of skin patches during the initial stages of infection.<sup>36</sup>

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<sup>31</sup> Damage to a biological organism caused by physical harm from an external source.

<sup>32</sup> Ibid.

<sup>33</sup> FD 1/7613, Committee: Conference on Leprosy, Medical Research Council, p.19.

<sup>34</sup> FD1/1922, Research on leprosy: Professor S Adler; correspondence and application, Medical Research Council, The National Archives, UK, 1950, p.19 and p.20.

<sup>35</sup> A. Joshua Raghavar, *Leprosy in Malaysia: Past, Present and Future*, Selangor: Mantfort Boys Town Printing Department, 1983, p.48.

<sup>36</sup> Ibid. p.61.

The structure (shape and size) of the bacterium is similar to that of tubercle bacillus. These types of bacteria are present in larger numbers in lepromatous or nodular cases. Compared with other bacteria, this is an acid-fast species and can be easily discoloured by alcohol.<sup>37</sup> In a sample taken from laproma, the bacteria often seen in large numbers, usually packing the tissues cells with organisms that are grouped in bundles and arranged, as previously mentioned, in a palisade<sup>38</sup> formation. The masses of bacteria are usually found in both the intra and extra cellular groups, which are called Globi.<sup>39</sup>

This kind of cellular group can be seen where the bacteria bacilli have lost most of their power and are unable to remove the mark or the stain. Usually the technique of pricking a suspected lesion, and then squeezing out a drop, is used to test for the disease in its early stage.<sup>40</sup> After obtaining the drop which is also known as “leper juice”, it is spread on a slide and the Ziehl-Neelsen technique<sup>41</sup> is used to stain it. Apart from this, swabs from the nose and blood taken from the ear can be used to test for the bacilli’s presence.<sup>42</sup>

There have not been any recent revelations pertaining to the means of entry of the bacilli into the human body. It was generally believed that the bacteria are transmitted directly from traumatised skin.<sup>43</sup> Once the bacilli have gained entry into the body, they start to invade the area near blood vessels (perivascular lymphatics) or are ingested by cells in the reticulo-endothelial system.<sup>44</sup> The entry of the bacilli into any human body is different for varying types of immune systems. In cases where the immune response is excellent, it is highly probable that the invading bacilli would be destroyed and the person is not likely to be infected by the disease.<sup>45</sup>

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<sup>37</sup> IMR116/28, Leper Asylum Handing over Charge of- to doctor Amies, Institut Penyelidikan Perubatan, Arkib Negara Malaysia, Kuala Lumpur, p.18.

<sup>38</sup> Any of a number of pales or stakes pointed at the top and set firmly in the ground in a close row with others to form a defence.

<sup>39</sup> Ibid.

<sup>40</sup> FD 1/7613, Committee: Conference on Leprosy, Medical Research Council, p.13.

<sup>41</sup> Known as the acid-fast stain, was first described by two German doctors: the bacteriologist Franz Ziehl and the pathologist Friedrich Neelsen. It is a special bacteriological stain used to identify acid-fast organisms, mainly Mycobacteria.

<sup>42</sup> CO 927/560, Minutes of Conference on Leprosy Research, London, July 1955, Colonial Office, p.15.

<sup>43</sup> Subject to lasting shock as a result of a disturbing experience or physical injury.

<sup>44</sup> Ibid.

<sup>45</sup> Haridas, G, *Proceedings of the Alumni Association of the Kind Edward VII College of Medicine*, p.173.

On the other hand, when the immune response is poor, then the bacilli can invade the nerve trunks via the lymphatic channels.<sup>46</sup> While the immune response remains poor, the bacilli usually spread at very fast rate in the body. There are generally two ways through which the bacilli spreads; the direct way, that is through the wandering histiocytes, the other way being through blood. In the second way, the groups of bacilli spread through the entire body using the blood stream as their channel.<sup>47</sup>

When the leper is in the advanced stage of the disease, then the mucous membranes of different parts of the body such as those in the eyes, mouth and nose get infected, along with the liver and spleen. The kidneys also get infected, and the bacillus may be found in the glomeruli. However, the bacillus does not infect the lungs in any way.<sup>48</sup>

Another factor which is responsible for the spread of the disease is the concealment in houses, which often contain predispositions. There has not been any evidence which shows that the disease was transmitted through casual contact with lepers. However, if the contact is sustained for a longer time and there is a fair amount of intimacy, transmission of the disease is possible.<sup>49</sup> The spread of leprosy during the war period was mainly because the troops had to stay in unhygienic<sup>50</sup> conditions during transportation. The European troops therefore brought the disease to the Middle East after each war. Also, it was a belief at that time that a woman who was suffering from leprosy could cure herself by transferring the disease to other unsuspecting males.<sup>51</sup>

The transmission of leprosy varied with the type of cases. Tuberculoids leprosy is not as dangerous as the other types of leprosy. However, the concealed cases of leprosy in women became exposed after the birth of a child. In this case, the danger of leprosy, which the

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<sup>46</sup> CO 859/105/4, British Leprosy Relief Association: statement on future policy, Colonial Office, The National Archives, UK, 1950, p.19.

<sup>47</sup> FD 1/1922, Research on leprosy: Professor S Adler; correspondence and application, Medical Research Council, The National Archives, UK, 1951, p.19.

<sup>48</sup> Ibid.p.66.

<sup>49</sup> FD 23/952, Leprosy research in Sungei Buloh. Malaya: papers, notes and correspondence: report visit by Dr J A Mc Fadzean from March 1957 to March 1959: memorandum on the work of the Leprosy Research Unit between February 1959 and December 1960, p.24.

<sup>50</sup> Not clean or sanitary

<sup>51</sup> CO 927/560, Minutes of Conference on Leprosy Research, London, July 1955, The National Archives, 1955, p.18.

infected mother poses to her child, is related to the number of bacilli that she is capable of shedding.<sup>52</sup>

### **Early History of Leprosy in the Malay Peninsula**

Before the 17th century, there was very little information available on the early history of leprosy in the Malay Peninsula, apart from some vague and scanty references to the disease by Portuguese historians of the 15th century.<sup>53</sup> The existence of leprosy in the Malay Peninsula can be traced back to the 15th century, where the disease was recorded in the classic Malay literature “The Malay Annals”.<sup>54</sup> It was discovered that one of the reasons behind the spread of leprosy to Malaya was the mass influx of migrants from India, China and Indonesia, who came as traders during the early 18th century.<sup>55</sup>

During the 19<sup>th</sup> Century, the British colonial administration were ill prepared to face the problem. They did not know how the disease was to be handled and treated, neither did they have any knowledge about how to help those who had recovered from the disease.<sup>56</sup> People suffering from leprosy were rejected by society and they were subjected to the ostracism<sup>57</sup> and discrimination that was present during that period, which stemmed mainly from laws against the lepers. However, by the 20th century, leprosy had posed a serious problem to the community. As a result, plans were developed to eradicate this problem.<sup>58</sup> The government had passed the Leper Enactment Act 1926, on detention and isolation of known lepers, which had made detention of the lepers compulsory for isolation.<sup>59</sup> By the late 1940s, the estimated number of people who were permanently disabled due to leprosy was estimated at two to three million throughout the world. Seeing that leprosy can leave its victims deformed and crippled, the colonial government decided to give more attention to

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<sup>52</sup> Muir E., *Manual of Leprosy*, p.79.

<sup>53</sup> *The Straits Times*, 19<sup>th</sup> July, 1943, p.17.

<sup>54</sup> Originally titled Sulalatus Salatin (Genealogy of Kings),[1] is a literary work that gives a romanticised history of the origin, evolution and demise of the great Malay maritime empire, Melaka Sultanate.

<sup>55</sup> FD 1/2078, Proposals for research into leprosy, Medical Research Council, the National Achieves, UK, p.16.

<sup>56</sup> CO 927/559, Leprosy research: Malaya, Colonial Office, The National Achieves, UK, p.20.

<sup>57</sup> Was a procedure under the Athenian democracy in which any citizen could be expelled from the city-state of Athens for ten years.

<sup>58</sup> *The Malay Mail*, 18<sup>th</sup> August, 1939, p.6.

<sup>59</sup> *The Straits Times*, 23<sup>rd</sup> September, 1948, p.6.

the eradication of the disease in their colonies, by providing funds for the separation of leper patients from the general public and researching ideas to cure their disease.<sup>60</sup>

Hence, lepers had to be segregated from the general public and placed under the supervision of medical staff or housed in a camp. The appearance of the early Settlements camps in the Malay Peninsula during the early 1900s, was likened to barbed-wired prisons.<sup>61</sup> Similar early camps that were prison-like were; Pulau Serimbun in Melaka, Pulau Jerejak in Pulau Pinang, Setapak in Selangor, Pangkor island which is off Perak, and St. John's Island off Singapore. Several leprosy outbreaks which occurred in Malaysia during the 19th century prompted community leaders and local authorities to find humane ways to help lepers, by providing a place to recover and get treated, as existing facilities were far from adequate. In 1923, Dr. E. A.O. Traverse proposed a policy to improve the living conditions for those suffering from leprosy, so that patients could live with dignity while receiving the necessary care.<sup>62</sup>

According to the Leprosy Ordinance No. 673, (Chapter 194), which became law on 10th May, 1939, leprosy patients were prohibited from staying in any private residence without a permit from the District Hospital Medical Officer. Leprosy patients who did not comply were arrested under section (6)11.<sup>63</sup> The arrested leprosy patients would be sent to the government medical doctor to determine whether that person was a leprosy victim or not. If the person was proven to be a leper, the court would then order him to be quarantined in Pulau Jerejak Leprosy settlement. Surveillance would be made of that leper inside the camp until he was released officially by the health member.<sup>64</sup>

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<sup>60</sup> FD 23/952, Leprosy research in Sungei Buloh. Malaya: papers, notes and correspondence: report visit by Dr J A McFadzean from March 1957 to March 1959: memorandum on the work of the Leprosy Research Unit between February 1959 and December 1960, Medical Research Council, The National Archives UK, 1959, p.21.

<sup>61</sup> A Joshua Raghavar, *Leprosy in Malaysia: Past, Present and Future*, p. 6.

<sup>62</sup> CO 927/446, Medical research Malaya: brief for visit of Mr Manson to South East Asia, Colonial Office, the National Archives UK, 1951, P.14 and p.16.

<sup>63</sup> IMR 190/25, Questions of lepers and their discharge from hospital-Constitution of a Board, Institute of Medical Research, Arkib Negara Malaysia, Kuala Lumpur, 1948, p.23.

<sup>64</sup> MED/PG/353/ 51, Reports of lepers seen at Various Places, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.18.

Through the Leper Enactment Act in 1926 and Leprosy Ordinance No.673 (Chapter 194) in 1939, lepers could not stay in private residences without the permission of the medical officers of the district hospitals. So, if anyone was found to have leprosy, he would be forcibly sent to the Settlement and have to stay there until the medical officers gave permission for his return. The quarantine of lepers was required because the lepers who loitered in public areas were bringing danger to the health of the local residents.<sup>65</sup> As evidence a leprosy patient who live in Siram, Seberang Perai in 1941, named Yong Fong, was reluctant to go the Butterworth Hospital. She had caused various problems to the children in the area. What was more worrying was that it was found that leprosy patients were involved in prostitution. Another leper patient, Ong Choon, who lived in Jalan Dato Kramat, was a leper and the disease was the cause of Ong Choon's unemployment. She earned her livelihood through prostitution, which led to the revival of prostitution. As seen in these real life examples, these matters posed a serious danger to the health of the public.<sup>66</sup>

In 1951, an incident was reported in Kuala Lumpur. There was a woman about whom it was suspected that she was suffering from a contagious<sup>67</sup> skin disease. After several check-ups in Kuala Lumpur General Hospital, the dermatologist suggested that it was leprosy and she had to be transferred to the leper asylum in Kuala Lumpur. This was because the police were unwilling to allow the suspected leper to stay with her relatives, who were in the same locality.<sup>68</sup> Upon the administration of treatment in the camp, she was fully cured and the doctors gave her a clean bill of health. Later, she returned to her earlier home but she was not accepted there. She requested the authorities send her back to the camp. According to her, she was happier staying in the leper asylum than in any other place.<sup>69</sup>

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<sup>65</sup> MED/PG/2/52, T. B Hospital & Leper Settlement, Pulau Jerejak Daily State, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.19.

<sup>66</sup> MED/PG/353/ 51, Reports of lepers seen at Various Places, p.3A.

<sup>67</sup> Spread from one person or organism to another, typically by direct contact.

<sup>68</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.19.

<sup>69</sup> Ibid.

After the Second World War, the government categorised places for treatment of certain diseases that required isolation and separation, for treatment of such as leprosy and mental illness, as Special Institutions. These institutions specialised in the treatment of leprosy and mental illness.<sup>70</sup> The Special Institutions in the Federation of Malaya after the Second World War mainly referred to the leper settlements of Sungai Buloh, leper, the settlement in Pulau Jerejak and the Centre Mental Hospital Tanjung Rambutan.<sup>71</sup> The Table 6.1 shows the various Special Institutions and the number of patients in 1949.

**Table 6.1** Statement of General Hospital, District and Maternity Hospital, 1949

<b>Special Institution</b>	<b>Average daily number of patients</b>	<b>Patients remaining at the end of the year</b>	<b>Patients admitted</b>	<b>Deaths</b>	<b>Deaths per 100 patients treated</b>
<b>Leper Settlement, Sungei Buloh</b>	2119	1888	470	54	2.3
<b>Central Mental Hospital Tg. Rambutan<sup>72</sup></b>	2478	2139	2132	307	7.2
<b>Leper Settlement Pulau Jerejak</b>	394	394	40	21	4.8
<b>Leper Camp J. Bahru</b>	363	317	105	19	4.5
<b>Total</b>	5354	4738	2747	401	

Source: MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.13.

According to the table above, the total number of lepers in these special institutions was 5,354, while the total number of deaths was 401. These institutions were established specially for lepers.<sup>73</sup> The institution with the highest death rate was the Pulau Jerejak Leper

<sup>70</sup> SUK4239/43, Leper Asylums problems, Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, Arkib Negara Malaysia, Kuala Lumpur, p.2.

<sup>71</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.17.

<sup>72</sup> The Central Mental Hospital at Tanjong Rambutan deals with all cases of mental illness from the Federation of Malaya with exception of 1<sup>st</sup> Class male cases for whom there is no suitable accommodation.

<sup>73</sup> Ibid. p.18.



Settlement. The high death rate in this settlement was due to the bad conditions of the camp and the fact that proper treatment in this region was not available.<sup>74</sup>

When the medical officer of the Settlement declared a leper to be bacteriologically negative for leprosy, a new problem could arise. The cured leper would be faced with the difficulty of finding a place in society and his means of livelihood would be uncertain.<sup>75</sup> This matter had been very obvious in the Federation of Malaya. Those lepers who were discharged from the leper settlement and apparently cured, still bearing scars of the disease, were still perceived as lepers by their former friends. Gradually, the reluctance of the community to accept the cured leper back into society faded, and the fear of the disease subsided to some extent.<sup>76</sup>

### Sungai Buloh Settlement

In 1926, the Chief Secretary of the Federated Malay States, Sir George Maxwell, set up a leprosy settlement, choosing Sungai Buloh because of its lush valley and cool climate – the type of surroundings that are very much needed for leprosy patients, who are sensitive to heat. Located near Bukit Lagong, by two rivers, the Sungai Buloh and Sungai Cemubung, were perfect places for the lepers' communities.<sup>77</sup>

The main institution for the treatment of leprosy in the Malay Peninsula was the Sungai Buloh Settlement in the state of Selangor.<sup>78</sup> Sungai Buloh Settlement is situated in a valley, about 16 miles from Kuala Lumpur with beautiful and serene surroundings. This settlement made quite an impact on the leprosy world, in several ways. When it was officially opened in 1930, it was known to be the largest and most modern leprosarium in the British Commonwealth. The Culion Island Settlement in the Philippines, with its population of

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<sup>74</sup> SUK913/1934, Transfer of patients from the Sungei Buloh Leper Settlement to Pulau Jerejak, Penang and their re-transfer to the Sungei Buloh Settlement, Pejabat Setiausaha Kerajaan Negeri Selangor, Arkib Negara Malaysia, Kuala Lumpur, 1951, p.22.

<sup>75</sup> *The Straits Times*, 21th March, 1944, p.14.

<sup>76</sup> CO 927/559, Leprosy research: Malaya, Colonial Office, p.13.

<sup>77</sup> FD 23/952, Leprosy research in Sungei Buloh. Malaya: papers, notes and correspondence: report visit by Dr J A McFadzean from March 1957 to March 1959: memorandum on the work of the Leprosy Research Unit between February 1959 and December 1960, Medical Research Council, p.14.

<sup>78</sup> CO 927/559, Leprosy research: Malaya, Colonial Office, p.18.

around 6,000, was established in 1910, and was the largest in the world at that time. However Sungai Buloh Settlement became more impressive because of its scenic setting and its modern buildings and facilities.<sup>79</sup>

Part of the settlement is laid out as a hospital with wards for the treatment of acute cases, and the rest is a village settlement consisting of small semi-detached houses with one living room, a kitchen, a verandah and a bathroom. It was also destined to leave its legacy to the leprosy world by becoming, in later years, a notable research centre.<sup>80</sup> In 1932, Sungai Buloh became a modern centre for treatment, when the first notable drug-experiments with “Dyes” were carried out. This was a search among Aniline Dyes, carried out to find a replacement for Hydnacarpus Oil, which was widely used as the only effective remedy, but had been unsuccessful.<sup>81</sup>

Sungai Buloh settlement was equipped with facilities and amenities allowing conversion into a garden, meaning that the leper community could become a self-supporting one. An opportunity to stem the stigma was being realised in Sungai Buloh, as lepers were able to grow their own plants for selling so as to earn an income, while living in a spacious and beautiful area<sup>82</sup> where houses were built in clusters and people were encouraged to interact with each other, as well as providing a sense of security. In each cluster, a food distribution area or market was built, again to encourage the people to gather and socialise, while they visited these public areas.<sup>83</sup>

After the Second World War in 1947, Sungai Buloh leper settlement still remained as the biggest leper settlement in the Federation of Malaya.<sup>84</sup> This was obvious with the high number of patients remaining in the settlement in 1947, as illustrated by Table 6.2

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<sup>79</sup> MED1106/55, Increase in Allocation to Inmate Staffs at Sungai Buloh Settlement, Pulau Jerejak and Johor Leper, Settlements, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.14. This file mainly focuses on the finances in allocation for leper camp in Sungai Buloh and Settlement, Pulau Jerejak Leper Settlement and Johor Leper Settlement after the Second World War.

<sup>80</sup> A. Joshua Raghavar, *Leprosy in Malaysia: Past, Present and Future*, p.28.

<sup>81</sup> *Ibid.* p.8.

<sup>82</sup> CO 927/559, Leprosy research: Malaya, p.17. This file focus on the research on the disease, treatment and medication of leprosy in Sungai Buloh Leper Settlement.

<sup>83</sup> CO 927/180/3, Malaya; leprosy research: appointment by Dr F S Airey, Colonial Office, p.23.

<sup>84</sup> FD 1/7613, Committee: Conference on Leprosy, Medical Research Council, p.14.

**Table 6.2** The number of patients according to races and sex in Sungai Buloh Leper Settlement, 1947

Race	Men	Women	Boys	Girls	Healthy Infants	Total
Malays	190	51	24	9	1	275
Chinese	1,130	510	129	76	19	1,871
Indians	200	22	8	3		233
Others	16	3	2	1		22
<b>TOTAL</b>	1,543	586	163	89	20	2,401

Source: SUK913/1934, Transfer of patients from the Sungei Buloh Leper Settlement to Pulau Jerejak, Penang and their re-transfer to the Sungei Buloh Settlement, Pejabat Setiausaha Kerajaan Negeri Selangor, Arkib Negara Malaysia, Kuala Lumpur, p.14.

In addition, to encourage community activities, a variety of clubs were set up such as The Malay Club and various Chinese clan associations. Also, religious institutions such as temples, mosques and churches were built as a source of spiritual support for their community.<sup>85</sup> In 1955, there were over 1,000 lepers who lived in Sungai Buloh, and the numbers were high enough to allow the set-up of a separate administrative body. Simple civil functions such as birth, marriage and death registrations were supervised by a medical superintendent, who also monitored a divorce court in the area.<sup>86</sup>

#### Pulau Jerejak Leper Settlement

Pulau Jerejak is located in the south eastern part of Penang Island with a total area of 362 hectares.<sup>87</sup> The island was chartered and established by the British, after the founding of Pulau Pinang in 1786. Pulau Jerejak was just a 10-minute boat ride from Penang Island, but it was far behind in terms of progress and development.<sup>88</sup> In 1868, a leper asylum was completed on that island, but it only began to be used in 1871. The cost of construction was funded by the Chinese community. In 1880, it expanded into becoming the collection centre

<sup>85</sup> FD 23/952, Leprosy research in Sungei Buloh. Malaya: papers, notes and correspondence: report visit by Dr J A McFadzean from March 1957 to March 1959: memorandum on the work of the Leprosy Research Unit between February 1959 and December 1960, Medical Research Council, p.18 and p.19.

<sup>86</sup> CO 927/446, Medical research Malaya: brief for visit of Mr Manson to South East Asia, Colonial Office, p.22.

<sup>87</sup> A metric unit of square measure, equal to 100 acres (2.471 acres or 10,000 square meters).

<sup>88</sup> CO 273/647/1, Quarantine camp, Pulau Jerajak, Penang: Kedah contribution, Colonial Office, The National Achieves UK, 1950, p.18.

of leprosy (leprosarium) for the Straits Settlements until 1930, when the Sungai Buloh leper settlement was opened.<sup>89</sup>

Pulau Jerejak is about two miles in length and one mile in width. The area is very steep and most of the parts were covered with forests, similar to that of Penang. The hills of this island was made of a mix of sand and gravel<sup>90</sup> which was mixed by yellowish heavy clay.<sup>91</sup> Pulau Jerejak was the place where thousands of Asiatic lepers lived, most of them were from China. The lepers knew that the disease was curable but they were also aware that the treatment was not suitable for them. This island became known as a leper colony. Later, it was used in the rehabilitation of other diseases. Interestingly, it was then utilised as a penal colony.<sup>92</sup>

**Table 6.3** Total number of admissions and total number of inmates for every five-year interval from 1898 to 1920 in Pulau Jerejak

Years	Admissions	Total at end of Period
1898-1901	150	253
1902-1906	152	311
1907-1911	177	390
1911-1916	174	413
1917-1920	152	422

Source: Robert L. Jarman(ed.)*Annual Report of the Straits Settlements: 1855-1941, Volume 8: 1922-1926*, London,: Archives Edition, 1998, p. 259.

The Table 6.3 above shows the number of admissions and the total number of inmates for every five years, in the Pulau Jerejak camp. From 1898 until 1901, there were 150 new admissions into the camp, and at the end of 1901, the total number of inmates was 253. In the second 5- year interval, i.e. from 1902 until 1906, a total of 152 new patients were admitted. However the total number of inmates at the end of 1906, was only 311.<sup>93</sup> There was a decline in the total number. The reasons were that some lepers had succumbed to death and some had transferred to other camps or returned to this camp. By the end of 1920, the

<sup>89</sup> A. Joshua Raghavar, *Leprosy in Malaysia: Past, Present and Future*, p. 19.

<sup>90</sup> Is composed of unconsolidated rock fragments that have a general particle size range and include size classes from granule- to boulder-sized fragments.

<sup>91</sup> SUK4239/43, Leper Asylums problems, Pulau Jerejak, Pejabat Setiausaha Negeri Selangor, Arkib Negara Malaysia, Kuala Lumpur, p.13.

<sup>92</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941, Volume 8: 1922-1926*, p. 261.

<sup>93</sup> Ibid.

total number of inmates was 422 in the Pulau Jerejak camp. Based on the table, it can be concluded that a total of 805 new patients had been admitted during the entire time span of 1898 to 1920.<sup>94</sup>

### Leper Settlement in Singapore

The leper settlement in Singapore is called Trafalgar Home and was built in 1926. This settlement provided 56 semi-detached houses. Each house had separate rooms accommodating two people, to provide for 112 patients in total.<sup>95</sup> Each room was furnished with two cupboards, two bedside stools, two bedside lockers and two beds complete with linen.<sup>96</sup>

Though the total number of beds in Trafalgar Home was 550 as on 31st December 1950, there were still not enough. Overcrowding occurred regularly at Trafalgar Home. Serious overcrowding soon became an increasing problem. On top of that, the existing structure was very old.<sup>97</sup> As a result, they transferred 40 inmates to Pulau Jerejak Leper Settlement, Penang, in 1950. At that time, a total of 134 inmates were accommodated at this home. This enabled the work of rehabilitation to continue and the improvements already instituted in the hospital to be maintained.<sup>98</sup>

### **The Importance of the Pulau Jerejak Leper Settlement in the Region**

In early 1828, a British surgeon who was employed in Pulau Pinang, reasoned that lepers of the Straits Settlements should be segregated from the general public, and be quarantined and isolated on a remote island. He proposed the idea to Robert Fullerton, the Straits Settlement's Governor, on 25 March 1828.<sup>99</sup> Pulau Jerejak was the chosen island for

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<sup>94</sup> W. J. Vickers, *Colony of Singapore: Medical Department Annual Report 1948*, Singapore: Government Printer, 1948, p.73. This Annual report was published yearly on the report of medical and healthcare in Singapore.

<sup>95</sup> Ibid. p.69.

<sup>96</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 223.

<sup>97</sup> W.J. Vickers, *Colony of Singapore: Medical Department Annual Report 1951*, Singapore: Government Printer, 1951, p.51.

<sup>98</sup> Ibid. p.53.

<sup>99</sup> SUK2884/1950, Leper Settlement, Pulau Jerejak, 1950, Pejabat Setiausaha Kerajaan Negeri Selangor, Arkib Negara Malaysia, Kuala Lumpur, p.1 and p.2.

the purpose of quarantine, as it was near Pulau Pinang. This event proved that the disease had existed before 25 March, 1828. However, the East India Company did not keep any records concerning leprosy.<sup>100</sup>

The Leper Settlement was situated on the west side of Pulau Jerejak Island. The nearest entry point to Pulau Pinang is Sungai Nibong, which is situated about two miles from the island. Pulau Jerejak was first visited by Malay fishermen from Kedah, who started their village on the island. They worked as fishermen around the area, since the formation of Pulau Pinang by the East India Company in the year of 1786.<sup>101</sup> \$14,000 was collected to supply the funds required for relocation of lepers. Most of the contribution came from the Chinese merchants. These merchants also funded the construction of hospital building in Pulau Jerejak. In May 1868, buildings and residential areas were re-modelled to be a hospital.<sup>102</sup> However, it was vacant for three years, because of on-going discussions and planning among government hospitals concerning the segregation and quarantine of lepers by the government.<sup>103</sup>

Pulau Jerejak Hospital started operating on 1st November, 1871.<sup>104</sup> The British colonial administration chose a Medical Officer to be the officer in charge of the Pulau Jerejak Leper Camp. He had extensive duties and responsibilities. His duty was to coordinate and administer the place and he was responsible for giving treatment and providing care to the lepers in Pulau Jerejak. In 1928, Dr. C. R. Amiles, was the Medical Officer at Pulau Jerejak Camp. During the year, he admitted 897 leper patients into the hospital and most of the patients were handicapped.<sup>105</sup> By July 1931, there were seven doctors serving in the camp. Three doctors came from UK, two came from India, one from Europe and the sixth

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<sup>100</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941, Volume 8: 1922-1926*, p. 88.

<sup>101</sup> MED/PG/188/ 51, Pulau Jerejak- Health Inspection Visits, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.49.

<sup>102</sup> SUK26/5383, Annual Report Settlement of Penang, 1950, Pejabat Setiausaha Negeri Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p.16.

<sup>103</sup> SUK4239/43, Leper Asylums problems, Pulau Jerejak, Pejabat Setiausaha Negeri Selangor, p. 14.

<sup>104</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941, Volume 8: 1922-1926*, p. 88.

<sup>105</sup> MED/PG/22/53, Report on Medical & Dental Service, Kementerian Kesihatan Malaysia, p. 23.

was an Indian-Malay doctor from Pulau Pinang. They were responsible for administration of treatment of lepers in Pulau Jerejak.<sup>106</sup>

The camp was very important, as it gave the opportunity for the Straits Settlement government to segregate the lepers from the general public, since leprosy was perceived as a communicable disease during that time, and no proper cures had yet been identified. The policies on leper segregation were implemented and many institutions were formed to segregate thousands of lepers.<sup>107</sup> The process was accelerated, following the announcement that a Norwegian physician had discovered what he claimed to be the main cause of leprosy and he argued that it was a very dangerous and highly contagious disease for the surrounding people.<sup>108</sup>

After the passing of the Leper Enactment Act 1926, on the segregation and detention of known lepers, by law, it had become compulsory for leprosy patients to be detained. However, there were concerns on how this could be carried out on Pulau Jerejak.<sup>109</sup> The main objective of the health authorities and administration was to focus on the treatment of lepers as well as the safety of other healthcare personnel. Also, the process of isolation should be appealing and should provide encouragement for lepers to go voluntarily for treatment.<sup>110</sup>

Most of the cases of leprosy come from rural areas of Penang Island and Seberang Perai, seeking for medical help and treatment from the Penang General Hospital, which is the largest hospital in the north of the Malayan Peninsula, during that time.<sup>111</sup> In Penang General Hospital, a patient who was diagnosed with leprosy would be sent to the Pulau Jerejak Leper Settlement for isolation and treatment. The transportation of leper patients to Pulau Jerejak Leper Settlement was scheduled by the skin specialist, under the Dermatologist Department of Penang General Hospital. During the year 1948, Dr. Shelly, a dermatologist

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<sup>106</sup> *The Straits Times*, 19<sup>th</sup> July, 1931, p.4.

<sup>107</sup> SUK4251/19181, Accommodation of surprise Federated Malay States Lepers in the Asylum at Pulau Jerejak, Pejabat Setiausaha Negeri Selangor, Arkib Negara Malaysia, Kuala Lumpur, p.11.

<sup>108</sup> MED/PG/407, Narayan- Leper worker, Pulau Jerejak, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.7.

<sup>109</sup> SUK1272/1923, Reports by Dr. E. A.D Travers on the Leper Asylum at Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, p. 21.

<sup>110</sup> RCP/MED/202/49, Annual report of the Medical and Health Department of Penang 1948, Resident Commissioner Penang, p.19.

<sup>111</sup> CO 927/559, Leprosy research: Malaya, Colonial Office, p.14.

of the hospital, had referred more than 400 patients to Pulau Jerejak Leper Settlement for treatment.<sup>112</sup>

**Table 6.4:** Number of lepers in Pulau Jerejak for the year, 1926-1938

Year	Number of Patients on 1 <sup>st</sup> January	Admissions	Total	Deaths	Rate per 1000
1926	703	117	850	117	137.6
1927	707	164	871	122	140.0
1928	731	166	897	102	113.7
1929	772	218	990	108	106.0
1930	847	211	1058	121	118.1
1931	860	180	1040	88	84.6
1932	679	194	873	80	91.6
1933	765	299	1064	84	78.9
1934	894	234	1128	91	80.7
1935	968	250	1218	111	91.1
1936	1026	421	1447	160	110.6
1937	1217	234	1481	151	104.1
1938	1205	303	1508	193	127.9

Source: A. Joshua Raghavar, *Leprosy in Malaysia: Past, Present and Future*, Selangor: Montfort Boys Town Printing Department, 1983, p.73.

Table 6.4 above illustrates the number of admissions and deaths of lepers in Pulau Jerejak before the Second World War, during the period from 1921 to 1938. There were 438 inmates in 1921. A total of 217 new patients were admitted that year, while the number of deaths was reported as 201. Similarly, every year, there were new admissions and deaths of patients in the Pulau Jerejak camp. The total number of inmates had increased to 1,508 at the end of 1938, while the total number of deaths was 193. According to the table, the highest number of patients admitted was during 1936, with 421 admissions and the highest number of deaths was during 1921, when 201 patients died. The high number of deaths was due to the lack of proper facilities for treatment at the leper camp.<sup>113</sup>

The cost of operations, medical supplies, staff salaries, food and x-ray equipment had become burdensome to the British colonial government.<sup>114</sup> This is evident in the Table 6.5

<sup>112</sup> CO 273/647/1, Quarantine camp, Pulau Jerajak, Penang: Kedah contribution, Colonial Office, p.11.

<sup>113</sup> A. Joshua Raghavar, *Leprosy in Malaysia: Past, Present and Future*, p.74.

<sup>114</sup> CO 273/647/1, Quarantine camp, Pulau Jerajak, Penang: Kedah contribution, Colonial Office, p.16.



**Table 6.5** Revenue and Expenditure for Pulau Jerejak Leper Settlement, 1917-1926

<b>Year</b>	<b>Revenue (\$)</b>	<b>Expenditure (\$)</b>
<b>1917</b>	51,954	18,837
<b>1918</b>	65,263	19,485
<b>1919</b>	79,332	24,972
<b>1920</b>	102,749	47,792
<b>1921</b>	95,999	60,017
<b>1922</b>	79,697	45,477
<b>1923</b>	76,990	42,827
<b>1924</b>	77,201	43,113
<b>1925</b>	86,207	76,793
<b>1926</b>	98,971	71,891

Source: Robert L. Jarman(ed.) *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, London,: Archives Edition, 1998, p. 274.

According to Table 6.5 above, the total revenue collected by the Leper Settlement in 1917 was \$51,954 and the total spending was \$18,837. Over the period of ten years, the total revenue and total spending had increased. This revenue was acquired by fund allocation from the colonial government budget, donations from the Welfare Department and British Red Cross Society, and contributions by wealthy Chinese businessmen.<sup>115</sup>

However, the increased spending did not seem to benefit the employees of the Pulau Jerejak Leper Settlement. In reality, medical and inmate staff were not happy with the salary they received from their employment. Those unhappy employees had sent many applications for salary increment, to the Director of Medical Services, requesting for a rise in salaries for employees in Pulau Jerejak Leper Settlement.<sup>116</sup> To confirm this matter, the Chief Medical and Health Officer, Dr. C. Nadarajah made a study on the employee salaries of Leper Settlements at Sungai Buloh and Pulau Jerejak. Based on his observations, he noted that employees of the Pulau Jerejak Settlement were receiving a lower salary than the employees of Sungai Buloh Settlement. He reported his findings to the Ministry of Health and Social

<sup>115</sup>Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 274.

<sup>116</sup>SUK258/91, Proposal for Salary increment for Pulau Jerejak Leper Asylum, Pejabat Setiausaha Kerajaan Negeri Selangor, Arkib Negara Malaysia, Kuala Lumpur, p.10.

Welfare, Federation of Malaya. The Table 6.6 showed the comparison of salaries between employees in Sungai Buloh and Pulau Jerejak.<sup>117</sup>

**Table 6.6** Comparison of Salaries between employees of Sungai Buloh and Pulau Jerejak Leprosy Settlements, 1950

<b>Category/Occupation</b>	<b>Pulau Jerejak Per-month (Salary)</b>	<b>Sungai Buloh Per-month (Salary)</b>
<b>Sweepers</b>	26	31
<b>Grass Cutters</b>	26	31
<b>Barber</b>	29	31
<b>Attendants</b>	29	31
<b>Dhoby</b>	27	31
<b>Head Grass Cutter</b>	29	31
<b>Dressers</b>	33	37
<b>Assistant Supervisor</b>	53	57
<b>Guard Corporal</b>	54	57
<b>Head Sweeper</b>	32	37
<b>Band Master</b>	35	45
<b>Senior Dresser</b>	78	92
<b>Nurse</b>	44	50
<b>Steward</b>	96	114

Source: MED1106/55, Increase in Allocation to Inmate Staffs at Sungai Buloh Settlement, Pulau Jerejak and Johor Leper, Settlements, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.29.

The Leper Enactment Act 1926 had made it compulsory to segregate the known lepers from the general population. However, the Act was silent about segregation of lepers by race. This did not prevent in practice the segregation of lepers according to their race, which was evident in the Pulau Jerejak Leper Settlement.<sup>118</sup> Lepers were gathered according to their race into various camps, where each camp contained only one single race. This is portrayed by Table 5.7 below, which proved the existence of the practice of segregation of lepers according in Pulau Jerejak Detention Camp. Based on the table, it is shown that Chinese lepers were detained in Camp 2, Camp 3, Camp 4, Camp 5, and Camp 14, while both Malays and Indians were placed in Camp 6 on the 10 Dec 1948.<sup>119</sup>

<sup>117</sup> Ibid. p.11.

<sup>118</sup> SUK2884/1950, Leper Settlement, Pulau Jerejak, 1950, Pejabat Setiausaha Kerajaan Negeri Selangor, p.21.

<sup>119</sup> RCP/MED/202/49, Annual report of the Medical and Health Department of Penang 1948, Resident Commissioner Penang, p.21.

The total number of Chinese lepers in all the camps was 625 while the numbers of Malays and Indians lepers were 55 and 37 respectively. This also shows that the majority of lepers were Chinese.<sup>120</sup> The reason is that the majority of lepers came from towns and cities such as Ipoh, Singapore, Kuala Lumpur and Penang Island, where the majority of population during that time were Chinese.<sup>121</sup>

**Table 6.7** Number of Lepers in the Pulau Jerejak’s Detention Camp on 10<sup>th</sup> December, 1948

<b>BLOCK/PLACE</b>	<b>Chinese</b>	<b>Malay</b>	<b>Indian</b>
<b>Camp 2</b>	160	None	None
<b>Camp 3</b>	160	None	None
<b>Camp 4</b>	156	None	None
<b>Camp 5</b>	130	None	None
<b>Camp 6</b>	None	55	37
<b>Camp 14</b>	50	None	None
<b>Total</b>	625	55	37

Source: RCP/MED/202/49, Annual report of the Medical and Health Department of Penang 1948, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p. 24.

In Singapore, during the early 19th century, the colonial government encountered problems triggered by homeless lepers, who were “begging for food” and “living in the streets”. These had posed a danger to the public health of Singapore.<sup>122</sup> As the law had made it compulsory to detain and isolate the lepers, these street lepers in Singapore were detained and placed into the hospital area, which was temporarily and specifically built for them or were locked up in empty buildings, which served as asylums.<sup>123</sup> Later, they were sent to St. John’s Island for isolation. Similar to Pulau Jerejak, St. John’s Island is a remote island and is reserved for suspected and known lepers. Lepers who came from other countries such as China and India were brought to St John’s Island, while some were brought in illegally by the Dutch East Indies.<sup>124</sup>

<sup>120</sup> Ibid.

<sup>121</sup> SUK913/1934, Transfer of patients from the Sungei Buloh Leper Settlement to Pulau Jerejak, Penang and their re-transfer to the Sungei Buloh Settlement, Pejabat Setiausaha Negeri Selangor, Arkib Negara Malaysia, Kuala Lumpur, p.16.

<sup>122</sup> W. J. Vickers, *Colony of Singapore: Medical Department Annual Report 1950*, p.69.

<sup>123</sup> *The Straits Times*, 24<sup>th</sup> January, 1951, p.3.

<sup>124</sup> W. J. Vickers, *Colony of Singapore: Medical Department Annual Report 1951*, p.52.

Comparing the Leper Settlement of Pulau Jerejak and St. John's Island, the latter had better facilities for the treatment of lepers and had even been known as a successful research centre for leprosy.<sup>125</sup> Whereas in the case of Pulau Jerejak Leper Settlement, no funds were allocated for the research of the disease.<sup>126</sup> During the period from July 1946 until March 1948, the treatment of leprosy in Malaya was focused on the lepers in Sungai Buloh Leper Settlement. Dr. A. J. Smith, a British Medical Doctor who visited the Pulau Jerejak Leper Settlement in February, 1948, reported that the hospital building in the Pulau Jerejak was no longer suitable to be used as a hospital for treating the lepers and that it needed restoration and major repairs as the condition of the lepers' camp in Pulau Jerejak had deteriorated; the building was shabby, there was damage with broken windows, chairs and tables and all the medical facilities had broken down.<sup>127</sup>

Thus, the colonial government spent around \$850,000 from the Colonial Reconstruction Fund to re-build the hospitals and huts in Pulau Jerejak Leper Settlement.<sup>128</sup> The Leper Settlement Camp at Pulau Jerejak resumed operation in March 1948 after the Second World War.<sup>129</sup>

**Table 6.8** Classification of residents in Pulau Jerejak Detention Camp, 1948

<b>Gender</b>	<b>Intake</b>	<b>Death</b>	<b>Run-aways</b>	<b>Discharged</b>	<b>Those who remained</b>
<b>Male</b>	6	16	6	4	344
<b>Female</b>	1	6	1	1	49
<b>Children</b>	none	1	1	2	1
<b>Total</b>	7	23	8	7	394

Source: SUK1272/1923, Reports by Dr. E. A.D Travers on the Leper Asylum at Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, Arkib Negara Malaysia, Kuala Lumpur, p.7.

From Table 6.8 it can be observed that out of the total patients in the camp, most were males and there were no children. Also, most of the inmates who remained in the detention

<sup>125</sup> SUK1272/1923, Reports by Dr. E. A.D Travers on the Leper Asylum at Pulau Jerejak, Pejabat Setiausaha Negeri Selangor, p.20.

<sup>126</sup> SUK4239/43, Leper Asylums problems, Pulau Jerejak, Pejabat Setiausaha Negeri Selangor, p.11.

<sup>127</sup> SUK/412/2311, Annual Report Settlement of Penang, 1948, Pejabat Setiausaha Negeri Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p.19.

<sup>128</sup> RCP/MED/202/49, Annual Report of the Medical and Health Department Penang, 1948, Resident Commissioner Penang, pg. 12.

<sup>129</sup> *The Straits Times*, 18<sup>th</sup> July, 1948, p.12.

camp were males (344 out of 394).<sup>130</sup> The reason for the large number of males is because women generally did not disclose their disease as they did not want to be sent to the detention camp.<sup>131</sup>

Interestingly, during 1951, there were 29 married couples in Pulau Jerejak Leper Camp. A special hut was reserved for pregnant inmates and these women were given extra food during the last two months of their pregnancy. Babies born to these women were separated and immediately transferred to Penang Maternity Hospital. After staying six months in the hospital, the babies were transferred to the Social Welfare Department Orphanage.<sup>132</sup> In addition, there was repatriation of Indian Lepers from the Pulau Jerejak Leper Settlement.

The repatriation process here involved the sending or returning of an inmate to his place of origin in India. The inmates who had spouses and children in India, were given priority for repatriation. They would be sent back to a specific leper camp in India for treatment.<sup>133</sup> According to the Office of the Director of Medical Services, Federation of Malaya, five inmates were sent back to India on the 9<sup>th</sup> July, 1949. They were Pala Mayandy, Venu Muthusamy, Pillai Murugasoo, Pumaresh Puchee Nadar and Parvin Sinnasamy. Sometimes, the process of approval for repatriation took a very long time for certain lepers because of the lack of important documents concerning their background. Thus, due to a long wait for repatriation, two inmates absconded and were never seen again. They were Kumar Kuppusamy and Viknesh Rahanam.<sup>134</sup>

The *Pinang Gazette* in 1925 reported that a leper camp in Jelutong was set up and reserved for female lepers. This enabled the health authorities of Pulau Pinang to control the inmates adequately.<sup>135</sup> In 1939, there were 104 female inmates in Jelutong leper camp with

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<sup>130</sup> SUK1272/1923, Reports by Dr. E. A.D Travers on the Leper Asylum at Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, p.7.

<sup>131</sup> Banfield, A. G, *Colony of Singapore, Medical Department Annual Report for the year of 1955*, Singapore: Government Printing Press, p.45.

<sup>132</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.18.

<sup>133</sup> LAB.FM.3/2/129, Repatriation of Lepers & mental Defectives, Jabatan Buruh dan Tenaga Rakyat, Arkib Negara Malaysia, Kuala Lumpur, p.14.

<sup>134</sup> Ibid. p.15.

<sup>135</sup> SUK2884/1950, Leper Settlement, Pulau Jerejak, 1950, Pejabat Setiausaha Negeri Selangor, p.19.

four deaths were recorded that year. The number of female inmates of the Jelutong leper camp was small compared with the male inmates of the Pulau Jerejak leper camp. This female camp had other infectious disease too, as seen in 1928, a little girl aged 11 passed away due to malaria. Overall, the camp in Pulau Jerejak had more recent equipment and facilities than the female camp in Jelutong.<sup>136</sup>

Besides that, the Pulau Jerejak Leper Settlement had capable doctors and specialists to treat and cure leper patients. However, these doctors had to treat other diseases that may appear as complications of leprosy, using the hospital facilities, due to the lack of medical facilities and experienced doctors for treatment of other diseases.<sup>137</sup> In 1948, there were nine inmates in Pulau Jerejak Leper Settlement who were transferred to Penang General Hospital for treatment. During that period, Penang General Hospital was the best hospital in Northern Malaya. This showed how poorly equipped the Pulau Jerejak Leper Settlement was for treating inmates.<sup>138</sup> Table 6.9 below shows the number of inmates who were transferred from Pulau Jerejak to Penang General Hospital during 1948, for treatment of other diseases that was a complication of leprosy.<sup>139</sup>

**Table 6.9** Lepers transferred from Pulau Jerejak to Penang General Hospital, 1948

<b>Type of disease and cause</b>	<b>Total</b>
Pulmonary Tuberculosis	1
T.B. Sinuses	2
Senility	1
Hemiplegia	1
Fractures	4
<b>Total</b>	<b>9</b>

Source: RCP/MED/ 315/47 Annual Report of Medical & Health Department, 1948, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, 1948, p.18.

In total, nine inmates were transferred and among them, four had fractures. There was also one case each of pulmonary tuberculosis, senility and hemiplegia, and two cases of

<sup>136</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p.123.

<sup>137</sup> SUK2006/52139, Annual Report Settlement of Penang, 1949, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p.16.

<sup>138</sup> SUK451/1124, Annual Report Settlement of Penang, 1951, Pejabat Setiausaha Kerajaan Pulau Pinang, p. 33.

<sup>139</sup> RCP/MED/202/49, Annual report of the Medical and Health Department of Penang 1948, Resident Commissioner of Penang, p.24.

tuberculosis Sinuses.<sup>140</sup> Pulau Jerejak leper camp stopped operating on 9<sup>th</sup> October 1969, meaning 315 inmates of the camp had to be transferred to Sungai Buloh leper camp. The camp was finally shut-down, ending almost 100 years of operation, and changed to a detention camp for gangsters and bad-hats.<sup>141</sup>

### **Treatment for Patients at Pulau Jerejak Leper Settlement**

From 1882, Pulau Jerejak Leper Settlement was using Chaulmoogra (Chaulmoogra Oil) to treat lepers. Using this oil reduced the death rates tremendously and cured hundreds of inmates in the camp.<sup>142</sup> As such, Chaulmoogra or Hydnocarpus Oil had become one of the most effective remedies for treating lepers in Pulau Jerejak camp. Initially, the oil was administered orally to inmates.<sup>143</sup> In the last decades of the 19<sup>th</sup> century, some clinicians began experimenting with the administration of the oil by intra muscular or subcutaneous injections. This method eliminated the nausea caused by the oral administration of the drug, but could be very painful.<sup>144</sup> Following this revelation, the oil was subsequently given through injections even though this method was painful to the inmates.<sup>145</sup>

In 1888, Dr. McClosky, a Medical Doctor of Pulau Jerejak Leper Settlement, said, “the practice of selecting suitable cases for special treatment with internal and external use of Gurjon, Chaulmurga and Thachary oils are still in vogue, and the condition of those who received this treatment is being recorded after the administration of the treatment, which creates an issue of great concern regarding the duration of isolation for the lepers.” It was noted that there were different opinions and views on the rules for the duration of the isolation period.<sup>146</sup>

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<sup>140</sup> Ibid.

<sup>141</sup> A. Joshua Raghavar, *Leprosy in Malaysia: Past, Present and Future*, p.89.

<sup>142</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941, Volume 8: 1922-1926*, p. 75.

<sup>143</sup> *The Malay Mail*, 16<sup>th</sup> March, 1931, p.13.

<sup>144</sup> A tube with a nozzle and piston or bulb for sucking in and ejecting liquid in a thin stream, used for cleaning wounds or body cavities, or fitted with a hollow needle for injecting or withdrawing fluids.

<sup>145</sup> IMR 116/ 28, Leper Asylum Handing over Charge of- to doctor Amies, Institut Penyelidikan Perubatan, p.17.

<sup>146</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941, Volume 8: 1922-1926*, p. 259.

Even during the early 1900s, Chaulmoogra or Hydnocarpus Oil was the most common and effective remedy and this was administered orally or in the form of an injection.<sup>147</sup> When the oil was administered by injection, sterilised Hydnocarpus Oil were used. However, these injections often produced severe local reactions and fevers. By 1948, a variant technique of injection, to diminish the pain and irritation as well as to secure greater absorption of the oil, was discovered and was the most hopeful form of therapy.<sup>148</sup>

Treatment using Hydnocarpus Oil helped in decreasing the amount of bacilli present in a particular area and it was quite successful with those inmates in the early stages of leprosy. However, the results were less favourable in advanced cases and only about a quarter of the patients showed improvement or arrest. If the lepromatous infection had gone to an advanced stage, then difficulties would be encountered because of the high concentration of bacilli in the skin.<sup>149</sup> To remedy this problem, the ‘Plancha’ technique was developed, in which injections were administered in small doses, often with volumes ranging from 0.05 to 0.1 cc. However, the small fractional injection of Hydnocarpus Oil had a positive effect in fighting against the onset of early neural and lepromatous cases of the disease.<sup>150</sup>

This process of injecting the oil was effective, but the drawback of this technique was that it was administered in a distressful public manner, with frightful after-effects such as painful suppurating abscesses, which formed in the patients’ backside, also called rear end ulceration.<sup>151</sup> According to the report of the Straits Settlement of 1893, the total number of deaths within the leper asylum was 122 in 1802 and decreased to 87 by 1893. This shows that using Hydnocarpus Oil and its derivatives for treating leprosy was effective in reducing fatality.<sup>152</sup>

In 1920, Hydnocarpus Oil was used as one of the modern and systematic methods for treating leprosy which gave encouraging results in reduction of death. Due to the success of

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<sup>147</sup> *The Straits Times*, 17<sup>th</sup> April, 1938, p.10.

<sup>148</sup> MED/PG/188/ 5, Pulau Jerejak- Health Inspection Visits, Kementerian Kesihatan Malaysia, p.21.

<sup>149</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 220.

<sup>150</sup> CO 927/559, Leprosy research: Malaya, Colonial Office, p.19.

<sup>151</sup> *The Straits Times*, 11<sup>th</sup> May, 1949, p.11.

<sup>152</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 75.



this treatment, the oil was administered to all leprosy patients and in greater doses. According to Dr. E. D. Lindow, the use of Hydnocarpus Oil brought down death rate from 18% in 1923 to 11% in 1928. This is illustrated in the Table 6.10 below:<sup>153</sup>

**Table 6.10** Effect of using Hydnocarpus Oil in leprosy treatments, 1928

Condition after treatment	Total
Fully recovered	20
Recovered	146
Slightly recovered	130
Not recovered	20
<b>Total</b>	<b>316</b>

Source: SUK4239/43, Leper Asylums problems, Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, Arkib Negara Malaysia, Kuala Lumpur, 1931, p.6.

The Table 6.10 above, an extract from the report of the Straits Settlement Office, shows the success of using Hydnocarpus Oil in treating leprosy during 1928. The total number of leprosy cases during that year was 316, out of which 20 inmates were fully recovered after receiving this treatment. Similarly, 146 inmates recovered and 130 patients showed signs of improvement with it. However, 20 patients showed no signs of improvement.<sup>154</sup>

The end of treatment by Hydnocarpus Oil came with the arrival of the sulphone group of drugs.<sup>155</sup> The sulphones, as the name suggests, are related chemically to the large group of sulphonamine drugs, which were introduced in the 1940s.<sup>156</sup>

The world's leading leprologist, Dr. Ernest Muir, from the Royal Society of Tropical Medicine gave his credit to sulphone therapy in 1938. He reported:

“As far as I can judge, the true criteria of the efficacy of the sulphones must be based, not on the usual form of controlled experiment, but on the judgement of experienced specialists who are capable of making a fair accurate prognosis in typical cases of leprosy. A patient in whom the disease has been progressing steadily for years begins to improve within a few weeks of starting the treatment. His ulcers of months, or years, duration quickly heal. His nose, long blocked with crusts, becomes clear. His eyes, deteriorating rapidly towards blindness, are improved. All these give reason for hope; but it is when, after

<sup>153</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 113.

<sup>154</sup> SUK4239/43, Leper Asylums problems, Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, 1931, p.6.

<sup>155</sup> FD 1/1922, Research on leprosy: Professor S Adler; correspondence and application, Medical Research Council, The National Achieves, Uk, 1951, p.19.

<sup>156</sup> SUK/3123/1232, Annual Report Settlement of Penang, 1947, Pejabat Setiausaha Kerajaan Pulau Pinang, p.19.

one to three years' treatment, the massive infection in the skin and nose gives place to a condition in which bacilli cannot be found, or are found only with difficulty, that the true value of sulphones can be appreciated."<sup>157</sup>

In 1941, there was a case of a Chinese man, who was brought to Pulau Jerejak Leper Settlement in a very critical condition. He had been in an advanced stage of leprosy and was administered a sample of sulphetrone. Following this, further treatment was instituted. Within a few weeks after the commencement of this treatment, his ulcers<sup>158</sup> began to heal. After one month, most of the ulcers in his body were healed except for some signs on his fingers and feet. Based on this observation and other similar cases, doctors concluded that sulphetrone was a favourable lead to the cure of leprosy. Where treating using Hydnocarpus Oil failed to show any rapid improvement in lepers, the use of sulphone therapy was showing a favourable result.<sup>159</sup>

Sulphetrone possessed remarkable properties to be able to exert an anti-bacterial action in the treatment of the neural cases in which bacilli are demonstrated either by nerve section or in the presence of tuberculoid lesions.<sup>160</sup> It became obvious that leprosy cases which had shown little or no response to Hydnocarpus Oil, had made rapid and dramatic improvement using sulphone therapy in Pulau Jerejak Leper Settlement.<sup>161</sup> Sulphetrone was readily available as early as 1935 in Pulau Jerejak Leper Settlement. It was an inexpensive drug, and the price in bulk would be under 4 British pounds for 1,000 half-gramme tablets.<sup>162</sup>

Even though these drugs are of relatively low toxicity when compared with the sulphonamide group, the long duration of their administration could reverse the course of leprosy.<sup>163</sup> The sulphones drugs used for treatment for leprosy include Promin, Dapsone, Diasone and Sulphetrone. Promin treatment involved painful injection. Diasone was an

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<sup>157</sup> CO 927/560, Minutes of Conference on Leprosy Research, London, July 1955, Colonial Office, p.18.

<sup>158</sup> An open sore on an external or internal surface of the body, caused by a break in the skin or mucous membrane which fails to heal.

<sup>159</sup> CO 927/559, Leprosy research: Malaya, Colonial Office, p.19.

<sup>160</sup> SUK/412/2311, Annual Report Settlement of Penang, 1948, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p.20.

<sup>161</sup> CO 273/647/1, Quarantine camp, Pulau Jerajak, Penang: Kedah contribution, Colonial Office, p.18.

<sup>162</sup> Ibid.

<sup>163</sup> SUK2287/1342, Transfer patients suffering from Leprosy to Pulau Jerejak Leper Asylum, Pejabat Setiausaha Kerajaan Negeri Kedah, Arkib Negara Malaysia, Kuala Lumpur, p.19.

American preparation that was manufactured in Britain. It had certain toxic effects and among them were anaemia, headaches, nausea and various skin manifestations.<sup>164</sup> Sulphetrone was less toxic, but in some cases produced similar effects to diasone.<sup>165</sup>

In acute toxicity, the Sulphone combines with iron in the gut and forms an insoluble compound, thus giving rise to hypochromic anaemia. In addition, the sulphonamides have an anti-bacterial effect and alter the bacterial flora of the intestine. This causes limitation to the bacterial flora to produce a number of factors of the Vitamin B2 complex which are essential in the diet, and precipitates the onset of B2 Deficiency.<sup>166</sup> This gives rise to macrocytanaemia. The combined effect is a macrocytic hypochromic anaemia and is of nutritional origin. This can be cured or prevented by the administration of iron and brewers' yeast.<sup>167</sup>

In 1941, the health authorities and the staff at Pulau Jerejak Leper Settlement spent several weeks preparing the inmates for treatment using sulphone therapy. All inmates with a satisfactory haemoglobin level were introduced to a full-scale administration of sulphetrone.<sup>168</sup> Among the various sulphones which are available, promin was the best; or at least as good as the other preparations. However, it was also liable to produce anaemia, apparently by direct action on the bone marrow.<sup>169</sup>

The dosage of the different sulphones that was administered to the lepers, was closely supervised by the medical staff. Promin was given in doses of two to five grammes daily, for six days a week, three weeks a month, and five months out of six.<sup>170</sup> Rest periods were necessary to prevent serious anaemia. Diasone was given orally in 5 grain capsules or tablets

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<sup>164</sup> SUK/412/2311, Annual Report Settlement of Penang, 1948, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, Akrib Negara Malaysia, Kuala Lumpur, p.20.

<sup>165</sup> Ibid. p.38.

<sup>166</sup> R.E. Anderson, *Federation of Malaya Report of the Medical Department for the year of 1954*, Kuala Lumpur: Government Printer, Kuala Lumpur, 1954, p.17.

<sup>167</sup> IMR 116/ 28, Leper Asylum Handing over Charge of- to doctor Amies, Institut Penyelidikan Perubatan, p.23.

<sup>168</sup> SUK1272/1923, Reports by Dr. E. A.D Travers on the Leper Asylum at Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, p.22.

<sup>169</sup> IMR 116/ 28, Leper Asylum Handing over Charge of- to doctor Amies, Institute of Medical Research, Arkib Negara Malaysia, Kuala Lumpur, p.23.

<sup>170</sup> Ibid.

beginning with one, two or three tablets daily, according to the general condition of the patient. In an undivided dose, the average full dose is about six tablets a day.<sup>171</sup>

Sulphetrone, on the other hand, was given in higher dosage, beginning with one tablet of 0.5 gramme, three times a day, for the first month, rising to two in the second month and three in the third month. In both of the latter drugs, the patient was advised to take one day rest per-week and one week's rest per-month.<sup>172</sup> Whatever sulphone is administered, the most prevalent toxic manifestation is a condition of macrocytic hypochromic anemia which is of nutritional origin. As such iron and yeast extract was given concurrently throughout the course of treatment.<sup>173</sup>

Among the sulphones, Promin was the first drug which was tested against leprosy. The first experiments were carried out by Carville of the United States of America, in 1942, and the results, reported in 1943, were very persuasive.<sup>174</sup> Carville conducted the experiment on 38 lepers who underwent the process of treatment over a period of two years. He noted that leprosy was arrested only in three, but this number increased with the duration of treatment. Then in another experiment, eight patients underwent the treatment for a period of five years. He noted that the disease was arrested in seven cases. So, it was proven that, in most cases, it takes at least five years for Promin to arrest the disease.<sup>175</sup>

The usage of Promin was also popular in Pulau Jerejak Leper Settlement. One case is that of an Indian adult who had been suffering from leprosy since he was seventeen years old and who had been treated with Hydnocarpus Oil, by different practitioners.<sup>176</sup> During the period of the Second World War, he started losing weight and his physical fitness was reduced due to malnutrition. Then, signs of lepromata started to appear on his face, hands and legs. He was also suffering from neural signs. This prompted the camp doctors to

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<sup>171</sup> IMR 190/ 25, Questions of lepers and their discharge from hospital-Constitution of a Board, Institute of Medical Research, Arkeb Negara Malaysia, Kuala Lumpur, p.13.

<sup>172</sup> Ibid.

<sup>173</sup> CO 927/560, Minutes of Conference on Leprosy Research, London, July 1955, Colonial Office, p.24.

<sup>174</sup> MED/PG/188/ 51, Pulau Jerejak- Health Inspection Visits, Kementerian Kesihatan Malaysia, p.19.

<sup>175</sup> *The Straits Times*, 17<sup>th</sup> August, 1949, p.10.

<sup>176</sup> Ibid. p.20.

administer Promin. The treatment was effective in getting rid of the leproma as well as improving the eyesight of the patient.<sup>177</sup> In another case, a Chinese boy who was suffering from early lepromatous leprosy in 1944 was treated. There were six lepromata signs on his buttocks. The doctors put him on Promin and the disease was arrested.<sup>178</sup>

It was also important from a medical perspective to monitor the effects of Promin on leprosy patients. In certain cases, in which the leper's situation had become prolonged and severe, the institution of sulphone therapy appeared merely to have accentuated the patient's distress without causing any appreciable benefit. In cases where administration of sulphone therapy had exceeded the patient's tolerance level, lepra reaction sometimes arose to such severity that treatment would have to be suspended, and, at times, actually abandoned. These cases were, however, a very small minority.<sup>179</sup>

In addition, the possibility of curing leprosy with available medicine, often depended on the attitude of the patient. Usually, treatments were long and arduous. So, the treatment could not be carried out successfully without the active co-operation of the patient.<sup>180</sup> During the treatment period, patients often got tired easily and might only be able to undergo part of the scheduled treatment. Some even gave up early. Therefore, the treatment given to lepers should take into consideration the mental state of the patient. Moral support should also be given to the patient along with medicine.<sup>181</sup>

Finally, facilities for treatment and nursing care also play an important role in the recovery process. Evidences have shown that negligence by the practitioner in treating the patient reduced the chances of recovery for the patient.<sup>182</sup> Also, there was a shortage of equipment and facilities for treatment at the Pulau Jerejak Leper Settlement, after the Second World War. Worse still, there was a shortage of medical staff to nurse the lepers or to follow

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<sup>177</sup> G. Haridas, *Proceedings of the Alumni Association of the King Edward VII College of Medicine*, p. 173.

<sup>178</sup> MED/PG/2/ 52, T. B Hospital & Leper Settlement, Pulau Jerejak Daily State, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.23.

<sup>179</sup> *Ibid.* p.15.

<sup>180</sup> SUK2884/1950, Leper Settlement, Pulau Jerejak, 1950, Pejabat Setiausaha Kerajaan Negeri Selangor, p.17.

<sup>181</sup> *Ibid.*

<sup>182</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, London,: Archives Edition, 1998, p. 122.

up on their treatment. The patients were also victims of ostracism by their communities and family members.<sup>183</sup>

### **Education and Employment for Leper Patients**

Western education commenced upon the arrival of the British to Malaya. The second half of the year 1880 was regarded as the turning point of the Westernisation of education through implementation of double educational policies of the British Administration in 1872.<sup>184</sup> The British Administrators aimed to establish a set of strategies in Malaya and among them certain types of members were chosen to be recruited for administrative positions. The colonial government formed an education system which was regarded as a positivist approach to lead the society by its graduates and change the world and lifestyle of the population through schooling and the provision of free good education to all their subjects and the population in Malaya.<sup>185</sup>

Interestingly, education and training was also provided throughout all the Leper Settlements in the Malayan Peninsula.<sup>186</sup> In 1888, schools were built for providing education for leper children and aimed at making their children successful. Officers from the Education Department visited the settlement to inspect the adaptation of the new education system by the leper colony and noted that the implementation of the education system had been successful. Training and guidance were also provided to the teachers.<sup>187</sup>

Travers School was established in the camp and aimed to educate students and take examinations from the Lower School Certificate up to the Higher School Certificate level. Apart from academic studies, students participated in various sporting activities such as football and badminton.<sup>188</sup> However, this education only benefited the English and Chinese

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<sup>183</sup> CO 273/679/8, Report on some aspects of medical planning for Malaya, by Dr A G H Smart, Colonial office, The National Archives, UK, p.18.

<sup>184</sup> *The Malay Mail*, 14<sup>th</sup> August, 1937, p.16.

<sup>185</sup> *The Straits Times*, 11, June, 1948, p.1.

<sup>186</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.24.

<sup>187</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p.120.

<sup>188</sup> SUK2884/1950, Leper Settlement, Pulau Jerejak, 1950, Pejabat Setiausaha Kerajaan Negeri Selangor, p.4.

speaking communities.<sup>189</sup> For the Malays and Indian Lepers, they found it hard to adapt their children to English education as they themselves had problems with the language. There were also three English and two Chinese Adult Education classes in the Camp managed by the Penang Adult Education Association. Interestingly, the classes were run by the inmates in the settlement.<sup>190</sup>

At Pulau Jerejak, many inmates were encouraged to work within the boundary of the camp. The main occupations of the inmates were gardening, poultry rearing and fishing.<sup>191</sup> The physically strong were employed as woodcutters, dhobis and artisans. Also, a piece of land with a total size of 5 acres was reserved for cultivation by the inmates. The agricultural produce such as vegetables and poultry were bought at cheap rates, by the health authorities of the camp, for the purpose of providing food to the medical staff and sick patients.<sup>192</sup>

Remarkably, they were given opportunities to be active in entertainment, gardening and in staffing and running the settlement.<sup>193</sup> In addition, inmates also performed other chores such as carpentry and running a sundry shop. They are also involved in the manufacture of plastic fingers, noses, ears and other parts, and there is evidence of a growing desire for such prostheses among those in need of them. Through the generosity of the Bar Councils of the Federation of Malaya and Singapore, free legal aid for inmates was arranged. This had been of the utmost value to inmates who may have had legal problems, and was much appreciated both by the department and the inmates.<sup>194</sup>

The social life in the leper camp was very restricted compared with any other society. However, efforts were made to make it more comfortable through formation of clubs, and other approaches. By 1939, there were five clubs in the camp.<sup>195</sup> These clubs were authorised to receive gifts from various organisations like the Social Welfare Department and the

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<sup>189</sup> Ibid.

<sup>190</sup> SUK4251/19181, Accommodation of surprise Federated Malay States Lepers in the Asylum at Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, p.6.

<sup>191</sup> MED/PG/188/ 51, Pulau Jerejak- Health Inspection Visits, Kementerian Kesihatan Malaysia, p.3.

<sup>192</sup> Ibid.p.2.

<sup>193</sup> MED/PG/407, Narayan- Leper worker, P.J., Kementerian Kesihatan Malaysia, p.10.

<sup>194</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.23.

<sup>195</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, London,: Archives Edition, 1998, p. 146.

Women's Service League. Apart from these organisations, gifts were also sent by individuals to the clubs. The customs department also sent gifts like tobacco to the clubs.<sup>196</sup> A Boy Scout troop of 29 members had also been formed. There was also a brass band comprising 12 highly trained musicians who provided pleasant music to the residents of the camp.<sup>197</sup> When there were important functions in the camp, various instruments were used and played to honour important guests such as the Resident Councillor of Pulau Pinang, Mr. E. F. W. Gilman, who would visit the camp twice every three years. There was also religious freedom in the camp, such as a Mosque for Muslim believers, a Church for Christian worshippers and a Hindu temple for Hindu residents.<sup>198</sup>

Even though inmates were given free food and lodging at Pulau Jerejak Leper Settlement, most of them were interested in growing vegetables and flowers on the grounds.<sup>199</sup> There were inmates who wanted to be employed by the hospital itself. By 1952, 36 inmates were employed by the department as helpers and sweepers in the hospital. Others worked at places like coffee shops, while others spent their time in activities such as fishing. The extra income from the part-time employment was a bonus for the inmates and would become part of their personal savings.<sup>200</sup>

### **Problems among Lepers and Limitations in the Pulau Jerejak Leper Settlement**

In its early days, the Pulau Jerejak Leper Settlement was under the care of the Medical and Health Services. There was a continual shortage of medicine, medical helpers and other medical items, which were necessary for operating the camp. There were only eleven medical staff members to carry out the day to day services while the number of nursing staff members

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<sup>196</sup> SUK4239/43, Leper Asylums problems, Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, Arkib Negara Malaysia, Kuala Lumpur, p.19.

<sup>197</sup> MED/PG/353/51, Reports of lepers seen at Various Places, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.25.

<sup>198</sup> MED/PG/188/51, Pulau Jerejak- Health Inspection Visits, Kementerian Kesihatan Malaysia, p.36.

<sup>199</sup> MED/PG/2/ 52, T. B Hospital & Leper Settlement, Pulau Jerejak Daily State, Kementerian Kesihatan Malaysia, p.12.

<sup>200</sup> MED/PG/407, Narayan- Leper worker, P. J., Kementerian Kesihatan Malaysia, p.27.



was also very small.<sup>201</sup> Other necessary equipment such as mattresses, blankets, mosquito nets, sheets and even the required drugs were lacking.<sup>202</sup>

The British Army and the Red Cross Society supplied large quantities of drugs and other essential equipment to the camp via the British Military Administration.<sup>203</sup> There was also a shortage of clothing among poor inmates in the prison camp. On top of this, there were problems with inmates who ran away from the camp. During 1926, on the feast of Thaipusam, 26 Tamils escaped from the camp. Later they were caught and were brought back by the police. As a result, the guard and watchmen who were held responsible for their escape were sacked. The lighting of the fence at night was improved. Security and surveillance on inmates in the island was tightened. With the enforcement of tight security, it was then mandatory for the inmates to seek permission for any activities. This posed another problem for inmates wanting to see or meet their relatives.<sup>204</sup>

Apart from the increasing number of lepers, there were other problems on the island. The island was surrounded by a mountainous region; which led to a shortage of water and electricity.<sup>205</sup> Lamps were the only source of light at night for the people living on the island. The lack of water supply meant that the patients were not able to wash themselves regularly.<sup>206</sup> One of the factors leading to the lack of provision of these basic requirements was the geographical layout of the island, which is of an extremely hilly nature.<sup>207</sup>

In the year 1929, the Straits Settlement Report recounted that Pulau Jerejak Leper Settlement was facing severe drought, where their means of water supply was a reservoir in the Eurasian camp. As a result, water-boats had to bring water from Pulau Pinang; 8,360 tons of water were brought on 111 occasions in 1929.<sup>208</sup>

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<sup>201</sup> *Malaya and Its Civil Administration Prior to Japanese Occupation*, London: War Office, Great Britain, 1944, p. 30.

<sup>202</sup> SUK4239/43, Leper Asylums problems, Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, p.5.

<sup>203</sup> A voluntary humanitarian organization to protect human life and health.

<sup>204</sup> SUK1272/1923, Reports by Dr. E. A.D Travers on the Leper Asylum at Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, p.18.

<sup>205</sup> CO 273/647/1, Quarantine camp, Pulau Jerajak, Penang: Kedah contribution, Colonial Office, 6.

<sup>206</sup> Ibid.

<sup>207</sup> SUK212/323, Annual Report Settlement of Penang, 1953, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, p.23.

<sup>208</sup> Robert L. Jarman(ed.), *Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, p. 133.

Later, it was realised that the shortage of water on the leper island was actually due to the misappropriation of the water supply. The water supply had been distributed differently among the different camps. As portrayed in the Table 6.11 below, 350,000 gallons of water was supplied to the Old Settlement reservoir, whereas the supply to Camp F was 1,500,000 gallons.<sup>209</sup> So, in terms of water supply, the issue of discrimination was also rife and this led to the shortages of water in some of the camps.<sup>210</sup>

**Table 6.11** Major sources of water for the Pulau Jerejak camp with their respective capacities, 1929

<b>Water Supply</b>	<b>Capacity</b>
Old Settlement reservoir	350,000 gallons
New Settlement reservoir ( Green bank)	750,000 gallons
Camp E	750,000 gallons
Camp F	1500,000 gallons

Source: Robert L. Jarman(ed.)*Annual Report of the Straits Settlements: 1855-1941*, Volume 8: 1922-1926, London,: Archives Edition, 1998, p. 198.

There were various problems related to discrimination in the leper camp in Pulau Jerejak Leper Settlement. Since the administration of the camp was handled by the English, there was a predicament of lack of trust, and discrimination between the whites and the non-whites.<sup>211</sup> The European inmates were given preferential treatment and 16 rooms were specially built for them. Also, there was discrimination in terms of education and usage of electricity.<sup>212</sup>

The Europeans had ‘better-furnished’ camps than the locals.<sup>213</sup> The children of the Europeans were given a higher priority in the English-medium schools, so much so that the local children did not have much access to these at all. This shows that there was national discrimination between the European inmates and the local inmates in the camp.<sup>214</sup>

Apart from the difficulties of electricity and water supplies, the leper camp in Pulau Jerejak was suffering from another problem, that of the increasing consumption of opium by

<sup>209</sup> Ibid.

<sup>210</sup> SUK4239/43, Leper Asylums problems, Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, p. 12.

<sup>211</sup> Ibid. p.19.

<sup>212</sup> MED/PG/188/ 51, Pulau Jerejak- Health Inspection Visits, Kementerian Kesihatan Malaysia, p.21.

<sup>213</sup> Ibid.

<sup>214</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.18.

inmates.<sup>215</sup> The addiction to opium by inmates was an existing issue and this led to various disputes on the island. Addressing this problem, the government reduced the supply of opium to the island, arrested opium addicts and sent them to the Setapak camp in Kuala Lumpur.<sup>216</sup> This led to a decrease in opium addiction in the Pulau Jerejak camp. According to the 1930 Annual report of the Straits Settlement, the government gave instructions to reduce the supply of opium rationing commencing from 1930 onwards, and to transfer all opium-smokers in Pulau Jerejak Leper Settlement to the Opium Smoking Leper Settlement in Kuala Lumpur.<sup>217</sup> This is because opium smoking lepers had caused a lot of problems in the Pulau Jerejak Leper Settlement.

However, the Chief Medical Officer during that period criticised the shortage of accommodation and rooms at the Opium Smoking Leper Settlement in Kuala Lumpur.<sup>218</sup> By 1934, there were 287 patients, and overcrowding became obvious. Besides that, the cost of construction of buildings in Kuala Lumpur and Setapak was much greater than the cost of expansion of the accommodation of the camp in Pulau Jerejak Leper Settlement.

The lepers in the camp were unruly and were found to be involved in illegal tree-felling in the areas surrounding the camp. Numerous cases of malaria resulted among inmates because of this illegal felling of trees. In 1951, six cases of illegal tree-felling were reported.<sup>219</sup> This had caused the area to become prone to natural disasters such as landslides, which in turn, obstructed the flow of the stream water in nearby forests. This created water pools which became probable breeding places of malaria-causing mosquitoes.<sup>220</sup> As such, the spraying of D.D.T on the island had to be carried out regularly, as part of the prevention measures for malaria.<sup>221</sup>

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<sup>215</sup> SUK2884/1950, Leper Settlement, Pulau Jerejak, 1950, Pejabat Setiausaha Kerajaan Negeri Selangor, p.19.

<sup>216</sup> Ibid.

<sup>217</sup> CO 273/647/1, Quarantine camp, Pulau Jerajak, Penang: Kedah contribution, Colonial Office, p. 16.

<sup>218</sup> Ibid.

<sup>219</sup> MED/PG/353/ 51, Reports of lepers seen at Various Places, Kementerian Kesihatan Malaysia, p.11.

<sup>220</sup> SUK4251/19181, Accommodation of surprise Federated Malay States Lepers in the Asylum at Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, p.18.

<sup>221</sup> Ibid.

As for the leper settlement in Pulau Jerejak, most inmates were also not obeying guidelines given by the authorities. Some inmates went to the jungle to find rattan and termites for feeding their chickens.<sup>222</sup> Other inmates sold goods, including chickens, in bulk to other inmates in the detention camp. Even after many warnings, they still did not comply with the rules and regulations of the Pulau Jerejak camp.<sup>223</sup> By the year 1948, the British Military Administration took over charge of the camp from the Medical and Health Services and placed it under the care of Dr. L. E. Vine who was serving as the Colonel of the Malayan Medical Services.<sup>224</sup>

### **Rehabilitation of Former Leper Patients from Pulau Jerejak**

The idea behind rehabilitation is that the person affected with leprosy should be restored back to normal social life, or as near to that as possible.<sup>225</sup> Rehabilitation means restoration of economic productivity leading to economic independence.<sup>226</sup> Tragically, even after a leper is certified cured and free from leprosy, the disease has a significant impact on his physical and mental health. This is seen in many cases where many inmates who were freed from Pulau Jerejak Leprosy settlement were disfigured physically, unfit to work, suffered with mental health issues and were ostracised by their relatives and the society in general.<sup>227</sup>

Rehabilitation of the leprosy patients is a multifaceted and long process. Consistent efforts in various directions are necessary to bring success. It is a time-consuming process and the rewards are often not commensurate with the input.<sup>228</sup> Rehabilitation in the field of leprosy also requires greater effort than rehabilitation of other types of disabled people

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<sup>222</sup> *The Straits Times*, 19<sup>th</sup> June, 1943, p.17.

<sup>223</sup> SUK/3123/1232, Annual Report Settlement of Penang, 1947, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p. 19.

<sup>224</sup> SUK4239/43, Leper Asylums problems, Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, p. 22.

<sup>225</sup> MED/PG/257, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p. 6.

<sup>226</sup> SUK212/323, Annual Report Settlement of Penang, 1953, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.10.

<sup>227</sup> FD 1/1922, Research on leprosy: Professor S Adler; correspondence and application, Medical Research Council, Medical Research Council, The National Archives UK, 1953, p.21.

<sup>228</sup> FD 1/7613, Committee: Conference on Leprosy, Medical Research Council, Medical Research Council, p.14.

because the question of social acceptance does not arise in a non-leprosy disabled person. The social stigma often makes the life of leprosy sufferers unbearable.<sup>229</sup>

The rehabilitation of former leper patients discharged from Pulau Jerejak Leper Settlement in Pulau Pinang was governed by the “The Rehabilitation of Discharged Hansen Cases Committee” which was set up in 1951.<sup>230</sup> This committee consisted of different departments mainly The Penang Health Department, Social and Welfare Department and the Red Cross Society, as well as the Nibong Tebal District Officer. According to the Red Cross Society in Balik Pulau, the “Rehabilitation of Discharged Hansen Cases Committee” provided four methods or schemes for the rehabilitation of former Hansen patients who was discharged from Pulau Jerejak Leper Settlement.<sup>231</sup> They were:

- (i) Relocate former lepers to New Jawi Village
- (ii) Instant Cash Payment of \$300 per head
- (iii) Send home those former lepers immediately who want to go home to China or India.
- (iv) Relocate former lepers who were formerly fishermen<sup>232</sup>

In the first scheme, former lepers will be relocated to New Jawi Village in Seberang Perai. By 1951, the rehabilitation village was built to accommodate 11 families who were recently discharged from the Pulau Jerejak Leper Settlement.<sup>233</sup> Each of these families was given a house worth \$6,500 and a monthly allowance of \$ 60 per-month for a period of nine months. These families were happy with the accommodation and monthly allowances they received to buy their necessities.<sup>234</sup> They were also provided with a piece of land to farm. This land was used for farming vegetables, such as *bayam*, *sawi*, *kangkong* and chillies, which could be used for their family and also sold to other villages.<sup>235</sup> In addition, animal

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<sup>229</sup> Ibid.

<sup>230</sup> MED/PG/46/54, British Red Cross Society General, Perubatan dan Kesihatan Malaysia, p.6.

<sup>231</sup> Ibid. p.7.

<sup>232</sup> Ibid.

<sup>233</sup> SUK3375/1351, List of Johore and Kedah lepers who have been under treatment at the Leper Settlement, Pulau Jerejak, Penang, Arkib Negara Malaysia, p.21.

<sup>234</sup> IMR 190/ 25, Questions of lepers and their discharge from hospital-Constitution of a Board, Institut Penyelidikan Perubatan, p.16 and p.16.

<sup>235</sup> MED/PG/257, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, p.6.

farming such as the rearing of chickens, cows and goats was undertaken with success. The land was utilised fully to provide the food and income to sustain their families and health.<sup>236</sup>

As for the second scheme, the committee would give an instant cash payment to former lepers, with of a maximum amount of \$300 per person. The conditions of these schemes were:

- (i) Officially discharged from Pulau Jerejak Leper Settlement
- (ii) Fit and capable of working on their own a physical examination was taken and there was a need to produce a medical report to certify that the patient was fit for employment.<sup>237</sup>

Even though this scheme sounds promising to former lepers, as they will receive instant cash of \$300, not many former lepers were able to take advantage of it, as many of them were rejected because they failed their physical examination and were not fit for employment.<sup>238</sup> Secondly, this instant cash plan did not give additional benefits like the first scheme where monthly allowances are provided for at least nine months after the former leper patient resettled in Jawi New Village, Seberang Perai.<sup>239</sup> It is believed that less than 10% of the former leper patients took this scheme.<sup>240</sup> In July, 1951, it was reported that four lepers took this scheme. Their names were, Tan Ah Cheng, age 33 from Baling, Kedah, Francis Tan age 24 from, Kulim Kedah, Mohd. Bin Ibrahim, age 36 from Pulau Langkawi, Kedah and Theng Hin Lee, age 38 from Sungei Petani, Kedah. They were discharged and took this scheme to meet with their spouses and families.<sup>241</sup>

The third scheme was requested by some Chinese and Indian lepers who wanted to go immediately back to their families in India and China, upon their discharge from Pulau Jerejak Leper Settlement.<sup>242</sup> Funds were provided to cover their travel tickets home and all

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<sup>236</sup> A. Joshua Raghavar, *Leprosy in Malaysia: Past, Present and Future*, p.12.

<sup>237</sup> MED/PG/146/56, Balik Pulau Red Cross, Pejabat Daerah Barat Daya Pulau Pinang, p.20.

<sup>238</sup> Ibid.

<sup>239</sup> MED/PG/257, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, p. 2.

<sup>240</sup> SUK451/1124, Annual Report Settlement of Penang, 1951, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.11.

<sup>241</sup> IMR 190/ 25, Questions of lepers and their discharge from hospital-Constitution of a Board, Institut Penyelidikan Perubatan, p. 13.

<sup>242</sup> MED/PG/46/54, British Red Cross Society General, Perubatan dan Kesihatan Pulau Pinang, p.19.

other expenses required for their journey. In 1953, only six of the recovered patients opted for this scheme. This scheme was abolished in 1956 because of financial constraints.<sup>243</sup>

The fourth scheme was the resettlement of former lepers in Teluk Bahang, Penang Island, who were fishermen before they were diagnosed as leper patients. Initially, three houses were built and furnished for the purpose of housing these fishermen. Electricity and water supply was also connected to these houses.<sup>244</sup> To help these former lepers to become fishermen again, they were provided with other necessary equipment which was important for fishing, such as boats, nets, fish hooks and other fishing equipment.<sup>245</sup> In addition, in 1955, a small jetty was also build onto the village so that their boats could be docked or moored, and to create a place for the fishermen to sell their catch upon their return from the sea.<sup>246</sup> These fishermen were also provided with an allowance of \$105 per month. By the year 1953, there were 200 who opted for this scheme. All the funds for this scheme were provided by the Central Welfare Council.<sup>247</sup>

#### Jawi New Village

The new rehabilitation camp for former leper patients who were discharged from Pulau Jerejak Leper Settlement, called Jawi New Village, was located in Seberang Perai. The State had leased 1.5 hectares of land for this purpose. The District Office governed and controlled this rehabilitation camp.<sup>248</sup> The cost for clearing the land, removal of old houses, building roads and re-developing the area for the purpose of this rehabilitation of former leper patients was exorbitant,<sup>249</sup> and the receipts in 1950 reported the below figures:

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<sup>243</sup> Ibid.

<sup>244</sup> MED/PG/146/56, Balik Pulau Red Cross, Pejabat Daerah Barat Daya, p.8.

<sup>245</sup> SUK33/2311, Annual Report Settlement of Penang, 1952, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.23.

<sup>246</sup> MED/PG/257, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, p. 4.

<sup>247</sup> MED/PG/578, Annual Report 1950, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p. 15.

<sup>248</sup> SUK212/323, Annual Report Settlement of Penang, 1951, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p. 46. and p.47.

<sup>249</sup> Ibid.

**Table 6.12** Expenditure by the PWD for the Development in Jawi New Village Road: Main Access Road, 1950

Acquisition of land and removal of houses	\$7,500
Cost of construction	\$65,000
Cost of construction - Internal Roads	\$16,000
<b>Filling:</b> Cost of filling blukar and nipah 44 sites – say \$1,300 per site	\$39,000
<b>Total</b>	<b>\$127,500</b>

Source: SUK26/5383, Annual Report Settlement of Penang, 1950, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur, 1950, p.18.

Table 6.12 above shows the spending for the establishment of Jawi New Village which was to be used for the resettlement of former lepers in Pulau Jerejak Leper Settlement. It shows that the money was mainly spent for two purposes which are; roadwork and filling.<sup>250</sup> The bulk of the money was spent on the construction of roads and on the filling of blukar and nipah in 44 sites. The total cost of the development amounted to \$127,500.<sup>251</sup>

In 1952, 25 houses were built in Jawi New Village for the former lepers. They were equipped with various facilities such as beds, furniture, bed sheets and even kitchens. The village was also supplied with electricity and water. As well as this, there was some land for agricultural purposes such as vegetable farming and animal farming.<sup>252</sup> Also the government provided a monthly allowance of \$60 for a married couple and \$40 for a single person, for residing in Jawi New Village. These monthly allowances were provided for a period of six months. From the seventh month onwards, the allowances provided were half the previous amounts.<sup>253</sup> These allowances were funded by The Lotteries Board and the Penang State Welfare Committee. The main objective for providing these welfare allowances was to

<sup>250</sup> Ibid. p.25.

<sup>251</sup> Ibid. p.19.

<sup>252</sup> MED/PG/605, Rural District Council Province Wellesley Central, Perubatan dan Kesihatan Pulau Pinang, p. 13.

<sup>253</sup> MED/PG/257, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, p.7.



enable the former lepers to become more independent and more responsible of their futures.<sup>254</sup>

Unlike the Pulau Jerejak Leper Camp, they had freedom and saw no restrictions on activities and businesses for the former leper patients. Most of the former lepers who were staying in Jawi New Village lived a happier life and a better life in their new resettlement area.<sup>255</sup> In 1955, a new nursery school was built especially for small children of former leper families residing in Jawi New Village. Repair and maintenance of the buildings and houses in Jawi New Village was also carried out to ensure the safety of the inhabitants in the area. In 1956, the total cost for repairs and maintenance of Jawi New Village was \$1,068.35.<sup>256</sup> This sum was paid by the Lotteries Board and the Pulau Pinang State Welfare Committee.<sup>257</sup> The details and purpose of the spending is detailed in Table 6.13 below:

**Table 6.13** Total Allocation spent on Jawi New Village for the Relocation of Recovered Lepers, 1956

<b>Purpose of money spent</b>	<b>Total (\$)</b>
Repairing houses	144.35
Recovery treatment for former lepers	649.00
Payment for Lim Ah Sai, for land works	275.00
<b>TOTAL</b>	<b>\$1068.35</b>

Source: MED/PG/146/56, Balik Pulau Red Cross, Pejabat Daerah Barat Daya Pulau Pinang, Arkib Negara Malaysia, Cawangan Pulau Pinang, 1956, p.12.

Based on Table 6.13, the total spending of Jawi New Village for that particular year was \$ 1,068 out of which the bulk of the money was spent for the recovery treatment of the former lepers.<sup>258</sup> Dr. Alfred Ronald, the Nursing Consultant from the World Health Organisation had visited Jawi New Village, from July to August, 1956. He gave his comments and observations on 11 lepers who were undergoing rehabilitation at Jawi New Village. In his report, he wrote,

<sup>254</sup> SUK212/323, Annual Report Settlement of Penang, 1953, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.11.

<sup>255</sup> RCP/MED/202/49, Annual report of the Medical and Health Department, Penang 1948, Resident Commissioner Penang, p.3.

<sup>256</sup> MED/PG/146/56, Balik Pulau Red Cross, Pejabat Daerah Barat Daya Pulau Pinang, p.12.

<sup>257</sup> Ibid.

<sup>258</sup> Ibid.p.13.

From my observation it would appear that the village community has successfully overcome their dread of leprosy and has accepted this group of cured persons into the community. Rehabilitation however, which implies a return to full social activity by a handicapped person, has been achieved by only one. The remainder, probably because of their long stay (up to 32 years) in a leprosarium, remain dependant, and in need of support, and would more properly be regarded as having been placed in sheltered employment. It is necessary to recognise these differences for, should dependency become respectable, rehabilitation is virtually impossible. In mental illness, should this occur, and the patient becomes dissocialised, and the result would be the same.<sup>259</sup>

Ronald also said that 25% of the former lepers in Jawi New Village were suffering from mental problems, which had developed into social problems.<sup>260</sup> There are several reasons that could have triggered these problems, firstly, their long stay in a leprosarium meant that they had no home and they were too unstable to live in an ordinary community without some support and supervision.<sup>261</sup> Secondly, it was reported that there were problems associated with overcrowding, poor environment and conditions, lack of after-care services and follow up visits by the medical staff in Jawi New Village.<sup>262</sup>

During the initial period, the chief medical officer of Pulau Jerejak leper settlement had send a letter to the local residents of New Jawi Village, to inform that the former lepers who had re-settled in their village, were fully cured and there was no possibility of transmission of the disease to other people. Having said that, the social life of former lepers was not always easy.<sup>263</sup> Because of the public stigma of leprosy, initially, the locals of the village did not welcome them as a part of their community. The local people of the village had a poor perception of the former lepers. This was because of their inability to believe that the disease had been cured and their fear that it could still be transmitted.<sup>264</sup> Thus, the social life of these former lepers and the local people was one of segregation.

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<sup>259</sup> FD 1/7613, Committee: Conference on Leprosy, Medical Research Council, p.11.

<sup>260</sup> MED/PG/146/56, Balik Pulau Red Cross, Pejabat Daerah Barat Daya Pulau Pinang, p.12.

<sup>261</sup> LAB.FM.3/2/129, Repatriation of lepers & mental Defectives, Medical Research Council, p.10.

<sup>262</sup> SUK33/2311, Annual Report Settlement of Penang, 1952, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.11.

<sup>263</sup> Ibid.

<sup>264</sup> SUK451/1124, Annual Report Settlement of Penang, 1951, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.11.

Over a period of time, however, the local people began to realise that the former lepers were not a danger to their community. So they were accepting of them as part of their society and as humans who can live in their own homes and natural environment. They started co-operating and communicating with the former lepers, and making friends with them. Gradually, the former lepers integrated back into society and started working in various occupations with the help of the allowances provided by the authorities.<sup>265</sup> Eventually, they became independent. As for those former lepers who had settled in Jawi Village for a long time, some had succeeded by becoming financially independent and were able to support their own livelihood, rather than to depend on others for sustenance.<sup>266</sup>

Thus, the rehabilitation of bacteriologically negative cases from Pulau Jerejak Settlement to Jawi New Village had been a success.<sup>267</sup> Now, the reaction from the residents of the Jawi New Village had none of the old fear and suspicion which had been expressed previously, prior to the arrival of these discharged patients. As such, these former lepers could now settle into their new surroundings.<sup>268</sup> To resettle the former lepers who were neither farmers nor fisherman, the rehabilitation committee had to conduct a study on the background of each one by the collection of database information about them.<sup>269</sup> Information collected for each person pertained to their names, ages, nationality (if any), previous occupation and deformities caused by the disease on their bodies (eg. scars). After the collection of this data, the estate managers, army or air force authorities and other possible employers were approached to secure jobs so that these former lepers could work for their subsistence.<sup>270</sup>

It was observed that age, gender and medical status affected medical rehabilitation of the discharged lepers in Jawi New Village. Males were better medically rehabilitated than females.<sup>271</sup> Also, the more middle-aged the lepers (49-59), the better medically rehabilitated

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<sup>265</sup> Ibid.

<sup>266</sup> MED/PG/146/56, Balik Pulau Red Cross, Pejabat Daerah Barat Daya Pulau Pinang, p.12.

<sup>267</sup> Ibid.

<sup>268</sup> *The Straits Times*, 9<sup>th</sup> May, 1952, p.16.

<sup>269</sup> MED/PG/257, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, p. 16.

<sup>270</sup> SUK5013/91, Encloses a letter from Colonial Surgeon Province Wellesley recommendation for lepers at Pulau Jerejak, Pejabat Setiausaha Kerajaan Negeri Selangor, p. 10.

<sup>271</sup> CO 927/559, Leprosy research: Malaya, Colonial Office, p.4 and p.6.

they were. One of the criticisms of “the Rehabilitation of Discharged Hansen Cases Committee” was that their focus was only on the younger lepers who had recovered from leprosy and were able to work.<sup>272</sup> The critics also observed that the committee did not pay much attention to elderly lepers or former lepers who were unable to work.<sup>273</sup>

In the majority of cases, the former lepers in Jawi New Village who were below the age of 60 were successfully rehabilitated and were leading a normal family life, which proved the success of “the Rehabilitation of Discharged Hansen Cases Committee”.<sup>274</sup> In New Jawi Village, the young farmers were so well-disciplined and hardworking that they slowly succeeded in businesses in Seberang Perai and contributed to the development and economy of the state.<sup>275</sup> As for the former lepers who were fisherman, they were also given the necessary materials to start fishing again and many of them became successful fishermen in Teluk Bahang and contributed to the economy of Pulau Pinang.<sup>276</sup>

However, not all the former lepers benefited from these schemes and some were left behind, especially those who were blind, handicapped, disfigured or old, and they were unable to secure work and become independent.<sup>277</sup> They also required assistance and help with their mobility. Hence, they would rather stay in the Pulau Jerejak Settlement.<sup>278</sup> Some were not able to go back to their original places of work because they were either not physically fit for work or they did not want to go back for some other reason.<sup>279</sup> Some did not want to leave Pulau Jerejak because they could not tolerate the hard work required in the rehabilitation village. Similarly, some recovered lepers were not able to find their livelihood in the rehabilitation centre, and returned to the Pulau Jerejak camp. The authorities had taken the initiative to ensure that these former lepers received some source of livelihood so that they did not have to depend on others.<sup>280</sup>

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<sup>272</sup> Ibid. 4.

<sup>273</sup> MED/PG/146/56, Balik Pulau Red Cross, Pejabat Barat Darat Daya, p. 11.

<sup>274</sup> MED/PG/257, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, p.17.

<sup>275</sup> *The Malay Mail*, 19<sup>th</sup> June, 1939, p.1.

<sup>276</sup> SUK212/323, Annual Report Settlement of Penang, 1953, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.2.

<sup>277</sup> Ibid.

<sup>278</sup> MED/PG/578, Annual Report 1951, Medical Department Federation of Malaya, Kementerian Kesihatan Malaysia, p.14.

<sup>279</sup> SUK33/2311, Annual Report Settlement of Penang, 1952, Pejabat Setiausaha Kerajaan Negeri Pulau Pinang, p.13.

<sup>280</sup> Ibid.p.16.

Also, there were some of the former lepers who were not willing to go to Jawi Village even after they were cured because they were given free food in the Pulau Jerejak camp. Thus, they could save on their received money and did not have to work hard for their livelihood.<sup>281</sup>

## **Conclusion**

Leprosy is one of the oldest and one of the most feared diseases. The origin of this disease can be traced back thousands of years. It is a belief that this disease had been explained in an ancient document in the Egyptian papyrus which was written circa 1500 to 1550 B.C. According to a recent research by the geographical origin of leprosy may be that of the Middle of the Far East regions.

Through the Leper Enactment Act in 1926 and the Leprosy Ordinance No.673 (Chapter 194) in 1939, lepers were not permitted to stay in private residences without the permission of the medical officers of the district hospitals. If anyone was found to have leprosy and was not willing to go to the island, he/she was forcefully sent and had to stay there until the medical officers gave permission for their return. Quarantine of leprosy patients was particularly needed because the patients who loitered in public areas were bringing danger to the local residents. Thus, the establishment of early leper settlements was evident in the Malay Peninsula such as the Pulau Serimbun in Melaka, Pulau Jerejak in Pulau Pinang, Setapak in Selangor, Pangkor Island which is off Perak and St. John's Island off Singapore. Most of them were likened to barbed-wired prisons.

So those who were suspected to be suffering from leprosy were arrested and sent to the government medical doctor who would then determine whether that person was a leprosy patient or not. If he or she was found to be with leprosy, the court would order that patient

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<sup>281</sup> MED/PG/257, Red Cross Assistants for Resettlement Areas, Kementerian Kesihatan Malaysia, p.15.

be sent to a Leper settlement or detention camp, so that the disease would not spread in their villages and families. Observations were made of the leprosy patients in the detention camps until they were declared completely healed and released by a medical member of the camp.

All leper patients from Penang Island and Seberang Perai benefited from the establishment of the Pulau Jerejak Leper Settlement which was established 1st November, 1871. Pulau Jerejak Leper Settlement was situated in the west side of Pulau Jerejak Island and the nearest point of access to Pulau Pinang was about two miles from Sungai Nibong. The camp was very important as it gave the opportunity for the Straits Settlement government to segregate the patients suffering from leprosy, as it was a communicable disease and, up to that time, no proper cures had been identified.

Women leper patients benefited from the establishment of the Jelutong leper camp, which was a camp set up for female lepers. In 1939, 104 women leper patients were in Jelutong leper camp and four deaths were recorded. The number of patients was small compared with the male leper camp in Pulau Jerejak. Overall, the camp in Pulau Jerejak had more modern equipment and facilities compared with the female detention camp in Jelutong. Even though Pulau Jerejak Leper Settlement had all the expert doctors and specialists to treat and cure leper patients, they still lacked expertise. There were no expert doctors and facilities were to treat other ailments and diseases that occurred among the leper patients in the centre. Thus there was a lack of medical facilities and experienced doctors in other diseases. In 1948, there were nine leper patients in Pulau Jerejak Leper Settlement being transferred to Penang General Hospital for treatment. During this time Penang General Hospital was the best Hospital in Northern Malaya. This showed the weaknesses of the Pulau Jerejak Leper Settlement.

The social life of the leper patients in Pulau Jerejak Leper Settlement was restricted compared with other places. However, many efforts were made to make life normal for the leprosy patients in the asylum. Various activities were introduced to keep the patients busy and they were encouraged them to work. This initial requirement was provided for the patients. Similarly, various clubs were formed, such as the Social Welfare Department and the Women's Service League. Schools were established for the leper children and training was given to the more educated leper patients so that they could contribute to the welfare of the leper colony. One of the main problems was the discrimination between the European and non-European patients. The European patients were provided better huts and other services, whereas as the non-European patients had to adjust to small huts which did not even have proper roofs. Similarly, there was discrimination in the provision of electricity and education also. Apart from the discrimination cases, there were other problems in the leper island. The over-consumption of opium among the leper patients was one the main concerns. It not only affected the health of the leper patients, but also created social problems. The British government also introduced some rules to control the opium in the camp and even transfer opium addicted lepers to Setapak and Kuala Lumpur leper camp. The problem of malaria was another big problem, and the illegal cutting of trees in the woods by the patients was also creating problems for the authorities.

From this research is was obvious, it was a success in treatment and curing leper patients in Pulau Pinang. This is evident with the reduction of the death rate in 1901 was 13.5% and went down to 3.7% in 1955. Such reduction was because the establishment of Pulau Jerejak Leper camp as a treatment centre and the introduction of western medicine such as hydnocarpus and sulphone for the treatment of leper patients in Pulau Pinang. However, the rise of number of patients in Pulau Jerejak Leper Camp from 1901 to 1955, does not reflect the rise of leprosy patients in Pulau Pinang, this was because Pulau Jerejak

became popular and famous as a leprosy treatment centre in the region, thus received more patients from Singapore and other Malay States.

The rehabilitation of former leper patients discharged from Pulau Jerejak Leper Settlement in Pulau Pinang was under the shoulder of the “The Rehabilitation of Discharged Hansen Cases Committee” which was set up in 1951. This committee consisted of different departments: mainly The Pulau Pinang Health Department, Social and Welfare Department, Red Cross Society as well as Nibong Tebal District Officers.

The Rehabilitation of Discharged Hansen Cases Committee established Jawi New Village, ex-leprosy patients who got the clean chit from the medical department were sent to the Jawi New village so that they can start their new normal life. In Jawi New Village, various schemes provided for housing, occupation and financial support, and these had been helpful to the patients in starting a new life. However this support was not provided to all the ex-leprosy patients, and there were still problems related to social acceptance of the leprosy patients in society. The government could also have focused on ensuring that the ex-leprosy patients did not face any social discrimination in society.

However, success was achieved in recovering the lives of those former leprosy patients. In Jawi New Village, most of the former leprosy patients that lived in the village became independent after a few years, and they were able to support their own expenses. These shows how successful the Rehabilitation of Discharged Hansen’s Cases Committee was, and that success was not only brought by the Pulau Pinang Health Department. In 1953, the majority of the ex-leper patients in Jawi New Village could take care of themselves and handle their own economic independence, hence they no longer needed to be supported or helped by anyone anymore. This is the fruit of the efforts of The Rehabilitation of Discharged Hansen’s Cases Committee.



## CHAPTER 7

### CONCLUSION

This research shows that the British Colonial Administration faced many challenges in the prevention, treatment and cure of infectious diseases such as malaria, tuberculosis and leprosy in Pulau Pinang from 1900 to 1957. Despite this, the Colonial Government reduced the death rates and cured the patients who were affected by those diseases. This success was attributed to the good working relationship and coordination that existed between the Colonial Government, the local authorities and the non-profit organisations which helped towards the prevention and eradication of malaria, tuberculosis and leprosy cases in Penang Island and Seberang Perai.

The British colonial administration also supported the development of Christian Churches and Mission Schools. One of the denomination of Christian Churches, the Methodist Church, established the Methodist Mission and this brought about the creation of the Penang Sanatorium Hospital and the Penang Mission Clinic. However, their services were limited to urban areas where the Chinese were concentrated, and in the case of Catholic Welfare, they were only well received by non-Malays.<sup>1</sup> They were rejected by Malays in rural areas. The Malays in rural areas refused to associate with them as they were cautious of them evangelising to the Muslim community. In Penang Island, there were two well-known private hospitals, which were the Lam Wah Ee Hospital and the Seventh-day Adventist Hospital. Many patients sought treatment in these hospitals because they were being discriminated against in the General Hospital.<sup>2</sup>

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<sup>1</sup> MED/PG/46/54, British Red Cross Society General, Perubatan dan Kesihatan Pulau Pinang, p.16.

<sup>2</sup> MED/PG/22/53, Report on Medical & Dental Service 1951, Kementerian Kesihatan Malaysia, p.9.

The British colonial administration also encouraged the involvement of non-profit organisations (NPO) to cooperate in solving the problems of infectious diseases which shows that the British Colonial Administration was not capable of solving the problems of malaria, tuberculosis and leprosy by itself and needed the help other non-profit organisations. One of these organisations which was The British Red Cross Society Federation of Malaya (Penang Island and Seberang Perai Branch) which took part by actively visiting schools and providing medical examinations and treatment to school children. This association also provided health advice, treatment and medicines to children in almost every school in Pulau Pinang.

The women also assisted through providing nursing care and moral support to the victims of the infectious diseases. For instance, in Pulau Pinang, Mrs. P.K. Hamilton and Susan Cheah (Nurses for the Red Cross Association), visited almost every school in the rural area to offer medical check-ups and treatment to children. Mrs. Hamilton was a nurse of the Red Cross Association for 4 years. During that period, she visited nearly all the schools in Seberang Perai and Bukit Mertajam and gave medical aid and treatment to thousands of children.

Also, many new hospitals were built in the town; the General hospital, for instance, provided a comparable range of facilities for medicine, surgery, radiology, obstetrics, pathology and other special services. There were clinics for infants and mothers, for school children, for dental care and vaccination and for the treatment of special diseases. However, in rural areas, health facilities and services were in poor condition. This was obvious in health centres in Tasek Gelugor, Balik Pulau, Teluk Bahang and Kepala Batas where there were insufficient staff and health workers. Also Health Centres In Teluk Kumbar, Bayan Lepas, Kuala Muda, Penaga and Maklom recorded maintenance problems with the buildings. This shows that the health standard in urban areas was better than in rural areas.<sup>3</sup>

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<sup>3</sup> MED/PG/605, Rural District Council Province Wellesley Central, Perubatan dan Kesihatan Pulau Pinang, pp. 5-7.

No matter how much the newly-developed western medication existed, writers such as Giok Ling argue that people in Pulau Pinang still continued to use traditional medicine.<sup>4</sup> The fact is that different ethnic groups had their own aboriginal medicines before the western medicines were introduced during the British Colonial occupation. The persistence of traditional medicines has been traced to colonial healthcare policies, where there was an uneven growth of development and services. In addition to this, early western and colonial medicine did not appeal to the natives, and so it took time for western medicine to penetrate the society.

To solve the problem of malnutrition among school children, the Milk and School Feeding Scheme was launched by the Pulau Pinang Health Department. The Milk Scheme was introduced in all schools in Pulau Pinang without many difficulties, whereas the School Feeding Scheme was a failure because the Health Department did not have enough funds or grants to provide for every school and was unable to cover the cost of the required expansion of school canteens and the wages for hiring new staff for this scheme.<sup>5</sup>

As for dental care, it was noted that people who lived in urban areas had better dental health than those who lived in rural areas. This was because the people in the cities were well to do and were knowledgeable about the importance of dental health. In rural areas, the percentage of children who were in need of dental treatment was very high, about 90%, in Seberang Perai, for example. This study found that those children in English schools had worse dental problems than those in Malay schools.

Malaria is one of the world's most threatening and fatal diseases which created havoc during the 19th and the early part of the twentieth century and destroyed millions of human lives across all continents. The Colonial office records reported that since the establishment of Imperial governance in Pulau Pinang and Malacca, the surgeons of the East

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<sup>5</sup> MED/PG/188/48, Medical Examination of School Children, Kementerian Kesihatan Malaysia, p.14 and p.16.

India Company had to deal with veritable diseases, transforming the island into a “convalescent station”. The records presented by the Institute for Medical Research announced that Pulau Pinang had earned itself a bad name for frequent occurrence of fever in the region. Out of 34 European civil servants stationed in Pulau Pinang, between 1805 and 1825, 20 died before 1830, half of whom perished due to fever.

The person responsible for establishing the British East India Company’s rights on the island, Francis Light, fell victim to this fatal disease which led to his eventual death. There was little knowledge about how fever led to fatality among inhabitants. There was also a scarcity of resources to fight the disease. As a result, little improvement occurred in controlling the incidence of this disease during the period from 1830 to 1900. Hence, due to lack of preventive or curative progress, the disease claimed a huge toll of lives, particularly after the growth of the population and agricultural advancements.

The Straits Settlement Annual Report in 1905 suggested that malaria control and anti-malarial measures initiated during the 1900s were primarily diverted towards rural Penang Island and Seberang Perai. Regions which were abandoned, like Tanjong Tokong, Ayer Itam, Sungai Glugor, Balik Pulau, Bayan Lepas, Teluk Kumbang, Sungai Pinang and Teluk Bahang, and especially Tanjung Bungah and Ayer Itam were given significant focus, as these areas had a high possibility of mosquito breeding. The Colonial authority sponsored these measures through the help of a large number of labourers who resided in these rural areas.

From 1918 onwards, anti-malarial measures undertaken by the British Colonial Administration and the Pulau Pinang Health Department gained prominence when notices under the Destruction of Mosquitoes Ordinance No 174 were distributed in areas such Seberang Perai, Bukit Mertajam, Sungai Bakap, Bukit Tambun and others. There were 94 notices issued under the ordinance, followed by actions compelling landlords to contribute monetarily towards anti-malarial measures. According to the ordinance issued, people or individuals trying to oppose or obstruct the anti-malarial procedures carried out by the

employers or workers, would be held liable. Other anti-malaria measures were introduced, such as kerosene, infused with 5% DDT, which were adopted in the initial stages of re-occupation and continued for a prolonged time. Anti-malaria oil along with DDT was used as an anti-larval measure, along with Paris Green (1% strength) and indoor sprays to check the prevalence of the disease.

In the 1930s, anti-malarial drainage systems were introduced to the kampongs or villages, as ways to create drinking water and bathing wells. The village of Telok Bahang derived its drainage water supply from a self-owned subsoil water supply introduced in the latter part of 1938, consisting of a concrete tank having a capacity of 6000 gallons. Anti-malaria drainage systems were also introduced in Tanjong Tokong, Ayer Itam, Sungai Glugor, Balik Pulau, Bayan Lepas, Teluk Kumbang, Sungai Pinang, Tanjung Bungah and Ayer Itam before the Second World War. Such anti-malarial drainage systems introduced in rural areas in Penang Island and Seberang Perai were an important prevention measure, especially in this sort of area. Before the Second World War, the British Colonial Administration and local authorities managed to control the spread of malaria diseases in Penang Island and Seberang Perai.

During the Second World War, anti-malarial work suffered significant negligence during the period of the Japanese invasion and occupation of Penang Island and Seberang Perai. Obtaining information for comparison of the measures with other years was also difficult later on because of the lack of records kept during this period. According to the annual report of Pulau Pinang medical and health department in 1946, incidence of the epidemic increased during Japanese Occupation of Pulau Pinang due to negligence of anti-malarial actions, especially in the urban areas. Rural areas also witnessed a growing incidence of the disease, but these were not epidemic outbreaks as observed in the cities and towns.

Severe epidemic outbreaks occurred in settlements where the Japanese army introduced a policy of "Grow More Food" where the inhabitants had inadvertently formed

new areas of mosquito breeding while using their agricultural abilities. As a result of this policy, the gardeners had elevated the water level in the inspection compartments by blocking the outlet pipes with coconut shells or other such materials, in order to carry on their work. These had obstructed the “flow of subsoil water along the pipes”. Later, the authorities removed all such obstructions by laying the pipe lines again and thus preventing water clogging. Another difficulty noted by the British authorities was a mass deforestation drive carried out by the Japanese forces, which resulted in formation of fresh breeding places in the Penang Island and Seberang Perai.

After the re-occupation of the British authorities over the Malayan peninsula and the formation of the Malayan Union (1946) and eventually the Federation of Malaya (1948), anti-malarial works gained new impetus. A report from the Pulau Pinang Health Department, suggested that anti-malarial measures in kampongs faced more difficulty than those in cities and towns, owing to the numerous abandoned areas serving as breeding places for the vectors. Later, under the supervision of Haji Abdul Ghani bin Mohammad, the senior health officer, these areas such Jalan Titi Tras, were utilised for farming purposes (except paddy so as to prevent mosquito reproduction). Besides this, several other measures were employed: sewage, water supply and building plans were reformed, as part of controlling mosquito prevalence.

1952 also witnessed a major amount invested in anti-malarial measures. \$3,440.09 was invested in abolishing mosquitoes, possible breeding areas like sewers (21,662 ft<sup>2</sup>) were destroyed. 72,927 gallons of anti-malaria oils, comprising solar oil, kerosene and diesel were sprayed to eradicate breeding areas. Despite such measures, entire eradication of breeding places, and hence of the spread of the disease, was not possible. Sadly, such anti-malarial measures were also implemented in urban areas. In fact, in urban areas, where it was densely populated, the popular anti-larval methods, sub-soil drainage, ditching and spraying larvacides in breeding places have yielded outstanding results, thus becoming the most

effective measures to pursue for a prolonged period of time. Regular application of such measures helped eradicate the Anopheline mosquito, providing a higher degree of protection than that expected from such applications. Anti-larval measures in the urban areas involved less economic expenditure than rural areas, as the cost of the application was based on the cost per individual in an area.

However, measures undertaken by the Health personnel had failed to eradicate the vectors completely because of the presence of large abandoned areas that needed investigation. These areas were Balik Pulau, Jalan Titi Tras, Pantai Aceh, etc. In these areas, the personnel had assumed that mosquito breeding could not occur in such places due to the lack of water canals. However, the lack of an efficient canal system led the villagers to store water in containers, which became grave threats to the residents because of their transformation into breeding zones for the vectors.

Shell Emulsion was also used as an anti-larval method by the Health Department in schools, hostels and offices along Teluk Ayer Tawar Road, Seberang Perai in 1956, due to the large prevalence of the vector mosquitos there. An aggregate of 50 gallons of shell emulsion was used as larvacide in the rural areas, including the newly identified kampongs. As well as this, three gallons of kerosene oil was utilised for spraying at kampong wells such as in Bagan Dalam, a district in Butterworth. But when it was discovered that there was a large risk associated with such a measure, this was immediately replaced by medicines and insecticides, especially in places of residence. Such actions enabled the department to prevent the breeding of vector mosquitos, thus checking the growth of the disease.

Medication in Pulau Pinang and that of the whole of the Malayan Peninsula generally involved scientific measures, such as drugs and injections, but in rural areas, where there was a lack of scientific knowledge among the people, they usually believed in natural medications and sometimes scientific ignorance led them to rely on blind faith, without any recognition of the actual facts. These methods continued to be used to treat malaria until 1900 and even

after that, despite Government measures undertaken. During the 1920s, Pulau Pinang took over the Infectious Diseases Hospital and spread awareness through the telecasting of films related to the anti-mosquito campaign. A large number of patients were detected with malaria parasites and underwent treatment at the Hospitals, since the knowledge of the causes and its cure had then been discovered.

This research shows there was a success in the prevention and eradication of malaria cases in Pulau Pinang, for instance the death rate was 23% in 1901 but it was reduced to only 2.5% in 1955. In addition, the number of cases of malaria patients in Pulau Pinang was reduced significantly from 15, 653 cases in 1901 to only 746 cases reported in 1955. This was attributed to the anti-malaria efforts supported by the Institute of Medical Research, the DDT spraying, the installation of anti-malaria drainage systems, sub-soil and other prevention methods which were a great success in Pulau Pinang.

As for tuberculosis, when the government failed to provide sufficient effective action to deal with the increasing rate of tuberculosis, there were non-governmental organisations and civic-minded community leaders who initiated measures to improve the health conditions of the people. The non-profit organisations that helped with the cause of tuberculosis through funding and other help, like provision of food and care to the poor and needy patients, included the 'Malayan Association for the Prevention of Tuberculosis', the 'Penang and Province Wellesley Association for the Prevention of Tuberculosis' and the 'Turf Club', which was a horse racing club established in 1864. The Malayan Association for the Prevention of Tuberculosis (MAPTB), which began on 27th June, 1948, was responsible for launching an anti-tuberculosis movement in the Malay Federal States. The association also helped tuberculosis treatment by providing finance. As for the Turf Club, although no records have attested to the Turf Club helping the cause of tuberculosis since its foundation till the end of the war, the last period of colonialism saw the Club being actively involved in the tuberculosis cause.



In addition to these organisations, there were other non-profit organisations that dealt with the cause of women and children such as the Women's Service League and the Young Women's Christian Association (YWCA) that helped the cause of tuberculosis and other related needs. The Women's Service League, which took the role of the British Red Cross, along with the YWCA, were known for being responsible by visiting Tuberculosis patients at their homes to determine early cases in order to deter the disease from spreading further to other regions and patients. Apart from these associations, a series of other measures were taken in order to prevent the spread of tuberculosis in Pulau Pinang by the colonial government and the people. There was also the Sub-Committee in the Perak Road Settlement which was co-opted to serve on the Tuberculosis Committee of Pulau Pinang in 1947 for the leading of tuberculosis awareness campaigns.

The Women's Service League of Malaya was founded after the Second World War in 1946. The Women's Service League and Y.W.C.A. (Young Women's Christian Association) also made numerous visits to houses to trace early cases of tuberculosis, so that patients with tuberculosis could be brought to hospitals. This was to help stop the disease from becoming worse, as it could be fatal. In 1947, there were 13,000 tuberculosis patients who received treatment at their respective homes. Mrs. Cheah In Kiong, was a nurse who was trained others at the tuberculosis Committee to visit houses and residents who were suspected of suffering tuberculosis.

The effort to eradicate tuberculosis in Penang Island and Seberang Perai was largely done by their respective governments to help prevent the spreading of tuberculosis (TB). These organisations had set up Diagnosis Clinics and provided Florescent Screening Rooms to trace those with tuberculosis so that they could be treated as soon as possible. In addition, a Treatment Allowance Scheme was also implemented to ease the burden of tuberculosis patients and the financial burden for their respective families. However, not every tuberculosis positive patient received this allowance because there was a lack of funding.

The adoption of modern technology from Europe helped with the detection and prevention of tuberculosis in Pulau Pinang. X-rays, discovered by a German Physicist, Wilhelm Rontgen in 1895, were widely adopted all around the world to detect Tuberculosis cases. The X-ray technique was first used in Penang General Hospital and Pulau Jerejak Tuberculosis Hospital used the X-ray equipment for diagnosis as early as 1908. X-rays became very common after the Second World War. After the 1950s, they became even more common. By the end of the 1950s, there was an average 80 cases per month that were being X-rayed. Various medications such as streptomycin, Purified Protein Derivative, isoniazid and paraaminosalicylic acid were given to patients, together with treatments of X-ray radiography and chemotherapy.

Disease, however, cannot be cured by spreading awareness alone. Thus, there were clinical campaigns like the Bacillus of Calmette and Guérin or Bacille (BCG) Campaign, which started in the entire Federation of Malaya in 1951. B.C.G. is a vaccine that provides immunity or protection against tuberculosis. The campaign was mainly carried out in schools, infant welfare centres, outpatient departments attached to hospitals and also in certain rural areas. Response from the general public was satisfactory. In 1954, 109,129 people were tuberculin-tested and of those 50,024 received BCG Vaccinations. In addition 12,105 new-born babies were also vaccinated.

Government Hospitals and Dispensaries in Penang Island and Seberang Perai were the main centres for tuberculosis patients to receive their treatment. During the period of 1900-1957 there were 6 Government Hospitals in Penang Island and Seberang Perai which offered treatment and admission for tuberculosis patients. The said government hospitals were General Hospital Penang, Pulau Jerejak Tuberculosis Hospitals, Perak Road Hospital, Butterworth Hospital, Bukit Mertajam Hospital and Sungai Bakap Hospital. These government hospitals and dispensaries were responsible for various diagnosis systems,

vaccination, immunisation, and treatment together with financial help and the clinical facilities.

Penang General Hospital was the main government hospital in the state and was the referral centre for all tuberculosis patients in Pulau Pinang from 1900 until 1957 during British Colonial Administration. Tuberculosis was one of the most common medical complaints received in the Penang General Hospital. As far as the beds could permit, early cases suitable for active treatment were admitted to the hospital. In addition, advanced cases that required nursing were also looked after in the hospital. Patients with chronic ailments, including pulmonary and extrapulmonary cases were sent to the Pulau Jerejak Tuberculosis Hospital, Pulau Jerejak. More than a quarter of the hospital beds in Malaya during the colonial period were occupied by tuberculosis patients, and most of them were in the advanced stages. There was high demand for hospitals beds among tuberculosis patients.

Despite providing such medication, these hospitals, Penang General hospital and Pulau Jerejak Tuberculosis Hospital, along with the patients, continued to face various issues. These issues included a dearth of accommodation, a lack of availability of facilities like waiting rooms, a shortage of beds and accommodation for third class tuberculosis patients, rooms in need of repair and sanitation, a shortage of transport in terms of boats. However, laying aside the difficulties, the facilities available in these hospitals were able to bring down the tuberculosis mortality rate by the time colonialism came to a close in Penang Island and Seberang Perai.

This research shows that all prevention and treatment efforts such as x-ray, B.C. G. vaccinations, streptomycin, para-aminosalicylic acid (PAS) and other medication reduced the death rates from as high as 64% in 1900 to only 17% in 1955. This was the proof that working together and proper coordination between the Colonial Government, State Departments, non-profit organisations and private hospitals brought fruitful results in the reduction of tuberculosis cases in Pulau Pinang.

In contrast to tuberculosis, leprosy is known as one of the most feared diseases. The origin of this disease can be traced back thousands of years. It is a belief that this disease had been explained in an ancient document in the Egyptian papyrus which was written circa 1550 to 1500 B.C. According to a recent piece of research, the geographical origin of leprosy may be that of the Middle of the Far East regions.

Through the Leper Enactment Act in 1926 and the Leprosy Ordinance No.673 (Chapter 194) in 1939, Lepers were not permitted to stay in private residences without the permission of the medical officers of the district hospitals. So, if anyone was found to have leprosy, he would be forcefully sent to the Settlement and had to stay there until the medical officers gave permission for his return. The quarantine of lepers was required because the lepers who loitered in public areas were bringing danger to the health of local residents. So those who were suspected to be suffering from leprosy were arrested and sent to the government medical doctor who would then determine whether that person was a leprosy patient or not.

If the person was proven to be a leprosy victim, the court would order the leper to be quarantined in Pulau Jerejak Leprosy settlement or detention camp, so that the disease would not spread in their village and family. Observations were made of that leper in the detention camps until he is declared completely healed and released by a medical member of the camp.

Thus, the establishment of early leper settlements was evident in the Malay Peninsula such as the Pulau Serimbun in Melaka, Pulau Jerejak in Pulau Pinang, Setapak in Selangor, Pangkor island which is off Perak, and St. John's Island off Singapore. The appearance of the early Settlements camp in the Malayan Peninsula during the early 1900s, was likened to barbed-wired prisons. All lepers from Penang Island and Seberang Perai benefited from the establishment of the Pulau Jerejak Leper Settlement which was established 1st November, 1871. Pulau Jerejak Leper Settlement was situated in the west side of Pulau Jerejak Island.

Also, a leper camp in Jelutong was set up and reserved for female lepers. In 1939, 104 women leper patients were in Jelutong leper camp and four deaths were recorded. The number of female lepers was small compared with the male lepers in Pulau Jerejak camp. Overall, the camp in Pulau Jerejak had more recent equipment and facilities than the female detention camp in Jelutong. The Pulau Jerejak Leper Settlement was provided with capable doctors and specialists to treat and cure leper patients. However, these doctors also had to treat other diseases that may have appeared as a complication of leprosy, using the hospital facilities, because of the lack of medical facilities and experienced doctors for treatment of other diseases.

The social life in the leper camp was very restricted when compared with any other society. However, efforts were made so that the lepers in the asylum can live a normal life. Various activities were introduced to keep the lepers occupied and they were also encouraged to work. Also, clubs were formed for receiving gifts from various organisations such as the Social Welfare Department and the Women's Service League. Schools were established for providing education for leper children and aimed at making their children useful and successful. Also, training was given to the more educated lepers so that they could contribute to the welfare of the leper colony.

One of the main problems was the discrimination between the European and non-European patients. The European patients were provided better huts and other services, whereas as the non-European patients had to adjust to small huts which did not even have proper roofs. Similarly, there was discrimination in the supply of electricity and water. Apart from the problems of discrimination, there were other problems in the leper island. The over-consumption of opium among the lepers was one of the main concerns. It not only affected the health of the lepers but it also created social problems. As a result, the British government also introduced new rules to control the opium in the camp and transfer opium addicted lepers to Setapak and Kuala Lumpur Opium Smoking leper camp.

The treatment of leprosy patients in Pulau Jerejak Leper Settlement in the earlier period was mainly with the use of Hydnocarpus oil, which was discovered at the end of the 19<sup>th</sup> century. The use of hydnocarpus oil reduced the death rate of lepers in the Pulau Jerejak camp from 122 in 1802 to just 87 in 1893. Hydnocarpus oil was more effective if it was injected into the patient's body rather than consumed orally. After the Second World War, sulphone drugs became popular for the treatment of lepers. These drugs were also known as sulphetrone. Doctors claimed that the most effective approach for the treatment of leprosy was the use of sulphetrone after the Second World War until 1960s when new drugs were introduced.

This research shows there was a success in treating and curing leper patients in Pulau Pinang. This is evident by the reduction of the death rate in 1901 from 13.5% to 3.7% in 1955. Such reduction was because of the establishment of the Pulau Jerejak Leper camp as a treatment centre and the introduction of western medicine such as hydnocarpus oil before the Second World War and sulphone drugs after the Second World War for the treatment of leprosy.

The rehabilitation of former leper patients discharged from Pulau Jerejak Leper Settlement in Pulau Pinang was governed by the "The Rehabilitation of Discharged Hansen Cases Committee" which was set up in 1951. This committee consisted of different departments: mainly The Pulau Pinang Health Department, Social and Welfare Department, Red Cross Society as well as Nibong Tebal District Officers. Former lepers who received a clean bill of health from the medical department were sent to the Jawi New village, which was established by The Rehabilitation of Discharged Hansen Cases Committee, that these lepers could start a new normal life. In Jawi New Village, various schemes were provided such as housing, occupation and financial support. These had been helpful in assisting the former lepers in starting their new life. However this support was not provided to all the former lepers because not all of them were able to tolerate the hard work at the Jawi New

Village. Also, there were problems related to social acceptance of the former lepers by the society. The government also played a significant role in ensuring that former lepers do not face any social discrimination in society.

However, success was achieved in restoring the lives of those former lepers. In Jawi New Village, many former lepers that lived in the village became independent after a few years, and they were able to support their own expenses. By 1953, most of the former lepers in Jawi New Village were able to take care of themselves and were financially independent, hence they no longer needed to be supported or helped by anyone anymore. This shows the success achieved through the joint effort of the Rehabilitation of Discharged Hansen's Cases Committee and the Pulau Pinang Health Department.

Based on all the evidence contained in this research, we see that the British colonial administration faced many challenges in the prevention, treatment and cure of infectious disease such as malaria, tuberculosis and leprosy in Pulau Pinang from 1900 to 1957. In its effort to eliminate this predicament, the Colonial Government provided the funds necessary for medication and treatment, discovered in the West, and employed them for the benefit of the people of Penang Island and Seberang Perai. As a result, the death rates from diseases such as malaria, tuberculosis and leprosy were reduced drastically. This was even more obvious after the Second World War, whereby the new medication and new treatment methods from America and Europe were widely adopted. Thus, patients suffering from infectious diseases such as malaria, tuberculosis and leprosy in Penang Island and Seberang Perai received treatment, and the majority of them were cured and healed from their diseases by the modern medicine and effective treatment introduced to them by the Government Hospitals.

In addition, there was unity and coordination between the Colonial Government, the local authorities and the non-profit organisations. Such unity and coordination had helped the prevention and treatment measures which were carried out more effectively, especially

in rural areas in Penang Island and Seberang Perai. Finally, it is very obvious that the non-profit organisations played a more important role in the prevention of malaria, tuberculosis and leprosy than the Colonial Government. Thus, much credit should be given to the non-profit organisations especially with the preventative measures in rural and urban areas in Penang Island and Seberang Perai.

However, in terms of treatment of malaria, tuberculosis and leprosy cases, the Colonial Government hospitals played a more important role than the non-profit organisations, as they had provided good hospitals with good facilities for the benefit of all malaria, tuberculosis and leprosy patients in Penang Island and Seberang Perai. Moreover, the role of the Penghulu Kampung, the Malay doctors and bomoh was also important in rural areas.

Thus, we can form the conclusion that every person played an important role in the prevention, treatment and cure for malaria, tuberculosis and leprosy cases in Penang Island and Seberang Perai and they should be given the credit in history for working together with the Colonial Government and non-profit organisations in prevention, eradication and treatment of infectious diseases.



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University of Malaya

# APPENDIX

## Appendix 1

A copy of the Act of Possession, after the acquisition of Pulau Pinang by Francis Light<sup>1</sup>

### *Act of Possession*

*These are to certify that, agreeable to my orders and instructions from the Honorable Governor General and Council of Bengal, I have this day taken possession of this island, called Poolo Penang, now named the Prince of Wales Island, and hoisted the British colours, in the name of His Majesty George the Third, and for the use of the Honourable English East India Company- The Eleventh day of August, One Thousand Seven Hundred and Eighty-six, being the eve of the Prince of Wales's birthday.*

*(Signed) FRANCIS LIGHT, S.P.T*

**JAS GRAY**

*Lt. Commandant, Marine Corps.*

*In presence of the underwritten:*

**GEO. HOWELL**, *Captain, Artillery.*

**ELISHA TRAPAUD**, *Captain, Engineers.*

**RICHD. LEWIS**, *Jun., Commander of the Honourable Company's ship Vanstuart*

**JOHN BEATSON**

**GEORGE SMYTH**, *Merchant.*

**AMOS WALL**, *Commander of the Honourable Company's ship Valentine.*

**DAVID PEREIRA**, *Captain, 84<sup>th</sup> Regiment*

**J.S. MAGEENIS**, *Surgeon of the Honourable Company's ship Valentine.*

**JAS. GLASS**, *Commander of the Prince Henry's storeship.*

**WM. LINDSAY**, *Commander of the snow Speedwell*

**JAS. PROLOCOCKE**, *First Lieutenant of the Honourable Company's snow Eliza*

<sup>1</sup> Donald Moore, *Where Monsoons Meet: The Story of Malaya in the Form of an Anthology*, London: G. G. Harrap, 1956, p.76.

## Appendix 2<sup>2</sup>

### Approximate population in Pulau Pinang and Malacca based on house-numbering, 1957

State/ Settlement	District	Number of populations
<b>Pulau Pinang</b>	City of Georgetown	233, 795
	North East District	47, 541
	South West District	45, 730
	Butterworth	107, 600
	Bukit Mertajam	72, 992
	Nibong Tebal	46, 294
		<b>TOTAL- 553, 952</b>
<b>Malacca</b>	Municipality of Malacca	69, 032
	Centre District	80, 405
	Alor Gajah	80, 198
		<b>TOTAL- 290, 176</b>

<sup>2</sup> MED/PG/847/46, Census of Populations Penang and Singapore, Jabatan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Cawangan Pulau Pinang, p. 3A.

### Appendix 3<sup>3</sup>

#### Shortages of workers at Hospitals and Dispensaries in Pulau Pinang, 1955.

##### (a) Details on complaints received from Balik Pulau, District Health Centre in 1955

<b>Lack of employees and staff needed</b>	<b>Amount</b>
District Health Centre	1
Health officers and district health officers	1
Dental officers	1
Clerk	1
Driver	2

##### (b) Details on complaints received from Kepala Batas, District Health Centre, Seberang Perai in 1955

<b>Lack of employees and staff needed</b>	<b>Amount</b>
Medical and Health Officers	1
Dental Officers	1
Clerk	1
Drivers	2

<sup>3</sup> MED/PG/640/55, Rural Health Scheme Penang & Province Wellesly, Jabatan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Kuala Lumpur p. 27.

#### Appendix 4<sup>4</sup>

### The Importance and Frequencies of Vaccinations for Infant and Mother in Seberang Perai, 1948

	Districts	Approx. Miles from centre.	Clinics
Monday	Ptg. Pauh and Sg. Derhaka	6 miles from B.M.	Twice weekly
Tuesday	Ptg. Dg. Dua Spg. Ampat BengbongLima	2 ½ miles from Maklem 3 miles from K. Batas 3 ½ miles from K. Batas	Twice monthly Weekly Weekly
Wednesday	Ptg. Junggua Pdg. Bendahari	4 ½ miles from Penada 3 miles from K. Muda	Weekly Twice weekly
Thursday	Sg. Dua Labar Yai Ptg. Menara Gas Prau	3 miles from Maklem 7 miles from T. Clugor 8 miles from B. M. 5 ½ miles from B. M.	Twice weekly Weekly Twice weekly Twice weekly
Friday	T.A. Tawar	4 miles from Penang 5 miles from B'worth	Weekly Weekly
Saturday	Aras Rendang	5 miles from K. Batas 6 miles from T. Gligor	Weekly Weekly

<sup>4</sup> MED/PG/640/55, Rural Health scheme Penang & P. W., Jabatan Kesihatan Pulau Pinang, Arkib Negara Malaysia, Cawangan Pulau Pinang, p.4A.

## Appendix 5<sup>5</sup>

### Medical Examination of School Children, 1949

It must be well known to you and to the members of your society that at present Government is not in a position to provide a full medical service for schools, mainly on account of shortage of staff, but it has been suggested at times that private practitioners in Penang, especially those who are “old boys’ of local schools, might like to give some assistance by examining pupils in schools in which they are interested.

2. Should any of the members of your Society wish to undertake the examination of school children, arrangements for this could easily be made, once the schools in which doctors were interested and the time they could spare for this work were known.

3. I believe the suggestion that private practitioners might do some part-time work in selected schools came from a member of your Society and it is in accordance with the public spirited attitude in which they lead the profession in Malaya.

4. I shall be grateful if in due course you will let me have the views of your members on this proposal which I submit to you with some differences fearing that it may seem an attempt to impose on the good nature and public spirit of your members.

Yours Sincerely,

**P.G. CURRID**

**Chief Medical Officer, Penang**

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<sup>5</sup>RCP/PG/676/ 49, Medical examinations of school children, Resident Commissioner Penang, Arkib Negara Malaysia, Kuala Lumpur, p.5.

## Appendix 6<sup>6</sup>

### Morning Meals for School Children

It is well known to teachers as well as to doctors that a child with an empty stomach finds it difficult to pay attention to his studies and understand his lessons. Many children are sent to school without any food at all.

2. In order that your child may have a chance of doing his best at school, please give him some food before sending him to school. All that is necessary is some rice or bread and a cup of coffee. This will cost you very little, but it will make a lot of difference to your child's capacity to learn his lessons.
3. If you can afford it, your child should also have something to eat in the middle of the morning. It need not be much- even two or three biscuits or a banana will help.
4. This sounds very little but it will help your child to make the most of his education.

**30<sup>th</sup> January, 1953**

**Chief Medical Officer, Penang**

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<sup>6</sup> MED/PG/123/54, Malnutrition among School Children, Pejabat Daerah Barat Daya Pulau Pinang, Arkib Negara Malaysia, Cawangan Pulau Pinang, p. 13.



## Appendix 7<sup>7</sup>

### Insufficient Staff for B.C.G. Vaccinations, 1957

I cannot guarantee the infant be vaccinated wherever they may be, as I have insufficient staff but they could be vaccinated at any clinic.

The following are the reasons why the subject was raised:-

- (a) Recently mothers had to come to the clinics for vaccination thus there was contact between the mothers and the Health Nurses who persuaded the mothers to realise the value of visiting the clinics. In subsequent visits the staff succeeded in persuading mothers to have their infants immunised (B. C. G. & Diphtheria).
- (b) If the Hospital Assistant does the vaccination he is concerned with the vaccination only, on the other hand the Health Nurse will consider the other aspects of the infants as well, when doing the vaccination.
- (c) We may see the infants whose vaccinations were done by the Hospital Assistants only when they were ill.

Health Matron,  
Penang and Province Wellesley,  
8<sup>th</sup> April, 1957

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<sup>7</sup>MED/PG/208, Vaccinations, Kementerian Kesihatan Malaysia, Arkib Negara Malaysia, Kuala Lumpur, p.8.