

Disease, Colonialism, and the State

Malaria in Modern East Asian History

Edited by **Ka-che Yip**



香港大學出版社

HONG KONG UNIVERSITY PRESS

Hong Kong University Press

14/F Hing Wai Centre

7 Tin Wan Praya Road

Aberdeen

Hong Kong

© Hong Kong University Press 2009

ISBN 978-962-209-587-8

All rights reserved. No portion of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage or retrieval system, without permission in writing from the publisher.

Secure On-line Ordering

<http://www.hkupress.org>

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library.

Printed and bound by United League Graphic & Printing Co. Ltd., in Hong Kong, China



Hong Kong University Press is honoured that Xu Bing, whose art explores the complex themes of language across cultures, has written the Press's name in his Square Word Calligraphy. This signals our commitment to cross-cultural thinking and the distinctive nature of our English-language books published in China.

“At first glance, Square Word Calligraphy appears to be nothing more unusual than Chinese characters, but in fact it is a new way of rendering English words in the format of a square so they resemble Chinese characters. Chinese viewers expect to be able to read Square word Calligraphy but cannot. Western viewers, however are surprised to find they can read it. Delight erupts when meaning is unexpectedly revealed.”

— Britta Erickson, *The Art of Xu Bing*

Contents

Acknowledgments	vii
About the Authors	ix
Chapter 1	
Introduction. Combating Malaria in East Asia : A Historical Perspective <i>Ka-che Yip</i>	1
Chapter 2	
Colonialism, Disease, and Public Health: Malaria in the History of Hong Kong <i>Ka-che Yip</i>	11
Chapter 3	
Anti-malaria Policy and Its Consequences in Colonial Taiwan <i>Ku Ya Wen</i>	31
Chapter 4	
The Theory and Practice of Malariology in Colonial Taiwan <i>Liu Shiyung</i>	49
Chapter 5	
Colonial Medicine and Malaria Eradication in Okinawa in the Twentieth Century: From the Colonial Model to the United States Model <i>Wataru Iijima</i>	61
Chapter 6	
Malaria Eradication and the Technological Model: The Rockefeller Foundation and Public Health in East Asia <i>Darwin H. Stapleton</i>	71

Chapter 7	
Health, Disease, and the Nationalist State: Perspectives on Malaria Eradication in Taiwan	85
<i>Ka-che Yip</i>	
Chapter 8	
Disease, Society, and the State: Malaria and Health Care in Mainland China	103
<i>Ka-che Yip</i>	
Chapter 9	
Conclusion	121
<i>Ka-che Yip</i>	
Notes	125
Index	157

About the Authors

Iijima, Wataru is Professor of History at Aoyama Gakuin University, Tokyo. He graduated from the doctoral program of Oriental History at the University of Tokyo and also holds a Litt.D. from that university. He is the organizer of the Asian Society of Social History of Medicine (ASSHM). He is the author of *Hidden History of Malaria in East Asia* (in Japanese, 2005), *Plague and Modern China* (in Japanese, 2000), and a co-editor of *Development, Disease and Imperial Medicine* (in Japanese, 2001).

Ku, Ya-Wen is Assistant Professor of the Graduate Institute of History at the National Changhua University of Education in Taiwan. She received her Ph.D. from Yokohama National University in 2005. The title of her doctoral dissertation is “A Historical View of Malaria and its Countermeasures in Taiwan.” She has been a post-doctoral fellow at the Center for Geographic Information Service, Academia Sinica, Taiwan. Her major fields of research include environmental history, history of disease, and historical GIS.

Liu, Shiyung is Associate Research Fellow at the Institute of Taiwan History, Academia Sinica, Taiwan. He received his Ph.D. in history from the University of Pittsburgh in 2000 and was a visiting scholar at the Harvard Yen-ching Institute, Harvard University in 2006-2007. He specializes in the history of modern medicine in Taiwan, and his research interests include historical demography, colonial medicine, and the development of standards of medical practice and education in Taiwan. He has published articles in *Journal of Japanese Studies*, *Annales de Demographie Historique* and *China Quarterly*.

Darwin H. Stapleton is the Executive Director Emeritus of the Rockefeller Archive Center in Sleepy Hollow, New York. He graduated from Swarthmore College in Swarthmore, Pennsylvania, and holds a Ph.D. in history from the University of Delaware. He was a co-founder of the International Network for the History of Malaria that sponsored three malaria history conferences in the 1990s. Among his publications is a co-edited issue of *Parassitologia* (2000) on the theme “Dealing with Malaria in the Last Sixty Years.”

Ka-che Yip is Professor of History at the University of Maryland, Baltimore County. He is the author of *Health and National Reconstruction in Nationalist China: The Development of Modern Health Services* (1995), and *Religion, Nationalism, and Chinese Students: The Anti-Christian Movement of 1922–1927* (1980). His research interests include the medical activities of Christian missionaries, and the history of public health and diseases in modern and contemporary China.

1

Introduction

Combating Malaria in East Asia: A Historical Perspective

Ka-che Yip

This book is an attempt to provide a much needed historical study of malaria in modern East Asia. It examines how different countries attempted to combat this mosquito-borne disease in the context of the global history of malaria since the nineteenth century. Malaria has affected human developments since ancient times, and it remains a major health problem in Asia, not to mention Africa, today. The study of malaria has largely been dominated by scientists as well as medical and public health specialists, while social scientists and historians have only recently been contributing their expertise to examining the cultural, social, economic, and political dimensions of the relationship between human beings and diseases, including malaria. Developments in East Asia, however, have not received their fair share of attention. This book therefore fills an important gap in our understanding of the global problem of malaria and its impact on human society in an area where malaria has been, and still remains, a serious public health concern. In trying to understand the history of a disease, we have to look at its historical development in the course of human history, the concepts of disease and health and how they change over time, and the interplay of human activities, environment, and epidemiology. Moreover, we need to examine the impact of political, social, and economic factors on disease development, as well as how these factors influence individual or collective responses to diseases and other health concerns.

While the chapters in this book explore aspects of these issues in their study of the history of malaria in East Asia, they are particularly concerned with the emergence, development, and consequences of various approaches to dealing with malaria. In focusing on these aspects, they provide insights into the complex and subtle relationship between disease, society, and politics. Chapters two, three, and four by Yip, Ku, and Liu respectively, deal with anti-malaria efforts in colonial Hong Kong and Taiwan, and investigate the emergence and development of a “colonial model” (with variations) of malaria control and eradication. Chapter five by Iijima examines the eradication of malaria in Okinawa, first through the efforts of the Japanese based on their experience in Taiwan, and then the Americans after World War II with the use of dichloro-diphenyl-trichloroethane (DDT) technology. It also traces the emergence of a network of Japanese scientists and research institutes and their roles in the development of colonial medicine

as well as in anti-malaria efforts in Okinawa, Taiwan, and other Japanese colonial possessions. The introduction and use of DDT in the global anti-malaria campaign owed much to the research and experiments undertaken by the Rockefeller Foundation, and Stapleton's study in chapter six highlights the tremendously influential role of the Foundation not only in the development and application of DDT technology but also in the promotion of public health in Asia as a whole. Taiwan in the postwar era emerged as one of the success stories in malaria eradication, and in chapter seven Yip analyzes the role of the Nationalist government in this effort, both in mainland China before 1945 and in Taiwan after they relocated to the island, and how the use of DDT technology as well as international political and economic interests helped to shape Nationalist anti-malaria policies. Finally, chapter eight examines an alternative model of malaria control and eradication in mainland China that was based on the concept of mass mobilization and primary health care. At the same time, it explains the impact of recent changes in the health care system on the anti-malaria effort and public health developments and the state's role in formulating health policies in a new social and political environment. In fact, a theme that runs through the studies in this book is the significant role played by the state in anti-malaria efforts. The book, in short, lends a critical historical perspective to our understanding of the profound impact that malaria has exerted on human development in East Asia. In this introductory chapter, I shall examine briefly the nature of malaria and its importance in human history and put developments in East Asia in the context of the global attempt to combat this deadly disease.

Malaria: The Disease

Malaria is a parasitic disease transmitted by infected female anopheles mosquitoes. Before the 1950s, malaria was a major health problem in most countries; since then, because of malaria control or eradication efforts, Australia, Europe, and the U.S. have been largely free from the disease although it remains a problem in tropical Latin America, Africa, the Indian sub-continent, Southeast Asia, and the islands of the Pacific. During the first half of the twentieth century, malaria killed around 2 million people each year, mostly in the Asian and the Pacific tropics and in Africa. A report from the Regional Office of the Western Pacific Region of the World Health Organization (WHO) revealed that within the region in the year 2000, malaria was endemic in ten countries, seven of them in Asia and three in the south-west Pacific, with 404,376 confirmed cases, and 2,371 deaths.¹

There are four species of parasite that affect humans: *Plasmodium falciparum*, *P. vivax*, *P. ovale*, and *P. malariae*; of these species, the first is the most vicious, while *P. vivax* is the most common but rarely fatal. In the past, falciparum malaria was the major scourge in tropical Asia. The period from the 1950s to the 1980s witnessed successes in northeastern Asia, Taiwan, Okinawa, and parts of China in stamping out the disease, as well as the control or near eradication, and then resurgence, of malaria in countries like Sri Lanka, India, and the Philippines. In fact, multi-drug resistance of falciparum malaria has become the most serious threat in Southeast Asia, especially in the international

border regions of Yunnan province in China, Myanmar, Thailand, Laos, Cambodia, and Vietnam.²

Malaria: Miasma and Sanitation

The term malaria, from the Italian *mala* and *aria* meaning “bad air,” reveals the old belief that the disease was a product of miasma, or noxious vapor generated by putrescent organic matter. In the past, this concept was generally embraced by people in the West. In many parts of Asia, including China, a similar concept existed. People believed that exposure to *zhang*, or foul air, produced in valleys with marshes and swamps caused malaria. The disease was generally associated with marshy areas or newly opened land. It is not surprising that most of the measures adopted to deal with the disease centered on the avoidance of low-lying areas and the improvement of sanitation. Hippocrates once wrote that:

[where] there be rivers ... which drain off from the ground the stagnant water ... [the people] will be healthy and bright. But if there be no rivers, and the water that the people drink be marshy ... the physique of the people must show protruding bellies and enlarged spleens.³

As Ku’s chapter points out, people in Taiwan considered land reclamation to be an effective countermeasure, and they also drank only boiled water.

Before pathogenic agents were identified, such preventive actions would be supplemented by control measures designed to improve sanitation and living conditions. By the 1830s and 1840s, public health reformers in Europe pushed for sanitation reforms involving clean streets and sewers. This movement was reinforced by the Christian sense of moral living—a belief that proved to be especially important when Europeans encountered natives in their overseas expansion. A notable figure in this sanitation movement was Edwin Chadwick of the English Board of General Health who was influential in developing ideas for the construction and improvement of sewers and water systems to protect people’s health.⁴ In fact, as Yip’s chapter on the history of malaria in Hong Kong shows, the sanitation movement constituted an important part of the Hong Kong colonial government’s attempt to rid the city of diseases such as plague and malaria.

The Western expansion into tropical colonies created a health crisis as Europeans found themselves in the midst of unfamiliar environments without the immunity to protect themselves against unknown diseases. In India, British administrators in the second half of the nineteenth century introduced a series of sanitation reforms with the hope of reducing the malaria mortality and morbidity rates. But as in the case of Hong Kong, the Indian colonial administration was careful at first not to provoke indigenous opposition through overly aggressive medical intervention.⁵ In Taiwan, many Japanese fell victim to falciparum malaria which was absent from the home islands. The search for the etiology of and cures for “tropical diseases” including malaria proved to be a driving force behind the development of tropical medicine which was deemed vital to success in the race for colonies and possessions overseas.⁶

Malaria: Mosquito and Man

It is therefore no accident that many advances made in medical science in the second half of the nineteenth century were made by countries with expanding overseas political and economic interests. Tropical medicine relied heavily on bacteriological studies and research which promoted the germ theory of disease. Scientists like Louis Pasteur in Paris and Robert Koch in Germany were among many investigators trying to unlock the secrets of the biological processes of human diseases. Malaria was a favorite subject because of the widespread affliction and economic losses it caused the colonizers. A key question for these malaria fighters was how the disease was acquired by humans. It was Patrick Manson, a British medical officer who had served in the Imperial Chinese Customs Service who pointed to the possible link between mosquitoes and human diseases in his research on elephantiasis in the late 1870s and early 1880s. In late 1880 Charles Laveran, a French military doctor working in Algeria, identified a parasite as the cause of malaria. However, it was not until 1897 that the role of the mosquito in the transmission of the disease was established by a member of the Indian Medical Service, the British physician Ronald Ross.⁷

The discovery by Ross and the work of other investigators created a debate among the scientific community as to the best strategy to deal with malaria. Robert Koch, the German researcher, advocated the use of quinine to suppress the disease, while Ross insisted on the reduction of vector populations as the best approach. Others, especially in Italy, continued to stress sanitation reforms and general improvements in living conditions. From the late nineteenth century to the 1960s, this debate over control versus eradication led to the development of a number of anti-malaria “models” which were based on the latest scientific understanding of the etiology of the disease, the availability of technology, as well as on the political, social and economic concerns of the respective states engaged in the anti-malaria struggle.

Malaria Control: The Colonial Model

The first four chapters of this book focus on the historical development of malaria and anti-malaria policies in two former colonies, Hong Kong and Taiwan, as well as in Okinawa, at the southern edge of the Japanese home islands. Okinawa is considered together in the discussion of the colonial model because, as Iijima demonstrates, anti-malaria efforts there were based on the experience acquired by Japanese malariologists in colonial Taiwan, and in both concept and personnel, relied heavily on contributions from the imperial periphery. This illustrates the process of the “metropolitan capture of knowledge and resources from the tropics”⁸ that proved important in the development of Japanese colonial medicine. But Iijima also reminds us that the development of malaria studies in Taiwan and the Taiwan model of malaria control depended to a significant extent on infectious disease research conducted in research institutes in Japan. Liu likewise shows how malariology was developed and anti-malaria strategies were formulated in the metropolis. Researchers from Japan used Taiwan as a laboratory for

testing theories about malaria control and eradication, the results of which were then applied to Okinawa. In so doing, malaria research not only helped to advance Japanese colonial medicine, but also transform Taiwanese and Okinawan societies.

Both Ku and Liu provide details about the development of the Taiwan model of malaria control which was essentially based on Koch's method of compulsory blood testing of residents and treatment with quinine of suspected and confirmed cases. The top-down approach to control exploited a centralized colonial administrative structure and social system so that representatives of the state—the police and local headmen—collaborated to enforce anti-malaria measures. As Ku's chapter demonstrates, the interventions were imposed from above based on the colonizers' needs and beliefs, but she cautions that we have to understand the interaction of the colonizers and the indigenous population in order to appreciate the complexity of the anti-malaria policy, both in formulation and implementation. For the Taiwanese people who generally accepted malaria as a way of life, Ku aptly summarizes the situation when she writes that the anti-malaria campaign remained the "colonizers' conviction" rather than the "colonized people's necessity."

From the Japanese colonizers' point of view, however, there was indeed the need to take action. Anti-malaria efforts were deemed part of the broader civilizing and modernizing missions of the colonial government. The alleged backwardness and "uncivilized" features of the Taiwanese people and society would be transformed. Ku's chapter contributes to our understanding of the nature of Japanese colonialism by detailing the Japanese attempt to assimilate the Taiwanese through the implementation of "interior extensionism,"—a policy that treated Taiwan as an extension of the home islands—and its relationship to the priority given to the anti-vector approach in malaria control during the 1920s. For a brief period, the assumption was that the Taiwanese could become Japanese, or at least conform to Japanese values. But this was at odds with the dominant view among Japanese colonial leaders who:

intended from the outset that the enlightenment and progress of the indigenes were to be consistent with the limited and distinctly inferior position which they were to occupy within the empire.⁹

By the late 1920s, the colonial government re-emphasized targeting the parasite in its anti-malaria policy.

The British in Hong Kong also understood many of the diseases that they encountered, including malaria, to be products of the uncivilized and unwholesome lifestyle of the local population and the untamed environment they lived in. Their civilizing mission was certainly reinforced by their sense of superior Christian morality. As in India, the Hong Kong colonial government's health policy was shaped by local historical forces and political expediencies.¹⁰ Yip's chapter, which examines the evolution of an anti-malaria policy in nineteenth century Hong Kong, notes that there was in fact no specific anti-malaria policy until after the outbreak of bubonic plague in 1894. The untamed environment as well as the unhygienic conditions of Chinese living quarters and the lifestyle of Chinese residents seemed to validate the colonizers' conviction that

something drastic must be done to reform the environment as well as Chinese living conditions to protect the health of the colony.

As noted earlier, it is important to recognize local factors, especially the nature and background of indigenous populations, as well as the vested interests of the colonizers in our study of the development of anti-malaria policies. In Hong Kong, the proximity to China, the power of the merchants and social elites, and the initial reluctance of the colonial government to provoke local opposition all proved to be critical in explicating the colonizers' formulation of a health policy in general and anti-malaria strategies in particular. Ku's chapter on Taiwan demonstrates how local apathy and resistance were responsible at least in part for the colonial government's return to a policy of targeting the patients rather than environmental factors. In other words, the empire might impose policy, which should be understood as the product of the interaction between the empire and local society.

Unlike the Japanese in Taiwan, the Hong Kong colonial government adhered essentially to a sanitation approach for malaria control. The implementation of drainage schemes in urban areas, the clearing of vegetation, and the avoidance or filling of marshy areas were the main improvements to sanitation that helped to reduce malaria morbidity and mortality. Even after Ross' discovery, the Hong Kong government, apart from introducing more anti-vector activities such as anti-larval measures, essentially continued with general sanitation and environmental improvements. Unlike Taiwan, Hong Kong's rapid urbanization contributed to a reduction of vector sources, and its small size also made the implementation of anti-malaria measures much more manageable. But in both Hong Kong and Taiwan, as the chapters by Yip, Ku, and Liu show, there was an urban-rural dichotomy in the results of the respective anti-malaria efforts.

Before the rise of the technological model of malaria control and eradication, the colonial powers, through their control of vast areas affected by malaria and their domination of the scientific discourse on the subject, had influenced the directions of future anti-malaria efforts in the world. In particular, the colonial anti-malaria intervention had a scientific bias that often ignored the social and cultural contexts in the colonies. At the same time, in the pursuit of the colonizers' agenda, colonial governments often paid scant attention to the relationship between malaria and ecological changes. As Liu points out in chapter four, construction of water reservoirs and the exploitation of new lands in Taiwan increased malaria infection and expanded the malarious zone. Finally, the colonial model tended to expand the colonial state's penetration into and control of local society through the imposition of regulations and rules of behavior in the name of health protection for the good of society.

Malaria Eradication: The Technological Model

The interwar years not only saw the continuation of the debate between supporters of the anti-parasite or anti-mosquito approaches, but also the advocacy of the concept of malaria as a social disease whose elimination demanded general social amelioration. The Malaria Commission of the League of Nations, for example, recommended that the

elimination of poverty should be a major concern in any anti-malaria efforts.¹¹ These various approaches, however, were soon overshadowed by the discovery of a powerful chemical agent, dichloro-diphenyl-trichloroethane (DDT), and the development of a new technological approach in dealing with malaria.

The success of DDT in eliminating malaria transmission in many countries during the last years of World War II raised the expectation among some policy makers that there could be a united approach in malaria control or even eradication. In chapter six Stapleton provides a much needed historical perspective on the role of the Rockefeller Foundation in the development of various public health and anti-malaria programs in Asia during the interwar years, and its intimate involvement in the initial experimentation and subsequent support of DDT residual spraying to destroy the mosquito vector as the method of malaria eradication. The technological model rose to prominence in the postwar period when the hegemonic position of the U.S. made it possible for many other countries to follow this approach of disease control and eradication, with WHO providing the leadership in a global eradication program.

In Asia, the Foundation became closely involved in the preparatory stage of malaria eradication in Taiwan through its epidemiological work and spraying experiments between 1946 and 1950. Yip's chapter on postwar Taiwan highlights several important themes in the eradication effort. DDT spraying began in 1952—even before WHO finally approved a global eradication program based on DDT residual spraying in 1955.¹² In Okinawa, the Wheeler Plan based on the use of DDT was introduced by the U.S. military government. What is significant is that the states in both Taiwan and Okinawa, with the support of a powerful ally, the U.S., assumed critical roles in the development, implementation, and enforcement of the technological approach. Both Iijima and Yip however, argue that the colonial legacies in Okinawa and Taiwan, especially the social support system developed by the Japanese in Okinawa and the anti-malaria infrastructure established in colonial Taiwan, proved important in the respective postwar programs. Hong Kong's government briefly conducted DDT spraying after the war, but this was soon abandoned as improvements to infrastructure and other health programs made spraying unnecessary. The development of overall health services was also a factor in the success of Hong Kong and Taiwan's anti-malaria efforts.

The success stories in Okinawa, Taiwan and also in Sri Lanka, which came close to eradication, were not duplicated in other countries, however. Progress in some countries was slow, as resistance to DDT had developed. Moreover, the eradication strategy proved to be impractical in highly malarious sub-Saharan Africa. WHO decided to abandon the time-limited global campaign in 1969.¹³ Many reasons accounted for the failure of this global effort based on the technological model. The misguided belief that there could be a unified approach and a universal epidemiological model blinded its advocates to an appreciation of the relevance of local conditions and factors in the anti-malaria effort. Many developing countries spent a good part of their health resources on malaria eradication even though basic health services were still largely non-existent. In the 1970s and 1980s, when international funding for malaria control and research diminished, many countries had neither the funds nor the political will to continue with the eradication program.

The Mass Mobilization Model and Recent Problems

During the 1950s and 1960s, when WHO's global campaign was being implemented, leaders in the People's Republic of China (PRC) were developing disease control and prevention programs, including an anti-malaria strategy that relied on their experience in political and social mobilization. Not being a member of WHO and without massive foreign aid, the country was too poor to invest heavily in DDT technology. Yip's chapter on the PRC's anti-malaria efforts examines the tactics of mass mobilization employed by the government in health campaigns in the 1950s and 1960s, and how policy-makers tried to use local resources and labor to compensate for the lack of modern biomedicine and medical technology. The state played a critical role in these developments as it exhorted the people to attack pests in the name of national strengthening and modernization. Health preservation was the patriotic duty of every citizen.¹⁴

Yip's study also emphasizes the PRC government's attempts to develop comprehensive epidemic prevention and health services to combat communicable diseases affecting the majority of the population. Such a health infrastructure, which was absent in many developing countries that embarked on malaria eradication with the use of DDT, enabled the implementation of an integrated approach to both control and treatment of malaria. The role played by the state and a strong political will proved to be essential in these efforts. Similar conditions existed in Taiwan, which benefited from the use of DDT as well as from massive foreign aid. These conditions might not be duplicated in other countries, but they do point to the importance of local factors and the need to develop a solid primary health care system to support anti-malaria programs.

Recent changes in China's health system have certainly affected anti-malaria efforts. As Yip's chapter points out, with the development of a market-oriented economy since the early 1980s, the treatment of malaria has to some extent been taken over by private-sector providers in some areas. Government investment in health matters, including those for combating parasitic diseases has also declined. Although the surveillance system remains sound, it is clear that malaria remains a problem in some provinces, especially in Yunnan and Hainan. As noted earlier, the situation in Yunnan is complicated by the active cross-border trade between Yunnan and its southern neighbors.

With increased international travel, the possibility of travelers and migrants introducing malaria into different parts of the globe has become a major health issue. The chapter on Hong Kong points to the fact that the influx of Vietnamese boat people into the colony in 1989 was accompanied by a spike in the number of malaria cases. In Taiwan, malaria eradication had been achieved without vector extermination, and the continued existence of malaria in other countries poses a serious threat to the island, and indeed, to countries in a similar situation. The development of a sound surveillance system is therefore vital to protecting people against a renewed threat from the disease.

Studies in this book will do much to illuminate an important and neglected dimension of the history of malaria and the development of global anti-malaria strategies in the modern period. The resurgence of malaria, the continued widespread human suffering, and the search for ways to relieve the burden of the disease in the

world, especially on those parts least able to shoulder it, all remind us of the value of looking back to lessons learned from a time when optimism ruled and different models of malaria control or eradication were developed and tested. The single most important historical lesson, perhaps, is that there is no one single model that might work by itself. The solution may be an integrated approach, and that may indeed be discovered in the history that we have presented in this book.

9

Conclusion

Ka-che Yip

This book has examined both the temporal and spatial aspects of the development of various approaches to combating malaria during the colonial and postcolonial periods in Hong Kong, Okinawa, Taiwan, and mainland China. The essays consider the historical development of malaria and its control or eradication in modern East Asia as a dynamic process of interaction between the interests and objectives of the state (colonial or sovereign), international interests, the emergence of new medical knowledge and technology, changing concepts of disease and health, local environmental conditions and local society, as well as the political, social and economic forces at work in a particular locality at a particular time. They have demonstrated the complexity required in the formulation and implementation of anti-malaria policies, and highlighted factors central to the health of a society.

For the colonial states, the essays have validated Mark Harrison's assertion in his study of public health in British India, that in trying to understand the relationship between colonial priorities and health policies, we need to move away from the rigid dichotomy of the "authoritarian, paternalistic" state versus the "liberal and decentralist" state to a paradigm that would accommodate both conceptions of empire.¹ Colonial health policies were in many cases the result of a combination of these characteristics of the state and were based on political, economic, and social concerns. Certainly, the critical roles played by colonial states in formulating approaches to combating malaria should be acknowledged. Although the state's policies were often informed by a strong "civilizing" mission, they were constrained in their implementation by indigenous responses and competing priorities for resources. Indeed, these studies on Taiwan, Hong Kong, and Okinawa have shown the importance of local factors, including prevailing perceptions of malaria, and local actions, including resistance and the inertia of vested interests in shaping anti-malaria policies and facilitating their implementation. In practice, theoretical formulations often proved impractical or unworkable.

At the same time, relationships between the metropolis and colony were often affected by broader international forces. Hong Kong's proximity to China greatly affected the colonial government's public health efforts, including its anti-malaria activities. The isolation of Hong Kong as a plague port in 1894 by the international

community forced both London and Hong Kong to take immediate countermeasures. Development and advances in medical knowledge also changed the dynamics of center-periphery interactions. Anti-malaria efforts in Okinawa were based on experience gained by Japanese malariologists in Taiwan, and the colony contributed both concepts and personnel to the development of Japanese colonial medicine.

When the technological model for combating malaria held sway in the early postwar period, the state often tried to provide direction and determine the allocation of resources, including the use of dichloro-diphenyl-trichloroethane (DDT), yet local and international interests also affected the actual policies and their implementation. Hong Kong's government found that its health resources could be better used in continuing its sanitation approach to combating the disease and developing a public health infrastructure. Okinawa and Taiwan benefited from the adoption of DDT technology as well as the support and largesse of a powerful ally—the U.S.—which dominated postwar Asia. Even when an alternative anti-malaria model was developed and adopted, as in the People's Republic of China, the state made the mobilization of labor as well as other resources possible. But such state actions would not be successful without community co-operation and action, even when the state has the coercive power to force compliance. The interests and concerns of colonialism as well as those of the state, constrained by factors present at a specific locality at a particular time, constitute central themes in the history of malaria in modern East Asia.

There is also a significant aspect to the state's role in the anti-malaria story. In both mainland China and Taiwan the state promoted health protection and anti-epidemic activities as part of their attempts to strengthen the state, and health protection was deemed not so much as a right, but an obligation of the individual citizen. This position could in fact be traced to the Nationalist state's claim before 1949 that public health was a function of the state and health was essential to the welfare of the nation. After the Nationalists relocated to Taiwan, this theme continued to dominate the government's health propaganda, especially with its emphasis on the need to strengthen the population in its struggle against communism.

On the other hand, anti-epidemic and public health campaigns constituted part of the patriotic health movement in the People's Republic, which was dedicated to the strengthening and modernization of the country. The government was at the same time ideologically committed to the equitable distribution of health resources. As we have seen, the introduction of new economic policies in the late 1970s and early 1980s, as well as subsequent changes in the health system, have however, created tension between the commitment to providing health care for the people, including protection from diseases, and financial and political constraints. The state has responded with active intervention in the health sector to reduce the potential for social conflict and resistance resulting from the emergent inequities in health care. It is certainly too early to predict the outcome of such actions by the state.

While international developments have helped to shape anti-malaria efforts in East Asia, experiences in individual East Asian countries have in turn helped to chart new directions in the global anti-malaria campaign. The lessons of the People's Republic

of China's success in the 1960s to control many infectious and parasitic diseases through the mobilization of labor and the development of a strong primary health care system that would support anti-epidemic efforts were not lost on the World Health Organization (WHO), which, after declaring the formal end to its global program of malaria eradication, was searching for a new strategy to control malaria. During the 1970s, WHO turned increasingly to the primary health care model for the development of a solid health infrastructure. In 1978, it endorsed a new anti-malaria approach that stressed careful study of local epidemiology, ecology, and social and economic conditions, as well as an integration of specialized and general health care services. There was no longer a universal control theory; it was now held that malaria control planning should be adapted to local conditions, and the understanding of these diverse conditions—termed the “stratification” of the malaria problem—would help determine the selection of control measures.

But the technological model—or modifications of it—has not disappeared. The end of the global malaria eradication initiative was followed a few years later by the ban on the use of DDT in the U.S. because of environmental concerns. Persistent objection from environmental groups led to its removal from the anti-malaria arsenal in most countries.² Yet the problem, as we have seen, is not in the technology itself (although the toxic effect is certainly a major concern) but in the belief that massive indoor residual spraying of DDT would be enough to wipe out an entire species. DDT, if used properly, could indeed help to save millions of lives. Some countries in Africa have continued to use it on a highly restricted basis. In 2006, WHO announced plans to promote DDT as a cheap and effective tool against malaria, and the U.S. government also increased its financial support for malarial insecticide spraying in Africa.³

We have also noted the serious problem of the rise of multi-drug resistance in malaria parasite strains. In the early 1960s, there were reports from South America of chloroquine resistant strains of *Plasmodium falciparum*, and similar resistance was reported in Yunnan in 1973. Fortunately, artemisinin, first developed in China in 1972 and which has proved to be highly effective, is available from China and is used in Asia. However, WHO did not approve the widespread use of the drug until 2001 (partly out of the fear that parasites would soon develop resistance to this potent anti-malarial) and it was not until three years later that a concerted effort was made to introduce the drug to countries afflicted by malaria in Africa.⁴

Malaria remains one of the most serious diseases in the world due to global political and economic changes, as well as the dynamics of locally changing patterns of disease, ecology and population behavior—not to mention the changing biology of parasites. In October 1992, WHO held the Ministerial Conference on Malaria in Amsterdam to evaluate anti-malaria efforts since 1978 when they had endorsed the primary health care initiative, and to formulate appropriate responses to new realities. The summit reiterated some of the points proposed in 1978, but emphasized even more strongly the need for community involvement, environmental management, and sanitation. It also urged governments to consider malaria control as an essential part of overall health development with sustainable progress as the major objective.⁵

In 1998, the world body announced a new initiative, Roll Back Malaria, to mobilize worldwide support for the fight against malaria. The project endorses the use of insecticide-treated bed-nets, artemisinin-based combination drug therapy, and rapid diagnosis and treatment. Most important of all, it insists that partner countries in the project must be fully committed to the terms of their respective agreements in implementing anti-malaria measures that are sustainable.⁶ The fight against malaria, as WHO has recognized, requires, among other things, a strong political will on the part of individual states. Significantly, the anti-malaria experiences in Hong Kong, Okinawa, Taiwan, and mainland China have offered similar lessons. Malaria control programs should be part of overall health development so that they become an integral part of a well-organized health service. Intervention should be adapted to local conditions, taking into consideration epidemiological, economic, and social factors. Anti-malaria efforts should also be integrated into plans of national development that aim to raise living standards and improve socio-economic conditions. And these programs need to be sustained through continual support of the state and society.

Notes

CHAPTER 1

1. Regional Office for the Western Pacific, World Health Organization, *Malaria, Filariasis and Other Parasitic Diseases*, Document #WPR/RC53/8 (2002), 2.
2. Chev Kidson and Kaemthong Indaratna, "Ecology, economics and political will: the vicissitudes of malaria strategies in Asia," *Parassitologia* 40 (1998), 39–46.
3. Quoted in World Health Organization, *The World Health Report 1999* (Geneva: WHO, 1999), 54.
4. For Edwin Chadwick's contributions to the public health movement, see R.A. Lewis, *Edwin Chadwick and the Public Health Movement, 1832–1854* (London: Longmans, Green, 1952); and Christopher Hamlin, *Public Health and Social Justice in the Age of Chadwick, 1800–1854* (Cambridge: Cambridge University Press, 1998).
5. Mark Harrison, *Public Health in British India: Anglo-Indian Preventive Medicine, 1859–1914* (Cambridge: Cambridge University Press, 1994), 166–201.
6. For the development of tropical medicine, see Michael Warboys, "The emergence of tropical medicine: a study in the establishment of a scientific specialty," in Gerald Lemaine et al., eds., *Perspectives on the Emergence of Scientific Disciplines* (The Hague: Mouton, 1976), 76–98; Philip D. Curtin, *Death by Migration: Europe's Encounter with the Tropical World in the 19th Century* (Cambridge: Cambridge University Press, 1989); Helen J. Power, *Tropical Medicine in the 20th Century: A History of the Liverpool School of Tropical Medicine, 1898–1990* (New York: Kegan Paul International, 1999); Douglas M. Haynes, *Imperial Medicine: Patrick Manson and the Conquest of Tropical Diseases* (Philadelphia: University of Pennsylvania Press, 2001); and David Arnold, ed., *Warm Climates and Western Medicine: The Emergence of Tropical Medicine, 1500–1900* (Amsterdam: Rodopi, 1996).
7. For a detailed study of Patrick Manson's work in China, see Li Shang-Jen, "British Imperial Medicine in Late Nineteenth-Century China and the Early Career of Patrick Manson," PhD dissertation, University of London, 1999; see also Philip H. Manson-Bahr, *Patrick Manson, the Father of Tropical Medicine* (London: L. Thomas Nelson & Sons, 1962); and Edwin R. Nye and Mary E. Gibson, *Ronald Ross: Malariologist and Polymath: A Biography* (New York: St. Martin's Press, 1997).
8. Helen J. Powers, "Review of *Imperial Medicine: Patrick Manson and the Conquest of Tropical Disease*," *Bulletin of the History of Medicine* 76:3 (2002), 617.

9. Ramon H. Myers and Mark R. Peattie, *The Japanese Empire, 1895–1945* (Princeton: Princeton University Press, 1984), 40.
10. For an excellent discussion of the British policy in India, see Mark Harrison, “‘Hot beds of disease’: malaria and civilization in nineteenth-century British India,” *Parassitologia* 40:1–2 (June, 1998), 11–18.
11. Gordon Harrison, *Mosquitoes, Malaria and Man: A History of the Hostilities since 1880* (New York: E.P. Dutton, 1978), 183–189; and Mihai Ciuca, “Work of the Malaria Commission of the League of Nations,” *Chinese Medical Journal* 46 (1932), 412–424.
12. For an official account of the global malaria eradication program from 1955 to 1967, see World Health Organization, *The Second Ten Years of the World Health Organization, 1958–1967* (Geneva: WHO, 1968), 159–174.
13. M.A. Farid, “The malaria programme—from euphoria to anarchy,” *World Health Forum* 1 (1980), 8–33.
14. Chen Haifeng, *Zhongguo weisheng baojian* [Hygiene and health in China] (Beijing: Renmin weisheng chubanshe, 1985), 14.

CHAPTER 2

1. Susanna Hoe, *The Private Life of Old Hong Kong: Western Women in the British Colony, 1841–1941* (Hong Kong: Oxford University Press, 1991), 96.
2. Hong Kong Government, *Sessional Papers: The Colonial Surgeon’s Report for 1891, Appendix A* (Hong Kong: Government Printer, 1892).
3. See for example, Maryinez Lyons, *The Colonial Disease: A Social History of Sleeping Sickness in Northern Zaire, 1900–1940* (Cambridge: Cambridge University Press, 1992); and Martin F. Shapiro, “Medicine in the Service of Colonialism: Medical Care in Portuguese Africa, 1885–1974,” PhD dissertation, University of California, Los Angeles, 1983.
4. Ngo Tak-wing, “Hong Kong under colonial rule: an introduction,” *China Information* XII:1–2 (Summer/Autumn, 1997), 8.
5. Hong Kong Government, *Sessional Papers: Sanitary Superintendent’s Report for the Year 1890* (Hong Kong: Government Printer, 1891); and *The Colonial Surgeon’s Report for 1891, Appendix A*.
6. E.J. Eitel, *Europe in China. The History of Hong Kong from the Beginning to the Year 1882* (Hong Kong: Kelly & Walsh, 1895. Reprinted by Ch’eng-wen Publishing Co., Taipei, 1968), 191.
7. A.H. Crook and L. Gibbs, “Hong Kong: some early notes on its natural history,” *The Hong Kong Naturalist* 5:3 (November 1934), 194.
8. *Reports of the Medical Officer of Health, the Sanitary Surveyor, and the Colonial Veterinary Surgeon for the Year 1898* in *The Hong Kong Government Gazette*, April 29, 1899, 665–666.
9. *The Hong Kong Government Gazette*, January 28, 1899, 88–90.
10. *The Hong Kong Government Gazette, November 17, 1900: Report Regarding a Research into the Prevalence of Mosquitoes and Malaria in the Colony*.
11. David R. Phillips, *The Epidemiological Transition in Hong Kong: Changes in Health and Disease since the Nineteenth Century* (Hong Kong: Centre of Asian Studies, University of Hong Kong, 1988), 47.
12. Phillips, *The Epidemiological Transition in Hong Kong*, 46.

13. Phillips, *The Epidemiological Transition in Hong Kong*, 49–54; and S.Y. Chan, “Epidemiological surveillance on malaria in Hong Kong, 1984,” *Journal of the Hong Kong Medical Association* 38:1 (1986), 33.
14. Hong Kong Government, *Sessional Papers: Report of the Commissioners Appointed by His Excellency Sir. G. William Des Voeus to Enquire into the Causes of the Fever Prevailing in the Western District, 1888*, 7–8 (Hong Kong: Government Printer, 1888)
15. *The Governor’s Report on the Blue Book*, Governor J. Pope Hennessy, April 29, 1881, in R.J. Jarman ed., *Hong Kong Annual Administration Reports, 1841–1941, vol. 1: 1841–1886* (Oxford: Archives Editions, 1996), 254.
16. *Report of the Commissioners Appointed by His Excellency Sir. G. William Des Voeus to Enquire into the Causes of the Fever Prevailing in the Western District, 1888*, 7–8.
17. J. C. Thomson, *Malaria Prevention in Hong Kong, 1900–03* (Hong Kong: Victoria Gaol, 1903), 1.
18. For discussions of these convictions, see Michael A. Osborne, “Acclimatizing the world: a history of the paradigmatic colonial science,” *Osiris*, 2nd Series, 15 (2000), 135–151; and Dane Kennedy, “The perils of the midday sun: climatic anxieties in the colonial tropics” in John D. Mackenzie, ed. *Imperialism and the Natural World* (Manchester: Manchester University Press, 1990), 118–140.
19. Roger Bristow, *Land-use Planning in Hong Kong: History, Politics and Procedures* (Hong Kong: Oxford University Press, 1984), 26.
20. *The Governor’s Report on the Blue Book*, Governor J. Pope Hennessy, April 29, 1881, in Jarman, 255.
21. For discussions of these developments, see Philip D. Curtin, *Death by Migration: Europe’s Encounter with the Tropical World in the Nineteenth Century* (Cambridge: Cambridge University Press, 1989); Warwick Anderson, “Immunities of empire: race, disease, and the new tropical medicine, 1900–1920,” *Bulletin of the History of Medicine* 70 (1996), 94–118; and Greg Bankoff, “A question of breeding: zootechny and colonial attitudes toward the tropical environment in the late nineteenth-century Philippines,” *Journal of Asian Studies* 60:2 (May 2001), 413–437.
22. G.B. Endacott, *A History of Hong Kong*, 2nd edition (Hong Kong: Oxford University Press, 1973), 85.
23. Hong Kong Government, *Administrative Reports: Medical and Sanitary Reports for the Year 1914 Annexe B: Joint Report of the Principal Civil Medical Officer and the Medical Officer of Health* (Hong Kong: Government Printer, 1915), L11.
24. C.K. Lau, *Hong Kong’s Colonial Legacy: A Hong Kong Chinese’s View of the British Heritage* (Hong Kong: The Chinese University Press, 1997), 63.
25. Endacott, *A History of Hong Kong*, 42; 55.
26. For a discussion of the government civil hospital, see Law Yuen Han [Luo Wan Xian], “1842 nian ji 1937 nian jian zhengfu yiliao zhengce yu xiyi tizhi zai gang de fazhan” [“Medical Policies and the Development of Western Medical System in Hong Kong, 1842–1937”] MA thesis, Hong Kong Baptist University, 2002, 42–43. Annual reports of the Colonial Surgeon normally included a section on the number and classification of those admitted. See for example, *The Colonial Surgeon’s Report for 1891*. The Chinese generally did not seek admission to the hospital, partly because of the one-dollar per day fee but more fundamentally because most of them did not trust Western medicine.
27. The government contributed land and \$115,000. See G.H. Choa, *The Life and Times of Sir Kai Ho Kai* 2nd edition (Hong Kong: The Chinese University Press, 2000), 123.

28. Xie Yong Guang, *Xianggang zhongyi yao shi hua* [History of Chinese medicine and pharmacology in Hong Kong] (Hong Kong: Sanlian Shudian, 1998), 2–5.
29. For a discussion of some of the social and legal control measures imposed on the Chinese in the early decades of the colony, see Steve Tsang, *A Modern History of Hong Kong* (London: I.B. Tauris 2004), 47–52; and Elizabeth Sinn, *Power and Charity: the Early History of the Tung Wah Hospital, Hong Kong* (Hong Kong: Oxford University Press, 1989), 7–29. Some scholars have stressed this highly intrusive and manipulative nature of colonial rule in Hong Kong. See Tak-Wing Ngo, *Hong Kong's History: State and Society under Colonial Rule* (London: Routledge, 1999).
30. Ho Pui-yin, *Challenges for an Evolving City: 160 Years of Port and Land Development in Hong Kong* (Hong Kong: The Commercial Press, 2004), 44–47. See also Dafydd E. Evans, “Chinatown in Hong Kong: the beginning of Taipingshan,” *Journal of the Hong Kong Branch of the Royal Asiatic Society* 10 (1970), 69–78.
31. Statement by Governor William Robinson, as quoted in E. G. Pryor, “The great plague of Hong Kong,” *Journal of the Hong Kong Branch of the Royal Asiatic Society* 15 (1975), 65.
32. Statement by Dr. William Morison, Colonial Surgeon, as quoted in Gerald H. Choa, “A history of medicine in Hong Kong,” *Medical Directory of Hong Kong* (Hong Kong: Federation of Medical Societies, Hong Kong, 1970), 15.
33. Hong Kong Government, *Sessional Papers: Report on the Condition and Prospects of Hong Kong, by His Excellency Sir William Des Voeux, Governor, 1889* (Hong Kong: Government Printer, 1889), 293.
34. *Report on the Condition and Prospects of Hong Kong, by His Excellency Sir William Des Voeux Governor, 1889*, 293.
35. Hong Kong Government, *Sessional Papers: Report of the Medical Officer of Health, the Sanitary Surveyor, and the Colonial Veterinary Surgeon for the Year 1897* (Hong Kong: Government Printer, 1898).
36. Endacott, *A History of Hong Kong*, 96.
37. David Faure, ed., *A Documentary History of Hong Kong: Society* (Hong Kong: Hong Kong University Press, 1997), 33–48.
38. Bristow, *Land-use Planning in Hong Kong*, 30.
39. Bristow, *Land-use Planning in Hong Kong*, 30.
40. *Report on the Condition and Prospects of Hong Kong by His Excellency Sir G. William Des Voeus 1889*, 293.
41. Thomson, *Malaria Prevention in Hong Kong, 1900–03*, 1.
42. Endacott, *A History of Hong Kong*, 115.
43. Bristow, *Land-use Planning in Hong Kong*, 32.
44. Bristow, *Land-use Planning in Hong Kong*, 32–34.
45. Hong Kong Government, *Sessional Papers: Annual Report of the Colonial Surgeon for the Year 1883* (Hong Kong: Government Printer, 1884).
46. Endacott, *A History of Hong Kong*, 216; Pryor, “The great plague of Hong Kong,” 63. The difficulties of controlling the plague epidemic had been recorded by Dr. James Lawson, the acting superintendent of the Government Civil Hospital. See the entries in his diary from May 4 to September 3, 1894, reproduced in Law Yuen Han, “1842 nian ji 1937 nian jian,” 267–272.
47. Endacott, *A History of Hong Kong*, 217.
48. Pryor, “The great plague of Hong Kong,” 64.

49. For detailed discussions of the investigation of the plague and its consequences, see Law Yuen Han “1842 nian ji 1937 nian jian,” 131–172; and Elizabeth Sinn, *Power and Charity*, 159–208. See also Hong Kong Government, *Sessional Papers: Report of the Commission Appointed by His Excellency the Governor to Enquire into the Working and Organisation of the Tung Wa Hospital Together with the Evidence Taken Before the Commission and Other Appendices* (Hong Kong: Government Printer, 1896).
50. Endacott, *A History of Hong Kong*, 270.
51. *Report on the Health and Sanitary Condition of the Colony of Hong Kong for 1899*, in *Supplement to the Hong Kong Government Gazette, 1900*, XLIV.
52. Pryor, “The great plague of Hong Kong,” 70.
53. For a detailed study of Patrick Manson’s work in China, see Li Shang-Jen, “British Imperial Medicine in Late Nineteenth-Century China and the Early Career of Patrick Manson,” PhD dissertation University of London, 1999; see also Philip H Manson-Bahr, *Patrick Manson, The Father of Tropical Medicine* (London: L. Thomas Nelson and Sons, 1962), 48–57. For interesting insights into the relationship between Patrick Manson and Ronald Ross, see W. F. Bynum & C. Overy, eds., *The Beast in the Mosquito: The Correspondence of Ronald Ross and Patrick Manson* (Atlanta: Rodopi, 1998).
54. *Report on the Health and Sanitary Condition of the Colony of Hong Kong for 1899*, Appendix A., LXII–LXVI.
55. *Report Regarding a Research into the Prevalence of Mosquitoes and Malaria in the Colony in The Hong Kong Government Gazette, November 17, 1900*, 1701.
56. Endacott, *A History of Hong Kong*, 279.
57. A.R. Wellington, *Public Health in Hong Kong* (Hong Kong: Government Printers, 1930), 15.
58. *Medical and Sanitary Reports for the Year 1914*, 20–22.
59. *Medical and Sanitary Reports for the Year 1914*, 69; Wellington, *Public Health in Hong Kong* 38.
60. Hong Kong Government, *Sessional Papers: Reports of the Medical Officer of Health, the Sanitary Surveyor, and the Colonial Veterinary Surgeon for the Year 1904* (Hong Kong: Government Printer, 1905), 35.
61. *Medical and Sanitary Reports for the Year 1914*, 21.
62. Andrew S. P. Hua, “The development of public health in Hong Kong: the past, present and future,” *The Bulletin: the Journal of the Society of Medical Officers of Health of Hong Kong* 2:I (1968), 26.
63. *Medical and Sanitary Reports for the Year 1914*, 79.
64. Wellington, *Public Health in Hong Kong*, 14.
65. The quotations are from Endacott, *A History of Hong Kong*, 284. See also Bristow, *Land-use Planning in Hong Kong*, 39–40. The reservation of specific residential areas for non-Chinese ended after WWII.
66. Bristow, *Land-use Planning in Hong Kong*, 35–37.
67. *Reports of the Medical Officer of Health, the Sanitary Surveyor, and the Colonial Veterinary Surgeon for the Year 1904*, 27.
68. A. R. Wellington, *Medical and Sanitary Report for the Year 1932* (Hong Kong: Government Printer, 1933), M45.
69. Wellington, *Medical and Sanitary Report for the Year 1932*, M33.
70. *Medical and Sanitary Reports for the Year 1914*, 22; 62–66; and Wellington, *Medical and Sanitary Report for the Year 1931*, M90.

71. David H. C. Given, *Report no.1 on Malaria in Hong Kong* (Hong Kong: South China Morning Post 1928).
72. Wellington, *Medical and Sanitary Report for the Year 1931*, M45 and *Appendix B: Report of the Government Malariologist*, M103–116.
73. Wellington, *Medical and Sanitary Report for the Year 1931*, M86–90. The quotation is from M90.
74. *Annual Medical Report for 1939*, 4–23.
75. Endacott, *A History of Hong Kong*, 298.
76. For a perceptive account of medical work in Hong Kong during the Japanese occupation, see the report by Dr. Selwyn Clarke, *Report on Medical and Health Conditions in Hong Kong for the Period 1st January, 1942–31st August, 1945* (London: Her Majesty's Stationery Office, 1946).
77. Letter dated June 15, 1946, from Medical Officer in Charge-R.N. Mobile Malarial Hygiene Units Nos. 5, 7, & 9, to The Commodore in Charge, Hong Kong. In Hong Kong Public Records Office Folder HKRS#146, D-S No. 1–1.
78. Commodore in Charge Directive, February 2, 1946. In Hong Kong Public Records Office, Folder HKRS#146, D-S No.1–1.
79. Letter dated March 6, 1946 from The Commanding Officer, HMS “Nabcatcher” to Medical Officer in Charge, Malaria Control, Hong Kong: First Report on the Work Performed by the R.N. Anti-Malaria Aero Spraying Unit with Recommendation; and Letter dated May 21, 1956, from J. D. Romer Pest Control Officer, to Hon. D.U.S.: Insecticidal Spraying from Aircraft. Both in Hong Kong Public Records Office, Folder HKRS#146, D-S No.1–1.
80. M.J. Colbourne, “Malaria in Hong Kong,” *Society of Community Medicine. Hong Kong Bulletin* 9 (1978), 82.
81. Victor C.W. Wong, *The Political Economy of Health Care Development and Reforms in Hong Kong* (Aldershot: Ashgate, 1999), 79–80.
82. Catherine Jones, *Promoting Prosperity: the Hong Kong Way of Social Policy* (Hong Kong: The Chinese University Press, 1990), 161–163; 171.
83. Bristow, *Land-use Planning in Hong Kong*, 75. A recent study argues that the housing program was not a direct and humane response to the fire; rather, it was grudging and incremental, and that the security and stability of Hong Kong was of primary concern in the decision. See Alan Smart, *The Shek Kip Mei Myth: Squatters Fire and Colonial Rule in Hong Kong, 1950–1963* (Hong Kong: Hong Kong University Press, 2006).
84. Wong, *The Political Economy of Health Care Development*, 92; 131–132.
85. Director of Medical and Health Services, *Annual Departmental Report by the Director of Medical and Health Services for the Financial Year 1955–56* (Hong Kong: Government Printer, 1956), 6–7.
86. Hua, “The development of public health in Hong Kong,” 21; 25.
87. Colbourne, “Malaria in Hong Kong,” 82; 89.
88. Director of Medical and Health Services, *Hong Kong Annual Departmental Report by the Director of Medical and Health Services for the Financial Year 1970–71* (Hong Kong: Government Printer, 1971), 89; table 27; and Colbourne, “Malaria in Hong Kong,” 89.
89. Memo dated April 24, 1959, from the Director of Medical and Health Services, to the Colonial Secretary, with enclosures. In Hong Kong Public Records Office, folder HKRS#41, D-S No. 1–9890.

90. Director of Medical and Health Services, *Hong Kong Annual Departmental Report by the Director of Medical and Health Services for the Financial Year 1960–61* (Hong Kong: Government Printer, 1961), 35–36; Colbourne, “Malaria in Hong Kong,” 85–86; and Andrew S. P. Hua, “The development of public health in Hong Kong,” 26.
91. *Hong Kong Annual Department Report by the Director of Medical and Health Services for the Financial Year 1960–61*, 47.
92. Phillips, *The Epidemiological Transition in Hong Kong*, 51; and C.K. Li, “Epidemiology of malaria in the New Territories region, Hong Kong (1975–1980),” *The Bulletin: Journal of the Hong Kong Society of Community Medicine* 12:2 (1981), 29.
93. Director of Medical and Health Services, *Hong Kong Annual Departmental Report of the Director of Medical and Health Services for the Financial Year 1983–1984* (Hong Kong: Government Printer, 1984), 2; and Director of Medical and Health Services, *Hong Kong Annual Departmental Report by the Director of Medical and Health Services for the Financial Year 1985–1986* (Hong Kong: Government Printer, 1986), 2.
94. C.K. Li, “Epidemiology of malaria in the New Territories region, Hong Kong,” 32–33.
95. Mary Ann Benitez, “Another 3 victims in outbreak of cholera,” *South China Morning Post* (September 6, 1989), 1–2.
96. Fiona MacMahon, “115 boat people hit by malaria at island camp,” *South China Morning Post* (September 29, 1989), 1–2; “Malaria cases sweep past 500,” *Hong Kong Standard* (October 25, 1989), 6; and Fiona MacMahon, “66 more cases of malaria confirmed,” *South China Morning Post* (October 4 1989), 3.
97. Jamie Allen, “Call for action against malaria,” *South China Morning Post* (April 21, 1990), 3.
98. S.Y. Chan, “Epidemiological Surveillance on Malaria in Hong Kong, 1984,” 41.
99. W.L. Lo and C.W. Tsang, “Chemotherapy of malaria, recommendations for Hong Kong,” *Journal of the Hong Kong Medical Association* 38:1 (1986), 43–46.
100. M.J. Colbourne, “The Pattern of Disease in Hong Kong,” *The Bulletin: Journal of the Hong Kong Society of Community Medicine* 7:1 (1976), 17.
101. *Hong Kong Annual Departmental Report by the Director of Medical and Health Services for the Financial Year 1970–71*, 1.
102. Faure, ed., *A Documentary History of Hong Kong: Society*, 355.
103. Faure, ed., *A Documentary History of Hong Kong Society*, 149.
104. Tsang, *A Modern History of Hong Kong*, 109.
105. Tsang, *A Modern History of Hong Kong*, 205. Britain relinquished fiscal control over Hong Kong in 1948 although financial autonomy was not granted until ten years later.
106. See chapter 8 in this volume.
107. Quoted in Wong, *The Political Economy of Health Care Development*, 102.
108. Quoted in Wong, *The Political Economy of Health Care Development*, 102.
109. Zhang Bing Liang, ed., *Shui wei Xianggang yiliao zhengce kaidao* [Who will operate on Hong Kong’s medical policy?] (Hong Kong: Xin liliang wangluo, 2003), 99–132; and Christine Loh, ed., *At the Epicentre: Hong Kong and the SARS Outbreak* (Hong Kong: Hong Kong University Press, 2004), 77–78.
110. Zhang Bing Liang, ed., *Shui wei Xianggang yiliao zhengce kaido*, 110–132.

CHAPTER 3

1. This has been a popular view especially among Taiwanese medical professionals who have written on colonial medicine. They have praised Japanese colonial medicine's contribution to scientific progress and the Japanese colonial achievements in Taiwan. Some Taiwanese doctors continued to stress the scientific paradigm after 1945 and considered that the modern and scientific anti-malaria efforts had brought the disease under control and saved thousands of lives, without taking into consideration the context of local society and the colonial state. For example, see Department of Health, ed., *Malaria Eradication in Taiwan* (Taipei: Department of Health, 1991), 8–16.
2. See Daniel R. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (Oxford: Oxford University Press, 1981).
3. For example, see Fann Yann Chiou, "Riju qianji Taiwan zhi gonggong weisheng—yi fangyi wei zhongxin zhi yanjiu" [Public hygiene in early colonial Taiwan], PhD dissertation, National Taiwan Normal University, 1994; Fann Yann Chiou, "Yixue yu zhimin kuozhang: yi rizhi shi ji Taiwan nüejì yanjiu wei li," [Medicine and colonial expansion: Taiwan's malaria research under Japanese rule], *Xin shi xue* [New History] 7:3 (1996), 133–173. And Yip Ka-che, "Malaria eradication: the Taiwan experience," *Parassitologia* 42 (2000), 117–126; Yip Ka-che, "Colonialism, post-colonialism and hegemony: perspectives on the history of malaria eradication in Taiwan," in Institute of Taiwan History of Academia Sinica, ed., *The Theses of the International Workshop on Colonial Medicine 2001/10/25–26* (Taipei: Academia Sinica, 2001), 61–76.
4. Liu Ts'ui Jung and Liu Shi Yung, "Taiwan lishi shang de jibing yu siwang," [Disease and mortality in the history of Taiwan], *Taiwan shi yanjiu* [Taiwan Historical Research], 4:2 (1999), 90–132.
5. See Ku Ya Wen, "Taiwan niokeru mararia no ryūkō oyobi sono bōatsu taisaku no suii" [A Historical View of malaria and its countermeasure in Taiwan], PhD dissertation, Yokohama University, 2005, 34–45.
6. Ramon H. Myers and Mark R. Peattie ed., *The Japanese Colonial Empire, 1895–1945* (Princeton: Princeton University Press, 1984), 23–25
7. Most of the investigation reports have been republished in Ishigakishi Sōmubu Shishihenshitsu, ed., *Ishigaki shishi: mararia shiryō syūsei* [History of Ishigaki: historical records of malaria] (Okinawa: Ishigaki City Hall, 1989).
8. Miura Moriharu, "Taiwannetsu yobō kokoroe," [Knowledge about prevention of Taiwanese fever], *Taiwan Sōtokufu kōbun ruisan* [Archives of the Taiwan Sotokufu], Vol.30, No.12: 1896/05/11.
9. Morishita Kaoru, *Mararia no ekigaku to yobō: Taiwan niokeru nihon tōchi jidai no kiroku to kenkyū* [Malaria: epidemiology and prevention—reports and research in Taiwan during Japanese rule] (Tokyo, Kikuya Syobō, 1976), 114–116.
10. Taiwan Kōikai, ed., *Taiwan no eisi jyōtai* [Hygienic condition in Taiwan] (Taipei: Taiwan Kōikai, 1910), 25.
11. Takaki Tomoki, "Mararia yobōhō nitsuite," [On methods of malaria prevention], *Taiwan igakukai zashi* [Journal of the Formosan Medical Association], 29 (1905), 101–104.
12. The belief of an intrinsically hostile environment was common among colonizers, including the Japanese, see Dane Kennedy, "The perils of the midday sun: climatic anxieties in the colonial tropics," in John D. Mackenzie ed., *Imperialism and the Natural World* (Manchester: Manchester University Press, 1990), 118–140.

13. D.J. Bradley, “The particulars and the general: issues of specificity and verticality in the history of malaria control,” *Parassitologia* 40 (1998), 5–10.
14. Tsukiyama Kiichi, “Mararia yobōhō,” [Methods of malaria prevention], *Taiwan igakukai zashi*, 29 (1905), 89–101. He characterized these policies as “hito ni taisuru hōhō” [human approach] and “ka ni taisuru hōhō” [mosquito approach].
15. “Mararia boatsu kisoku,” [Malaria control regulations], *Taiwan Sotokufu kobun ruisan*, Vol.2111, No.1.; 1913/4/1; “Mararia boatsu kisoku sikō kisoku,” [Regulations for the enforcement of the malaria control regulations], *Taiwan Sotokufu kobun ruisan* Vol.2111, No.2; “Mararia boatsu kisoku toriatsukai kitei,” [Executive rules for the malaria control regulations], *Taiwan Sotokufu kobun ruisan*, Vol.2111, No.3: 1913/4/1.
16. The hokō system was at the lowest level of colonial administration. Ten households constituted a unit called kō, headed by a leader called kōchō, and ten kō constituted a ho, headed by a hosei. These headmen reported to the local police office.
17. Morishita, *Mararia no ekigaku to yobō*, 116.
18. Liu Ts’ui Jung and Liu Shi Yung, “Taiwan lishi shang de jibing yu siwang,” 113.
19. See Iijima Wataru and Wakimura Kōhei, “Eisei to teikoku- nichiei shokuminchi shugi no hikakushiteki Kōsatsu ni mukete,” [Hygiene and empire: toward a comparative history of Japanese and British colonialism], *Nihon shi kenkyū* [Research in Japanese history] (2001), 462; “Kindai ajia niokeru teikoku shugi to iryo, kōshu eisei,” [Imperialism, medicine and public hygiene in modern Asia] in Miichi Masatosi, Saito Osamu, Wakimura Kohei and Iijima Wataru, eds., *Sippe, kaihatsu, teikokuiryō : ajia niokeru byouki to iryō no rekishigaku* [Development, disease, and imperial medicine: the social history of medicine in the Asian context] (Tokyo: Tokyo University Press, 2001), 75–94; Wakimura Kohei, “Shokuminchi tōchi to kōshu eise: Indo to Taiwan,” [Colonial rule and public hygiene: India and Taiwan], in Wakimura, *Kikin, ekibyō, syokuminchi tōchi: kaihatsu no naka no eiryō indo* [Famine, Disease, and Colonial Rule in British India] (Nagoya: Nagoya University Press, 2002), 216–244.
20. “Jiasianpu no mararia: Kinoshita kyoju no hanashi,” [The malaria in Jiasian: an interview with Professor Kinoshita] (1)–(7), *Taiwan NichiNichiShinpō* [Taiwan Daily News], 1907/6/17, 1907/6/19, 1907/6/21, 1907/6/23, 1907/6/25, 1907/6/26.
21. Hatori Shigerō, “Beitou niokeru mararia bometsuhō jishi no kouka,” [The consequence of anti-malaria measures in Beitou] *Taiwan igakukai zashi* 100 (1911), 204–221; Horiuchi Tsugio, “Mararia yobō bometsuhō to chiriyōhō,” [Prevention and treatment of malaria], *Ni’shin Igaku* [The Japanese Journal of Medical Progress], 3:1 (1913), 205.
22. Taiwan Sōtokufu Keimukyoku Eiseika, ed., *Mararia bōatsu shi* [Records of malaria control programs] (Taibei: Taiwan Sōtokufu Keimukyoku Eiseika, 1932), 18.
23. Takaki Tomoki, “Kanjiyō 18 nen kaiko,” [Memories of official life in the last eighteen years] (1)–(3), *Taiwan Jihō* [Taiwan Times], January, February, March, 1920.
24. Morishita, *Mararia no ekigaku to yobō*, 120.
25. “Mararia bōatsu kisoku shikō kisoku kaisei no ken,” [Revision of the regulations for the enforcement of the malaria control regulations], *Taiwan Sōtokufu kōbun ruisan*, Vol.2927, No.14: 1919/1/1; “Mararia bōatsu kisoku shikō kitei” [Rules for the enforcement of the malaria control regulations], *Sōtokufu fuhō* [Sōtokufu office gazette], no.1831, 1919/5/14.
26. For example, the “mararia bōatsu kisoku shikō saisoku” [detailed regulations for the enforcement of the malaria control regulations] was published in Takao state in 1921, Shinchiku state in 1922, Taibei state, Tainan state and Karenkō chyo in 1923, Taichu state in 1927; see Taiwan Sōtokufu Keimukyoku Eiseika, ed., *Mararia bōatsu shi* [Records of malaria control programs], 91; 99; 109; 113; 137; 149.

27. Horiuchi Tsugio, “Bankin Taiwan niokeru eisei jōdai gyakudenn no genin oyobi sono kyūchisaku,” [The reasons for and measures to deal with the recent reversal in hygienic conditions in Taiwan], *Taiwan Jihō*, July, 1926.
28. Takaki Tomoki’s statement, cited by Koizumi Tan in *Taiwan niokeru kazoku no yobōigakuteki kenkyū* [Mosquito research from the perspective of preventive medicine] (Taipei: Kōbunkann, 1920), 3.
29. Rubert W. Boyce, *Mosquito or Man? The Conquest of the Tropical World* (London: John Murray, 1909), 64–75.
30. Suzuki Shintarō, “Mararia kansensritsu nitsuite- ross shi hanshiki ron taiwan niokeru kansensritsu ni oyobu,” [Prevalence of malaria in Taiwan: using the equation of Ross] *Taiwan igakukai zashi* 202 (1919), 876–890.
31. Shimomura Hachigorō, “Tainan syū ka niokeru mararia bōatsu sagyō no ji’sai to sono seiseki,” [The practice and result of the anti-malaria program in Tainan state], *Taiwan igakukai zashi* 358 (1935), 51–76.
32. Shimomura, “Tainan syū ka niokeru mararia bōatsu sagyō no ji’sai to sono seiseki,” 59.
33. Shimomura, “Tainan syū ka niokeru mararia bōatsu sagyō no ji’sai to sono seiseki,” 59.
34. Haruyama Meitetsu, “Kindai nihon no shokuminchi tōji to hara takashi,” [Modern Japanese colonial rule and Hara Takashi] in Haruyama Meitetsu and Wakabayashi Masahiroeds eds., *Nihon shokuminchi shugi no seijiteki tenkai (1895–1934)* [The political development of Japan’s colonialism, 1895–1934] (Tokyo: Ajia seikei gakkai, 1980).
35. Tsai Chin-Tang, “Ribenzhitai shiqi suowei tonghuazhengce de shixiang yu xuxiang,” [A study of the reality and falsehood of ‘assimilation policy’ during the period of Japanese rule], *Tamkang shi xue* [Journal of the Department of History of Tamkang University], 13 (2002), 181–192.
36. Ramon H. Myers and Mark R. Peattie ed., *The Japanese Colonial Empire, 1895–1945*, 96–109; E. Patricia Tsurumi, *Japanese Colonial Education in Taiwan* (Cambridge: Harvard University Press, 1977), 91–106.
37. See, for example, Yanaihara Tadao, *Teikoku shugika no Taiwan* [Taiwan under imperialism] (Tokyo: Minami shoten, 1929); Komagome Takeshi, *Shokuminchi teikoku Nihon no bunka togo* [Cultural integration of the Japanese colonial empire], (Tokyo: Iwaha shoten, 1996); Chen Pei-feng, *Tonghua de tongchuang yimeng: rizhi shiqi taiwan de yuyan zhengce, jindaihua yu rentong* [Strange bedfellows of Japan’s “assimilation policy”: the policy of extensionism, modernization, and identity in Taiwan during the period of Japanese rule] (Taipei: Maitian Publishing, 2006).
38. Wu Wen Shing, *Rizhi shiqi Taiwan de shehui lingdao jieceng zhi* [Local elites in colonial Taiwan] (Taipei: Wunan Publishing, 2008), 250–325.
39. Koitsumi Tan, “Taiwan niokeru mararia bōatsu sagyō ni kansuru shiken narabini teian,” [Private opinion and suggestions about the anti-malaria program in Taiwan], *Taiwan igakukai zashi* 275 (1928), 3.
40. Koitsumi Tan, “Mararia no ryūkōgaku oyobi bōatsu sagyō,” [Epidemiology of malaria and anti-malaria program], *Ni’shin Igaku* 6 (1929), 1157.
41. Koitsumi Tan, “Taiwan niokeru mararia bōatsu sagyō ni kansuru shiken narabini teian,” 23.
42. Tsai Chou Tong, “Duō Jin Biao,” [Getting a medal], *Taiwan shinmin pō* [Taiwan Shinmin News], no. 374, 375, 376 (1931). Reprinted in Chang Heng Hao, ed., *Taiwan tsuo-chia*

chuan-chi: Yang Yun Ping, Chang Wo Chun, Tsai Chou Tong chi [Taiwan literature series: works of Yang Yun Ping, Chang Wo Chun, and Tsai Chou Tong] (Taipei: Avant-garde Publishing, 1990), 183–194. Tsai was a Taiwanese hōsei in Tainan. His works are considered to be reconstructions of actual experience. He has in fact claimed that the story is based on actual events, and only the names of the characters have been changed. He has often used satire to express his disapproval of colonial policy.

43. Tsai, “Duō Jin Biao,” 185.
44. Taiwan Sōtokufu Keimukyoku Eiseika, ed., *Hoken eisei cyōsa yōkō* [Guidelines for public health investigation] (Taipei: Taiwan Sōtokufu Keimukyoku Eiseika, 1921), 1–8.
45. See for example, “Mabyō bōatsu ni handai shite bōgen,” [Incident: a man used abusive language against the anti-malaria work], *Taiwan NichiNichiShinpō*, January 23, 1934.
46. Shimomura, “Tainan syū ka niokeru mararia bōatsu sagyō no ji’sai to sono seiseki,” 66, 68, 71. See also Satō kaitetsu ed. *Taiwan eisei nenkan* [Yearbook of health in Taiwan] (Taipei: Taieishinpōsya, 1932), 280.
47. Tomita Yoshirō, “Taiwan xiangzhen zhi yanjiu,” [Research on towns and villages in Taiwan] *Taiwan Yin Hang Ji Kan* [Taiwan Bank Quarterly], 7:3 (1955), 90.
48. For example, “Fange malaliya, xinyingjun qiangzhi yizhu, nongjia buping zhi sheng guaner,” [Compelled to cut bamboo in Xinying county, voices of protest got loud], *Taiwan Mingpō* [Taiwan People’s News], January 23, 1929, 243. And “Wenhua cun yuanlai ruci! xinying junxia de banfa, cunmin dou kuji zhouzhu le,” [What a civilized village! The villager in Xinying county cursed the new anti-malaria method of cutting their fence], *Taiwan Mingpō*, March 17, 1929, 252.
49. Taiwan Sōtokufu Cyūōkenkyūjyō Eiseikabu, ed., *Taiwan Sōtokufu Cyūōkenkyūjyō Eiseibu Nenpō* [Annual report of Sōtokufu Central Institute for Hygiene], 1 (1930), 60–62; “Mararia kihonteki kenkyū kikan,” [Institute of basic research on malaria], *Taiwan Jihō*, January, 1926.
50. Ku, “Taiwan niokeru mararia no ryūkō oyobi sono bōatsu taisaku no suii,” 209.
51. Chen Shao Hsing, *Taiwan de renkou bianqian yu shehui bianqian* [Social change and demographic change in Taiwan] (Taipei: Linking Publishing, 1979), 82–83.
52. Taiwan Sōtokufu Keimukyoku Eiseika, ed., *Eisei cyōsasyo-kihoncyōsa no.4: Taiwan mararia tōkei* [Public health investigation report no.4: statistics on malaria] (Taipei: Taiwan Sōtokufu Keimukyoku Eiseika, 1926), 8–13.
53. The number of public hospitals and dispensaries had increased gradually, as had the number of patients they treated. At the end of the colonial period, there were 284 public dispensaries and 12 public hospitals. In order to eliminate bias resulting from the growing number of public hospitals and dispensaries, the total number of patients was always taken as a denominator to calculate malaria morbidity, rather than the absolute number of the population. See Taiwan Sōtokufu Keimukyoku Eiseika, ed., *Eisei cyōsasyo-kihoncyōsa no. 4: Taiwan mararia tōkei*, 145.
54. The rapid increase in the parasite rate after 1930 partly resulted from the advances in the blood testing technique. After 1933, an entirely new method of blood parasite examination was used, and that enabled technicians to find parasites more easily.
55. Taiwan Sōtokufu Keimukyoku Eiseika, ed., *Eisei cyōsasyo-kihoncyōsa no. 4: Taiwan mararia tōkei*, 145–150.
56. In malaria-endemic regions, repeated malarial infections and resulting hemolysis leads to splenomegaly. Thus, the prevalence of splenomegaly (spleen rate) reflects the frequency of clinical malaria.

57. Tainan syū ed., *Tainan syū hoken eisei cyōsasyo* [Public health investigation report in Tainan] (Tainan: Tainan syū, 1931).

CHAPTER 4

1. Ōda Toshiro and Morishita Kaoru, *Mararia no bōatsu* [The prevention and eradication of malaria] (Taihoku: Taiwan Sōtokofu, 1939).
2. Liu Ts'ui-jung and Liu Shiyung, "Disease and mortality in the history of Taiwan," *Taiwan Historical Research* 4:2 (1998), 90–132.
3. George Mackay, *From Far Formosa: The Island, Its People and Missions* (New York: F. H. Revell Co, 1896), 308–314.
4. George W. Barclay, *Colonial Development and Population in Taiwan* (Princeton: Princeton University Press, 1954), 136.
5. Tsuboi Jirō, "Taiwan no eisei" [Taiwan's hygiene], *Taiwan ishi zasshi* [Journal of Medical Affairs in Taiwan] 1:2 (1899), 1–8.
6. Omori, Nanzaburo, "On the anopheline mosquitoes of Kotoshū," *Taiwan igakukai zasshi* [Journal of Formosan Medical Association], 36 (1937), 2800–2801.
7. Omori, N. and Noda Hiyozo, "On an anopheline mosquito, *Anopheles arbumbrosus*, newly found in Taiwan," *Studia medica Tropicalis (Formosa)* 1 (1943), 83–89.
8. Ts'ui-jung Liu and Liu Shiyung, "Disease and mortality in the history of Taiwan," in Ts'ui-jung Liu et al, *Asian Population History* (Oxford: Oxford University Press, 2001), 262.
9. Morishita Kaoru, "Taiwan chihōbyo to densen chousaiinkai ni okeru mararia chousa gaiyo" [The summary of malaria investigation in the survey of Taiwan's endemic diseases and infectious routes], *Taiwan igakukai zasshi* 34 (1937), 142.
10. Kobayashi Hiroshi, ed., *Hikone shi no mararia taisaku* [The elimination of malaria in Hikone city] (Hikone shi: Hikone shi eiseika, 1951), 152–153.
11. Hata Chōsan, Kuriyagawa Shō, and Takeishi Hirodan, *Gentai iyakuhin no jisai* [Development of modern pharmaceuticals], (Tokyo: Nansandō, 1950), 197; 230–231.
12. Robert S. Desowitz, *Who Gave Pinta to the Santa Maria? Torrid Diseases in a Temperate World* (New York: W.W. Norton & Company, 1997), 76.
13. Ōda Taifumi, Morishita Kaoru, and Nabika Hiroshi, "Mararia chiryo kansuru kenkyū 3" [Studies to treat malaria 3], *Taiwan igakukai zasshi* 30 (1933), 99–109; and Morishita Kaoru and Nabika Hiroshi, "Mararia chiryo kansuru kenkyū 5" [Studies to treat malaria 5], *Taiwan igakukai zasshi* 30 (1933), 741–746.
14. Hata Chōsan, Kuriyagawa Shō, and Takeishi Hirodan, *Gentai iyakuhin no jisai*, 225.
15. Charles Dennie, *A History of Syphilis* (Springfield: Charles C Thomas, 1962), 113, 1; 18. It is very interesting that some physicians recently promoted malarietherapy as a treatment for AIDS/HIV patients, see Henry J. Heimlich, "Malarietherapy for HIV Patients," *Mechanisms of Ageing and Development* 93 (1997), 79–85.
16. Wada Toyotane, "Mahisei chihō no mararia ryohō" [The latest treatment of malaria], *Taiwan igakukai zasshi* 36 (1939), 203–209.
17. For details refer to Taiwan Sōtokofu yōshinin, *Taiwan Sōtokofu yōshinin gaikyo* [The general condition of the Taiwan Sōtokofu yōshin hospital] (Taipei: Taiwan Sōtokofu yōshinin, 1938).
18. Senbon Nobuo, "Rinshitsu no hanetsu ryohō ni tsuite" [On the treatment of venereal disease], *Taiwan igakukai zasshi* 35 (1936), 1143–1145.
19. Senbon Nobuo, "Rinshitsu no hanetsu ryohō ni tsuite," 1144; and 684 (note 45).

20. Morishita Kaoru, *Maraia no bōekigaku to yobō—Taiwan ni okeru Nihon tōji jitai no kiroku to kenkyū* [Malaria epidemiology and prevention—the treatment and studies in Japan-ruled Taiwan] (Tokyo: Nippon Itaikikuya, 1976), 130.
21. Daniel R. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (Oxford: Oxford University Press, 1981). In a case study of quinine prophylaxis, Headrick remarks that “scientific cinchona production was an imperial technology par excellence. Without it European colonialism would have been almost impossible in Africa, and much costlier elsewhere in the tropics.” See *The Tools of Empire*, 73.
22. “Mararia netsu yobōhō taii” [On the prevention of malaria], *Taiwan shinpō* April 1, 1897; and “Mararia yobōhō ni suite [On the method to prevent malaria], *Taiwan shinpō* October 10, 1898.
23. Miyahara Daisuke, *Mararia no chiryō* [Malaria treatment] (Taihoku: Taiwan Sōtokufu, 1939), 9–10; 18. Miyahara’s book does not reveal how much the colonial government paid for the importation of quinine. However, according to the records of the Annual Report of the Central Sanitary Bureau, Japan continued importing quinine, and the amount was always more than that for other imported medicines. Therefore, the consumption of quinine in colonial Taiwan would depend largely on the governmental budget for importing the medicine from Japan or other countries.
24. Taiwan Sōtokufu eiseika, ed., *Mararia bōatsuji* [Preventing malaria] (Taihoku: Taiwan Sōtokufu, 1931), 18–21.
25. Morishita Kaoru, *Maraia no bōekigaku to yobō*, 18.
26. Horiuchi Tsugio, “Bankin Taiwan ni okeru eiseijōtai gakuten no genin to sono kyūkyūsaku” [The backwardness of hygienic conditions in recent years and its remedy in Taiwan], *Taiwan jipō* April 1921, 53–61.
27. “Mararia bōatsukisei” [Principles of preventing malaria], *Sōtokufu fupō* [Governor-General’s government report] 192 (1913).
28. Morishita Kaoru, *Maraia no bōekigaku to yobō*, 125–129.
29. Taiwan Sōtokufu eiseika, ed., *Mararia bōatsu*, 14–16.
30. See “Mararia hokumetsu” [The horrifying malaria], *Taiwan nichinichishinpō* February 28–March 3, 1908.
31. Kanazawa Gintsurō, “Taiwan ni okeru shokumin jigyō no tenhō” [On colonization in Taiwan], *Taiwan jipō*, 1933 issue.
32. Zhang Shubing, *Taiwan de riban nongye yimin 1909–1945* [The Japanese agriculture immigrants in Taiwan] (Taipei: Goushiguang, 2001), 107–111.
33. Lin Zhengjung, “The Japanese experience in Taiwan: the immigrant village during the Japanese period,” text posted on <http://www.twhistory.org.tw/20010730.htm>. Site visited on April 3, 2006.
34. For data on colonial Taiwan, see Department of Health, ed., *Malaria Eradication in Taiwan* (Taipei: The Executive Yuan, 1991), 11; and Taiwansheng xingzheng zhangquang gongshu, ed., *Taiwansheng Wushiinian lai tongji tiyao* [The statistical summary of Taiwan in the past 51 years] (Taipei: Taiwansheng xingzheng zhangquang gongshu, 1947), 326–327.
35. Data for Figure 2 is from Taiwan Sotokufu eiseika, *Taiwan mararia gaikyo* [Summary of Taiwanese malaria] (Taihoku: Taiwan Sotokufu, 1935), 8–9. For improved sanitation in urban areas, see Wu-Dar Huang, Ja-Haur Tsay, and Naito Akira, “The evolution of building legislation in colonial Taiwan: case studies in Taipei city,” *Chien Chu Hsueh Pao* 23 (Winter, 1997), 37.

36. *Taiwansheng wushiyanian lai tongji tiyao*, 1249.
37. Commercial advertisement posted by Shinogi seiyaku kabushikikaisha, in Shimizu Hideo, *Jiyō eiseikowa* [Stories of hygiene and treatment] (Tokyo: Tomikura shoten, 1925), back page.
38. A box (12 roles) of mosquito coil was 0.3 yen in 1932. Comparing that to the monthly salary of an elementary school teacher (roughly 40 yen), the price was not expensive at all. For the price, see Dainibon seiyaku kabushikikaisha, *Shiyaku yōran* [The list of new medicine] (Osaka: Dainibon seiyaku kabushikikaisha, 1932), 33. For the teacher's salary, refer to Wu Wenxing, *Rijushihqi Taiwan shihfanjiaoyu zhi yanjiu* [The study of normal education in Japan-ruled Taiwan] (Taipei: Taiwan National University, 1983), 168–176.
39. Nakamura Yuzuru, Imai Yō, and Akashi Mataka, “Kaitō” [Reply], *Taiwan igakukai zasshi* 197 (1919), 483–491.
40. “Baiyaku kore fūken” [Buying medication—the advertisement], *Taiwannichinichishinpō* November 7, 1926.
41. “Kōku” [Public announcement], *Taiwan nichinichishinpō*, August 5, 1939.
42. Chuang Yung-ming (Zhuang Yung-ming), “Taiwan geyao” [Taiwanese folksongs], text posted on <http://library.taiwanschoolnet.org/cyberfair2004/a67560/m2023.htm>. Site visited on April 3, 2006.
43. Splenomegaly (enlarged spleen) is a significant indication of chronic malaria. See Zeigler J.L., “Editorial: Tropical splenomegaly syndrome,” *Lancet* 15:1 (1976), 1058–1059.
44. Chen, C.T., Wu, Y.T., and Hsieh, H.C., “Differences in detectability of minor splenomegaly through variation in the recumbent position of the patient,” *Taiwan yixuehui zazhi* 53:9 (1954), 561–567.
45. Miyahara Hatsuo, *Mararia kore gaku kenkyū* [On the epidemiological study of malaria] (Taihoku: Taiwan Sōtokufu Eiseibu, 1939), 12.
46. Morishita Kaoru, *Mararia no bōekigaku to yobō*, 62–66.
47. Department of Health, ed., *Malaria Eradication in Taiwan* (Taipei: The Executive Yuan, 1991), 38.
48. Hsieh, H.C., Chuang, C.H., Tseng, P.T. and Chen, W.I. “Some epidemiological observations of malaria in Shihtzu district of southern Taiwan,” *Taiwan yixuehui zazhi* 53 (1954), 553–560.
49. The transportation network in western Taiwan grew rapidly between 1909 and 1924. Although passenger coaches were rare, convenient transportation carried necessary medical supplies and promptly delivered experts to afflicted sites. See Jiaotongbu [Transportation Bureau], ed., *Taiwansheng jiaotong jianshe* [The construction of transportation in Taiwan] (Taizhung: Taiwansheng zhengfu, 1987); and Morishita Kaoru, Sugida Nobusuke, and Hitougawa Hachigorou, “Shinchikushōshita shisaichihō ni botsuhatsu seruryukosei mararia ni tsuite” [On the investigation and prevention of malaria epidemics in Xinzhu county after the big earthquake], *Taiwan igakukai zasshi* 36 (1937), 1156.
50. Morishita Kaoru, “Mararia Daisōshindan niokeru ketsueki atsusōhō no kōko sono jishihō kyūkoreni iru genchūshubetsu no yōten nitsuite” [On the application of the latest developments in the diagnosis and treatment of malaria], *Taiwan igakukai zasshi* 274–285 (1928), 1173.
51. Morishita Kaoru, Nabika Hiroshi, Matsūra Ho, and Tanigawa Kuniyasushi, “Wusandō ni okeru mararia ryukō kyūsono bōatsuni All Quinization no kōkoni tsuite” [The All-

- Quinization treatment in addressing the malaria problem at Wusantou], *Taiwan igakukai zasshi* 30:310–321 (1933), 713.
52. Morishita Kaoru, et al., “Wusandōni okeru mararia ryukō kyūsono bōatsuni All Quinization no kōkoni tsuite,” 715–720.
 53. Morishita Kaoru and Nabika Hiroshi, “Mararia chiryo kansuru kenkyū 4” [Studies to treat malaria 4], *Taiwan igakukai zasshi* 30:310–321 (1933), 735–736.
 54. Weishengshu, ed., *Malaria Eradication in Taiwan*, 14–15.
 55. Hitougawa Hachigorou, “Tainanshōshita niokeru ‘mararia bōatsusagyō no jisai to sono seiseki’,” [The result of anti-malaria in Tainan county], *Taiwan igakukai zasshi* 34 (1935), 56–76.
 56. Wuang Zhiting, *Taiwan jiaoyushihliao shinbian* [The new compilation of historical materials on Taiwan’s education] (Taipei: Shangwu, 1978), 46.
 57. Morishita Kuro, Sugida Nobusuke, and Hitougawa Hachigorou, “Shinchikushōshita shisaichihō ni botsuhatsu seru ryukosei mararia ni tsuite” [The result and works of anti-malaria in Xinzhu county] *Taiwan igakukai zasshi* 36 (1937), 1151–1166; 1666–1746.
 58. Morishita K. and Katagai T., “Examination of the blood meals of Formosan anophelines by precipitin tests,” *Journal of Zoology* 45 (1933), 137–139.
 59. Morishita Kaoru, “Mararia Daisōshindan niokeru ketsueki atsusōhō no kōko sono jishihō kyūkoreni iru genchūshubetsu no yōten nitsuite,” 1169–1208.
 60. Hitougawa Hachigorou, “Tainanshōshita niokeru kazoku bunbujiyōkyō” [Studies of mosquitoes in Tainan county], *Taiwan igakukai zasshi* 34 (1935), 51–55.
 61. Watson, R. B. and Liang, K.C., “Seasonal prevalence of malaria in southern Formosa,” *Indian Journal of Malariology* 4 (1950), 471–486. See also Watson, R.B., Paul, J.H. and Liang, K.C., “A report on one year’s field trial of chloguanide (paludrine) as a suppressive and as a therapeutic agent in southern Taiwan (Formosa),” *Journal of the National Malaria Society* 9:1 (1950), 25–43.
 62. Data for Figure 3 is from Morishita Kaoru, *Mararia no boekigaku to yobo—Taiwan ni okeru Nihon toji jitai no kiroku to kenkyū*, cited in Department of Health ed., *Malaria Eradication in Taiwan*, 14. To most Japanese malariologists and contemporary researchers, the increase reflected the improvement in test accuracy by using Morishita’s thick-layer blood film method. See Tanaka, S., “Diagnosis of the microfilariae from the people of Taiwan in the Pescadores, and clinical observation,” *Taiwan igakukai zasshi*, 36:7 (1937), 1824–1825.
 63. Hsieh, H.C., Chuang, C.H., Tseng, P.T. and Chen, W.I. “Some epidemiological observations of malaria in Shihtzu district of southern Taiwan,” *Taiwan yixuehui zazhi* 53 (1954), 553–560.
 64. Howard Watson Ambruster, *Treason’s Peace: German Dyes and American Dupes* (New York: The Beechhurst Press, 1947), 218–219.
 65. Interview with A-nan (alias) in Baiho, Tainan county on July 27, 2002. A-nan was born in 1929 and became a member of a local DDT spraying team in 1956.
 66. Warwick Anderson, “Where is the postcolonial history of medicine?” *Bulletin of the History of Medicine* 79:3 (1998), 522–530.
 67. Edward Said, *Culture and Imperialism* (New York: Knopf, 1993), 7.
 68. Liu Shiyung, “Defferential Mortality in Colonial Taiwan (1895–1945),” *Annales De Démographie Historique* 1 (2004), 231–232.
 69. Anne-Emanuelle Birn, and Armando Solorzano “Public heath policy paradoxes: science and politics in the Rockefeller Foundation’s hookworm campaign in Mexico in the 1920s,” *Social Science and Medicine* 49 (1999), 1197–1213.

70. The Nationalist government after World War II also confirmed the importance of the role of local communities. One of its publications has this to say about the anti-malaria campaign: (A)n impressive sequence of directors had both administrative and technical talent, and shared field-oriented skills and capabilities with personnel at all staff levels, many of whom had developed innovative methods of overcoming many obstacles quite commonly found in a truly ‘grass-roots’ campaign. See Department of Health, ed., *Malaria Eradication in Taiwan*, 271.

CHAPTER 5

1. Research Unit for Ishigaki History, *Yaeyamoto-nendaiki* [Annals of history of Yaeyama Islands], Ishigaki History Series No. 13 (Ishigaki: Ishigaki City Office, 2000).
2. The Committee for Yaeyama History, *Yaeyama rekishi* [History of Yaeyama] (Ishigaki: The Committee for Yaeyama History, 1954), 134–143; 149.
3. Masaharu Iridakanishi, *Yaeyama togyo shi* [A history of the sugar industry in Yaeyama] (Ishigaki: The Yaeyama Sugar Company, 1993), 54–74.
4. Takeshi Miki, *Iriomote tanko gaishi* [A brief history of Iriomote coal mining] (Tokyo: Research Society for Yaeyama Culture, 1976), 19; 24–28; 47.
5. Takeshi Miki, *Yaeyama kindaiishi no shoso* [Aspects of modern history in Yaeyama] (Ishigaki: Bunreisha, 1992), 25.
6. Masakazu Hashimoto, *Sekaishi no nakano Mararia* [Malaria in world history] (Tokyo: Fujiwara-Shoten, 1991); Robert S. Desowitz, *The Malaria Capers: More Tales of Parasites and People, Research and Reality* (New York: Norton, 1990), trans. Kurihara Takehiko, *Mararia tai ningen* (Tokyo: Shobunsha, 1996).
7. Wataru Iijima, *Mararia to teikoko: shokuminchiigaku to higashiajia no koiki chitsujyo* [The hidden history of malaria: colonial/imperial medicine and an integrated regional order in twentieth century East Asia] (Tokyo: University of Tokyo Press, 2005), 116–117.
8. Wataru Iijima, *Pesuto to kindai Chugoku: eisei no seidoka to shakaihenyo* [Plague and modern China: institutionalization of public health and social change] (Tokyo: Kembun Shuppan, 2000), 33–34.
9. Takeshi Odaka, *Densenbyo Kenkyujyo* [The Institute of Infectious Disease] (Tokyo: Gakkai Shuppan Center, 1992).
10. Iijima, *Mararia to teikoko*, 36–37.
11. Bing-yan Lin, “Zhongsu Taiwan Yixiaozhan Takagi Tomoki boshi de diaoxiang” [Personal history of Takagi Tomoki, dean of Taihoku Medical College], *Academia; Taibei Diguo Daxue yanjiu tongxun* 2 (1997), 70–71; Iijima, *Mararia to teikoko*, 36–37.
12. Iijima, *Mararia to teikoko*, 120–121.
13. Daizo Nagaki, *Kitazato Shibasaburo to sonon Ichimon* [Kitazato Shibasaburo and his students] (Tokyo: Keio Tsushin, 1989), 131–133.
14. Tomoe Takagi, “On anti-malaria methods,” *Taiwan igakukai zaashi* [Journal of Formosan Medical Association] 29 (January 1905).
15. The Department of the Central Institute changed its name to the Central Institute for Hygiene in 1921, and changed its name again to the Institute for Tropical Medicine, Taihoku Imperial University in 1939.
16. Iijima, *Mararia to teikoko*, 46–47.
17. Iijima, *Mararia to teikoko*, 49–51.

18. Ya-wen Ku, “Anti-malaria program in Taiwan under the Japanese Colonial Rule,” *Taiwan shi yanjiu* 11:2 (2004); Ya-wen Ku, “A Historical View of Malaria and Its Countermeasures in Taiwan,” PhD dissertation, Yokohama National University, 2005.
19. Iijima, *Mararia to teikoko*, 46–51.
20. Kaoru Morishita, *Mararia no ekigaku to yobo: Taiwan niokeru Nihon tochi jidai no kiroku to kenkyu* [Epidemiology and control of malaria: records and studies in Taiwan under Japanese colonial rule] (Tokyo: Kukuya Shobo, 1976), 115–116; 122.
21. Iijima, *Mararia to teikoko*, 25–56.
22. Iijima, *Mararia to teikoko*, 113–155.
23. *The Tokyo Mainichi Shinbun*, October 18, 1925.
24. Gozo Moriya and Yoshizo Endo, “Yaeyama fudobyō kenkyū hokoku” [The research report on the diseases of Yaeyama], *Saikingaku-Zasshi* [Journal of Bacteriology] 42 (1899).
25. Miki, *Yaeyama kindaiishi no shoso*, 37.
26. *Sakishima-Shinbun*, September 15, 1918.
27. *Ryukyū-Shinpo*, November 28, 1913.
28. *Sakishima-Shinpo*, April 25, 1919; May 5, 1919.
29. Miyajima, Mikinosuke, et al, *Okinawaken Yaeyamagun niokeru mararia yoboni kansuru chousa* [Survey of the eradication of malaria in Yaeyama, Okinawa prefecture] (Tokyo: Public Health Bureau of Home Affairs, 1921).
30. Iijima, *Mararia to teikoko*, 83–84.
31. Iijima, *Mararia to teikoko*, 87–88.
32. Iijima, *Mararia to teikoko*, 95–96.
33. Okinawa Prefecture Archives (hereafter OPA), The report of the anti-malaria program from 1940–1942, Iriomoto branch to chief of Malaria Eradication Office, No. 16 (February 1, 1940); Iijima, *Mararia to teikoko*, 101–103.
34. Yuki Eshita, “Ryukyū Retto no mararia to sono bokumetsu no shiteki kosatsu” [A historical analysis of malaria eradication in the Ryukyū Islands], *Kankyō Eisei* [Ecology of Health] 29:4 (1982); Iijima, *Mararia to teikoko*, 104.
35. Morizo Sakihara, et al, “Dainijisekaitaisenchi Ryukyūshoto ni ryukoshita Mararia ni kansuru Saikosatsu” [Reconsideration of malaria prevalence on the Ryukyū Island: the case of Yaeyama], *Minzoku Eisei* [Journal of Health and Human Ecology] 20:2 (1994), 80; 83.
36. Kumaichi Shimojyo, “Nanshi Kanton chihou ni okeru mararia chosa hokoku” [The report of malaria in Guangdong, south China], *Tokyo iji shinshi* [Abstracts of Progress of Medicine in Tokyo] 3177 (1940).
37. Kaoru Morishita, “Nishi-Taiheiyōgan oyobi shoto ni okeru mararia denpaka no bunpuni tsuite” [The anopheles mosquito in the west Pacific Islands] in Taiheyo Kyokai, ed., *The Nanyō Shoto* [South Sea Islands] (Tokyo: Kawade Shobo, 1940).
38. Hatsuo Miyahara, “Mararia no chiryo” [A treatment of malaria], *Kyudai-Yiho* [Report of the medical school of Kyushu Imperial University] 12:6 (1938),
39. Iijima, *Mararia to teikoko*, 208–217.
40. Iijima, *Mararia to teikoko*, 208–215.
41. The Archive of Japanese Defense Forces, 8:medical issues, file 20, Matsubara Koken’s report, July 31, 1943; Iijima, *Mararia to teikoko*, 213–215.
42. Tsuzuki Miyao and Manabu Sasa, *Daitōa Zenchiiki ni kansuru anoferesu no kanbetushu narabini bunpu ni kansuru chosa kenkyū* [The report on the type of anopheles mosquito and method of identification in Greater East Asia] (Tokyo: Kaigun Gunyū Gakko, 1943), 1–2; figures 1–4.

43. Iijima, *Mararia to teikoko*, 207; 212–213.
44. Iijima, *Mararia to teikoko*, 216.
45. Iijima, *Mararia to teikoko*, 226–227.
46. Shinken Ohama, *Yaeyama no mararia bokumetsu* [Eradication of malaria in Yaeyama] (Ishigaki: private publication, 1968), 187–191.
47. Ohama, *Yaeyama no mararia bokumetsu*, 249.
48. Naoki Kuroshima, *Mararia tono tatakai* [Battle against malaria, records of 43 years] (Ishigaki: private publication, 1976), 25.
49. Iijima, *Mararia to teikoko*, 231–233.
50. Iijima, *Mararia to teikoko*, 235–236.
51. Ohama, *Yaeyama no mararia bokumetsu*, 254–257; 267–269.
52. *Okinawa Times*, January 12, 1950; May 12, 1951.
53. Iijima, *Mararia to teikoko*, 237–242.
54. Yaeyama Public Health Office, Ootomi Branch, *Inspection of Malaria, from 1957 to 1961: Organization of Malaria Eradication* in OPA, R00085794B.
55. Kanzen Teruya, “Okinawa niokeru syuyo kansensho no sengo niokeru shouchu” [Infectious diseases in Okinawa after World War II], *Okinawaken Eisel Kogal Kenkyujyohou* [Report of the Okinawa Prefectural Institute of Public Health and Environmental Science] 9 (1974), 185.
56. *Ryukyu Islands Malaria Eradication Program*, March 22, 1965, in documents of USCAR (U.S. Civil Administration of Ryukyu), file 30–18.
57. OPA, The documents of malaria eradication, from Ishigaki (head of Yaeyama Public Health Office) to Oyamori Chomei (head of East Iriomote Branch), No. 231, February 26, 1958.
58. Yoshito Wada, *Kankyokaihatsu no okimiyage: ka ga motarashita shippei tono toso no rekishi* [The conflict with the mosquito; rebound after the environmental development] (Kawasaki: Environmental Hygiene Center in Japan, 2000), 140–149.
59. Department of Health, ed., *Malaria Eradication in Taiwan* (Taipei: The Executive Yuan, 1991).
60. Kaoru Morishita, “DDT zanryufunmu no koryoku: mararia boatsu niokeru shinsenjyutu” [Efficacy of DDT residual spraying: a new strategy in malaria control], *Eisei Dobutsu* [Medical entomology and zoology] 7:1 (1956), 2.
61. Kanzen Teruya, “Okinawa niokeru Syuyo Kansensho no Sengo niokeru Shouchu,” 185.
62. Public Health and Preventive Section, *Papers of Malaria Inspection (Malaria File): Microscope inspection of malaria parasite* in OPA: R00085237B.
63. Other cases can be found in Miyako; see The Committee for Hirara History, *Hirata shishi* [A history of Hirara] vol. 4, no.2, Materials for modern history series (Hirara: Hirara Education Committee, 1978), 282–284; vol.6, no.4, Materials of Post World War II Series (Hirara: Hirara Education Committee, 1985), 793.

CHAPTER 6

1. The author thanks Thomas Rosenbaum, former staff member, and current staff members of the Rockefeller Archive Center, particularly James Washington, for their assistance in the preparation of this chapter.
2. Darwin H. Stapleton, “Fellowships and field stations: the globalization of public health knowledge, 1920–1950,” read for “Explorations in Public Health History” conference,

- Bellagio Conference Center, Bellagio, Italy, October 27 – November 1, 2003; Betsy Hanson, *Achievements: The Rockefeller University—A Century of Science for the Benefit of Humankind* (New York: Rockefeller University Press, 2000), 41.
3. Raymond B. Fosdick, *The Story of the Rockefeller Foundation* (New York: Harper and Brothers, 1952), 42.
 4. It can be noted here that the fame of the Rockefeller Foundation has essentially obliterated the separate histories of the International Health Board and the China Medical Board, not only in the consciousness of the general public, but even from the works of many historians. The close working relationships of these organizations (to the extent that some individuals moved from the employ of one organization to another), and the blending of their archival materials at the Rockefeller Archive Center, reinforces the confusion. However, see the works of Mary Brown Bullock and John Farley, cited below, for discussions of their distinct histories.
 5. Darwin H. Stapleton, “Internationalism and nationalism: the Rockefeller Foundation, public health, and malaria in Italy, 1923–1951,” *Parassitologia* 42 (2000), 132–133.
 6. Mary Brown Bullock, *An American Transplant: The Rockefeller Foundation and Peking Union Medical College* (Berkeley, CA: University of California Press, 1980), 144–149; Rockefeller Foundation, *Annual Report for 1929* (New York: Rockefeller Foundation, 1930), 115 and photographs opposite 116; Darwin H. Stapleton, “The Rockefeller Foundation and the transfer and diffusion of scientific instrumentation to China, 1915–1949,” read at the 22nd International Congress in History of Science, Beijing, China, July 24–30, 2005.
 7. Rockefeller Foundation, *Annual Report for 1929*, 116; Rockefeller Foundation, *Annual Report for 1931* (New York: Rockefeller Foundation, 1932), 108.
 8. Bullock, *An American Transplant*, 166; 189.
 9. For example, John Farley, “To degree or not to degree: the International Health Division and the Toronto School of Nursing,” in Darwin H. Stapleton and Cathryne A. Welch, eds., *Critical Issues in American Nursing in the Twentieth Century* (Guilderland, NY: Foundation of the New York State Nurses Association, 1994), 91–105; and Soma Hewa, *Colonialism, Tropical Disease, and Imperial Medicine: Rockefeller Philanthropy in Sri Lanka* (Lanham, MD: University Press of America, 1995), 160–188.
 10. Stapleton, “Fellowships and field stations.”
 11. Although many fellows already had English language skills, tutoring in English was often part of a fellow’s program if it involved study in the United States.
 12. Fellowship recorder card, “de Jesus, Dr. Pablo,” Rockefeller Foundation Archives (hereafter RFA), Rockefeller Archive Center, Sleepy Hollow, New York, USA.
 13. Fellowship recorder cards (two), “Hsu, Dr. Shih-Chu,” RFA.
 14. Ludovic Tournès demonstrates the range and effect of Rockefeller fellowships in one nation in “Les boursiers français du programme *Fellowships and Scholarships* de la Fondation Rockefeller (1917–1970),” [French beneficiaries of the *Fellowships and Scholarships* program of the Rockefeller Foundation (1917–1970)] at <http://157.99.64.12/infosci/archives/f-rock.html> Site visited February 12, 2007.
 15. Marcos Cueto describes and lists these reports for Latin America in “El Rockefeller Archive Center y la Medicina, la Ciencia y la Agricultura Latinamericanas de Siglo Veinte: una Revision de Fondos Documentales,” *Quipu* 8 (January–April 1991), 35–50.
 16. For example, Darwin H. Stapleton, s.v., “Hackett, Louis,” *Dictionary of Medical Biography*, 5 vols. (Westport, CT: Greenwood Press, 2006); John Farley, *To Cast Out*

Disease: A History of the International Health Division of the Rockefeller Foundation (1913–1951) (New York: Oxford University Press, 2004), 6–20.

17. Hewa, *Colonialism, Tropical Disease and Imperial Medicine*.
18. This is my judgment. One author's careful examination of the RFA is useful on this subject. See Shirish N. Kavadi, *The Rockefeller Foundation and Public Health in Colonial India, 1916-1945: A Narrative History* (Pune/Mumbai: Foundation for Research in Community Health, 1999), especially pp. 136-139. See also R.B. Watson, "India," August 14, 1946, folder 87, box 11, series 464, Record Group (hereafter RG) 1.1, RFA.
19. See Chapter 7 in this volume.
20. Clark H. Yeager, "An Outline of Rockefeller Foundation Activities in the Philippine Islands, 1913–1935," 1935, folder 12, box 1, series 242, RG 1.1, RFA.
21. Warwick Anderson, *Colonial Pathologies: American Tropical Medicine, Race and Hygiene in the Philippines* (Durham, North Carolina: Duke University Press, 2006), 217.
22. Jacobo Fajardo to Victor Heiser, July 20, 1927, folder 63, box 6, series 242, RG 1.1, RFA; Paul F. Russell, "Final Report on the Malaria Investigations of the International Health Division of the Rockefeller Foundation in the Philippine Islands, 1921–1934," folder 882, box 72, series 242I, RG 5.3, RFA. Russell's report is the primary source for much of this section on the Philippines, but will not be footnoted again, unless quoted.
23. Anderson, *Colonial Pathologies*, 218–19, 221; Clark H. Yeager to Victor Heiser, June 7, 1929, folder 64, box 6, series 242, RG 1.1, RFA; Persis Putnam, "Malaria in the Philippine Islands: A Review of the Annual Report for 1928 by J. J. Mieldazis," October 1929, folder 64, box 6, series 242, RG 1.1, RFA.; Persis Putnam, "Memorandum for Doctor Russell," November 7, 1929, folder 64, box 6, series 242, RG 1.1, RFA.
24. Paul Russell to Victor Heiser, April 26, 1930, folder 74, box 6, series 242, RG 1.1, RFA.
25. Anderson, *Colonial Pathologies*, 220–22; "Control and Investigations of Specific Diseases. Program for 1932. Malaria. Philippines," October 26, 1931, folder 73, box 6, series 242, RG 1.1, RFA; "Philippines—Malaria Studies—Iwahig Penal Colony—Budget and Designation," June 9, 1934, folder 71, box 6, series 242, RG 1.1, RFA.
26. Russell, "Final Report on Malaria Investigations," 19.
27. Victor Heiser, "Memorandum for Japanese Health Survey", February 4, 1924, folder 7, box 1, series 609, RG 1.1, RFA.
28. [John Grant], "General Public Health Survey of Japan," June 1924, p. 126, IHB reports (blue-bound volumes), vol. 2, RFA.
29. John Grant to Victor Heiser, December 4, 1924, folder 7, box 1, series 609, RG 1.1, RFA.
30. Victor Heiser, memorandum, "Interview with Ambassador Matsudaira," April 16, 1925, folder 8, box 1, series 609, RG 1.1, RFA.
31. For example, see Victor Heiser to Frederick Russell, October 21, 1925, folder 8, box 1, series 609, RG 1.1, RFA; and W. Cameron Forbes to Arthur Woods, November 4, 1930, same location.
32. William S. Carter, diary, December 4, 1930, RG 12.1, RFA.
33. Farley, *To Cast Out Disease*, 251–253.
34. K. Yip, "Antimalarial work in China: a historical perspective," *Parassitologia*, 40 (1998), 30–32.
35. M.C. Balfour to W.A. Sawyer, July 1, 1939, folder 356, box 43, series 601, RG 1.1, RFA.

36. Thomas Parran to Wilbur A. Sawyer, August 2, 1939, folder 356, box 43, series 601, RG 1.1, RFA.
37. Thomas Parran to Wilbur A. Sawyer, August 2, 1939.
38. A useful summary of the military situation in the region in 1941–1942 may be found in “Burma, 1942,” at <http://www.army.mil/cmh-pg/brochures/burma42/burma42.htm> Site visited February 6, 2007.
39. F.C. Yen to M.C. Balfour, August 7, 1939, folder 356, box 43, series 601, RG 1.1, RFA. F.C. Yen (Yen Fu-ching) had been Vice-Director of the Peking Union Medical College in 1927–1928; see Bullock, *An American Transplant*, 59.
40. M.C. Balfour to F.C. Yen, August 16, 1939; F.C. Yen to M.C. Balfour, August 31, 1939; F.C. Yen to M.C. Balfour, September 5, 1939; M.C. Balfour to F.C. Yen, September 22, 1939, all in folder 356, box 43, series 601, RG 1.1, RFA.
41. M.C. Balfour to W.A. Sawyer, September 26, 1939, folder 356, box 43, series 601, RG 1.1, RFA; Rockefeller Foundation, *Annual Report 1940* (New York: Rockefeller Foundation, 1941), 105–106.
42. W.C. Sweet, “Annual Report of Malaria Studies, Chefang, Yunnan, China, February 27 to December 31, 1940,” folder 2727, box 218, series 601I, RG 5.3, RFA. All of the discussion of the malaria studies project in China in 1940 is derived from this document.
43. On L.C. Feng (Feng Lan-chou) see Bullock, *An American Transplant*, 124–125; and *The Chinese Medical Directory, 1941* (Shanghai: Chinese Medical Association, 1941), 75.
44. W.C. Sweet, “Annual Report of Malaria Studies, Chefang, Yunnan, China, February 27 to December 31, 1940.”
45. “China—Malaria Studies and Control Demonstration—Designation and Budget,” September 27, 1946, folder 356, box 43, series 601, RG 1.1, RFA.
46. S.C. Hsu to M.C. Balfour, September 13, 1942, folder 358, box 44, series 601, RG 1.1, RFA.
47. J. Needham to M.C. Balfour, July 10, 1943, folder 358, box 44, series 601, RG 1.1, RFA.
48. M.C. Balfour to J. Needham, July 22, 1943, folder 358, box 44, series 601, RG 1.1, RFA.
49. “1945 Estimate for China—Malaria Studies,” August 18, 1944, folder 358, box 44, series 601, RG 1.1, RFA.
50. “1945 Estimate for China—Malaria Studies.”
51. “1945 Estimates for China—Malaria Studies,” August 18, 1944, folder 358, box 44, series 601, RG 1.1, RFA.
52. “China—Malaria Studies and Control Demonstration—Designation and Budget,” September 27, 1946, folder 356, box 43, series 601, RG 1.1, RFA.
53. “China—Malaria Studies and Control Demonstration,” October 31, 1947, folder 356, box 43, series 601, RG 1.1, RFA.
54. Ming-Cheng M. Lo, *Doctors Within Borders: Profession, Ethnicity, and Modernity in Colonial Taiwan* (Berkeley, CA: University of California Press, 2002), 40.
55. Ming-Cheng M. Lo, *Doctors Within Borders*, 42; 53; 55.
56. Ming-Cheng M. Lo, *Doctors Within Borders*, 99.
57. R.B. Watson and C.Y. Chow, “Notes on Malaria in Taiwan,” October 1, 1946, folder 359, box 44, series 601, RG 1.1, RFA.

58. R.B. Watson and C. Y. Chow, “Notes on Malaria in Taiwan.”
59. R.B. Watson and C.Y. Chow, “Notes on Malaria in Taiwan.”
60. Darwin H. Stapleton, “The Rockefeller Foundation’s experimental strategy for using DDT for malaria control in the Caribbean region, 1941–1951,” read at “The Social History of Medicine and Public Health in the Caribbean,” University of West Indies, Cave Hill Campus, Barbados, May 23–26, 2001; Farley, *To Cast Out Disease*, 144–150; Hewa, *Colonialism, Tropical Disease, and Imperial Medicine*.
61. K. Yip, “Malaria eradication: the Taiwan experience,” *Parassitologia* 42 (2000), 119–121. My description of the Foundation’s work in Taiwan is based entirely on Yip’s relation.
62. Rockefeller Foundation, *Annual Report for 1947* (New York: Rockefeller Foundation, 1948), 76.
63. Yip, “Malaria eradication,” 121.
64. Yip, “Malaria eradication,” 122.
65. Farley, *To Cast Out Disease*, 284–287.
66. Hewa, *Colonialism, Tropical Disease and Imperial Medicine*, 191.
67. Farley, *To Cast Out Disease*, 292.
68. Farley, *To Cast Out Diseases*, 296.
69. Darwin H. Stapleton, “Lessons of history? Anti-malaria strategies of the International Health Board and the Rockefeller Foundation from the 1920s to the era of DDT,” *Public Health Reports* 119 (March–April 2004), 209–210.

CHAPTER 7

1. Parts of this essay have been presented at the Conference on the Political Economy of the Republic of China by the Taiwan Studies Program of SOAS, University of London, in May 2002, and in The International Workshop on Colonial Medicine, Academia Sinica, Taipei, in October 2001. I wish to thank participants of both conferences for their critique and comments.
2. For a detailed account of the malaria eradication program, see K.Yip, “Malaria eradication: the Taiwan experience,” *Parassitologia* 42 (2000), 117–126.
3. There had been several changes in the administrative structure from 1895 to 1920. See Hui-yu Caroline Ts’ai, “One kind of control: the *hoko* system in Taiwan under Japanese rule, 1895–1945,” PhD dissertation, Columbia University, 1990, 19–43.
4. Ching-chih Chen, “Police and community control systems in the Empire,” in Ramon H. Myers and Mark R. Peattie, eds., *The Japanese Colonial Empire, 1895–1945* (Princeton: Princeton University Press, 1984), 214–221; 227–228.
5. C.J. Xie, “Riban jiminzhiyi xia Taiwan weisheng jingze ji yanjiu” [A study of Taiwan’s health policy under Japanese colonialism], MA thesis, Wenhua University, 1989, 68–71.
6. Hui-yu Caroline Ts’ai, “One kind of control,” 111–112.
7. Yukiko Hayase, “The career of Goto Shumpei: Japan’s statesman of research, 1857–1929,” PhD dissertation, Florida State University, 1974, 42–43. There is a large body of literature on scientific medicine’s role in colonial expansion and how it served as an “instrument of empire”. See, e.g., Roy MacLeod and Milton Lewis, eds., *Disease, Medicine, and Empire: Perspectives on Western Medicine and the Experience of European Expansion* (London: Routledge, 1988); Sheldon Watts, *Epidemics and History: Disease, Power and Imperialism* (New Haven: Yale University Press, 1997);

- Teresa Meade and Mark Walker eds., *Science, Medicine and Cultural Imperialism* (New York: St. Martin's Press, 1991); Maryinez Lyons, *The Colonial Disease: A Social History of Sleeping Sickness in Northern Zaire, 1900–1940* (Cambridge: Cambridge University Press, 1992); and David Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-Century India* (Berkeley: University of California Press, 1993).
8. C.J. Xie, "A study of Taiwan's health policy," 48.
 9. For a discussion of Japan's colonial medical policy, see Liu Shi-yung, "Yijiu nanning naian dai yiqian jizhi shidai Taiwan yixue di deji" [Characteristics of Taiwanese medicine under Japanese rule before the 1930s], *Taiwan shi yanjiu* 4:1 (April 1999), 97–147. See also Ming-Cheng M. Lo, *Doctors Within Borders: Profession, Ethnicity, and Modernity in Colonial Taiwan* (Berkeley: University of California Press, 2002). Not surprisingly, practitioners of traditional Chinese medicine were strictly regulated, and only ten "certified" practitioners remained in 1945. See Cai Jingfeng et al, eds., *Zhongguo yixue tongshi. Xiandai juan* [A general history of Chinese medicine. Volume on contemporary China] (Beijing: People's Medical Publishing House, 2000), 551–552; and Taibeishi wenxian weiyuanhui, ed., *Riji qianqi Taiwan beibu shizheng jishi: weisheng pian dashi ji* [Administrative record of the northern part of Taibei during early Japanese occupation: major events from the health section] (Taibei: Taibeishi wenxian weiyuanhui, 1986), 23–30.
 10. Government-General of Taiwan, *Statistical Summary of Taiwan* (Tokyo: The Japan Times Press, 1912), 404.
 11. Government-General of Taiwan, *Statistical Summary of Taiwan*, 405.
 12. Taiwansheng wenxian weiyuanhui, *Riji qianqi Taiwan beibu shizheng jishi*, 183–184.
 13. Robert E. Barrett, "Seasonality in vital processes in a traditional Chinese population: births, deaths, and marriages in colonial Taiwan, 1906–1942," *Modern China* 16:2 (1990), 193; 200–202.
 14. For an interesting discussion of the development and institutionalization of medical practice under the Japanese, see Ming-cheng M. Lo, *Doctors Within Borders*.
 15. The Nationalist nation-building effort has received increasing attention from scholars; some studies include Xiaoqun Xu, *Chinese Professionals and the Republican State: The Rise of Professional Associations in Shanghai, 1912–1937* (Cambridge: Cambridge University Press, 2001); Julia C. Strauss, *Strong Institutions in Weak Politics: State Building in Republican China, 1927–1940* (Oxford: Clarendon Press, 1998); John Fitzgerald, *Awakening China: Politics, Culture, and Class in the Nationalist Revolution* (Stanford: Stanford University Press, 1996); Ka-che Yip, *Health and National Reconstruction in Nationalist China: The Development of Modern Health Services, 1928–1937* (Ann Arbor: Association for Asian Studies, 1995); James Reardon-Anderson, *The Study of Change: Chemistry in China, 1840–1949* (Cambridge: Cambridge University Press, 1991); Marie-Claire Bergere, *The Golden Age of the Chinese Bourgeoisie, 1911–1937* (Cambridge: Cambridge University Press, 1989); and Robert E. Bedeski, *State Building in Modern China: The Kuomintang in the Prewar Period* (Berkeley: Center for Chinese Studies, University of California, 1981).
 16. The linkage between health and national survival had in fact been made by many reformers and intellectuals at the turn of the century, and Nationalist leaders and medical modernizers shared this concern. See Ka-che Yip, *Health and National Reconstruction*, 26–39.

17. For discussions of the idea of state medicine, see Mei Yilin, “Yixue shang zhi xin jianshe—gongyi” [New development in medicine—state medicine], *Zhongyang ribao* 1930 (no exact date and page numbers), in the Archives of the Historical Commission of the Kuomintang; R.K.S. Lin and C.C. Chen, “State medicine,” *Chinese Medical Journal* 51 (June 1937) 781–796; and C.C. Chen (Chen Zhiqian), *Medicine in Rural China: A Personal Account* (Berkeley: University of California Press, 1989).
18. For a chronology of the establishment of the health administrative structure, see Gao Yingdu et al, *Zhonghuaminguo neizheng zhi* [Internal administration of the Republic of China], Vol. II (Taipei: Chinese Culture Publishing Enterprise Committee, 1957), 453–468.
19. Ka-che Yip, *Health and National Reconstruction*, 63; 108.
20. Ka-che Yip, *Health and National Reconstruction*, 100–131.
21. League of Nations, Council Committee on Technical Cooperation with China, *Annexes to the Report to the Council of the League of Nations of its Technical Delegate on his Mission in China from Date of Appointment Until April 1, 1934*. (Shanghai: North China Daily News and Herald, Ltd., 1934), 251.
22. The League’s Malaria Commission was set up in 1924. For an interesting discussion of its work, see Gordon Harrison, *Mosquitoes, Malaria and Man: A History of the Hostilities since 1880* (New York: E.P. Dutton, 1978), 183–186.
23. “The malaria problem,” *Chinese Medical Journal* 46 (1932), 426–428; and Ka-che Yip, *Health and National Reconstruction*, 112.
24. *Weisheng banyuekan* [Hygiene bi-monthly] 2:2 (January 31, 1935), 1–6.
25. Tang Lin-hua et al, “Malaria and its control in the People’s Republic of China,” *Southeast Asia Journal of Tropical Medicine and Public Health* 22:4 (1991), 467; and Tang Linhua, “Progress in malaria control in China,” *Chinese Medical Journal* 113:1 (2000), 89.
26. S.C. Hsu, *Semiannual Report of the Malaria Laboratory of the National Institute of Health, Kolosham, Chungking, July to December, 1943*, box 204, series 3, Record Group (hereafter RG) 5, IHB/D. In Rockefeller Archive Center (hereafter RAC); and P.Z. King, “Epidemic prevention and control in China,” *Chinese Medical Journal* 61 (1943), 47–54.
27. Xinsheng News, ed., *Taiwan nianjian* [Taiwan Yearbook] (Taipei: Xinsheng News, 1947), N27; and Cai Jingfeng et al, *A General History of Medicine in China*, 562.
28. C.H. Yen, *Public Health Service in Taiwan* (Taipei: Provincial Health Department, 1947), chart XXVI; Zhuang Yongming, *Taiwan yiliao shi: yi Taida yiyuan wei zhu zhou* [History of medicine in Taiwan: with the Taiwan University Hospital as the axis] (Taipei: Yuanliuu, 1998), 362–365; and Chow Ching-yen, “Malaria eradication in Taiwan,” *Chinese Tropical Medicine* 2:1 (2002), 22.
29. Xinsheng News, ed., *Taiwan nianjian*, N27.
30. Zhuang Yongming, *Taiwan yiliao shi*, 385.
31. Weishengshu, *Taiwan dichu gongkong weisheng faji she* [A history of the development of public health in Taiwan] (Taipei: Weishengshu, 1995), 259.
32. *Guojia jianshe congkan, vol.II: neijing pian* [Collections of materials on national construction. Vol. II: section on internal administration] (Taipei: Zhonghuaminguo guojia jianshe congkan bianwu weiyuanhui, 1971), 186.
33. Guo Yingdu et al, *Zhonghuaminguo neizheng zhi*, 477–478.
34. Weishengshu, *Taiwan dichu gongkong weisheng faji she*, 260–261; 266; 272; 277.
35. Chin Hsien-Yu, “Colonial medical police and postcolonial medical surveillance systems in Taiwan, 1895–1950s,” *Osiris*, 2nd Series, vol. 13 (1998), 332–335.

36. C.H. Yen, *Public Health Service in Taiwan*, chart IV; Ming-cheng M. Lo, *Doctors Within Borders*; and Arthur Kleinman, *Patients and Healers in the Context of Culture: An Exploration of the Borderland between Anthropology, Medicine, and Psychiatry* (Berkeley: University of California Press, 1980), 12.
37. The five medical schools are: National Taiwan University College of Medicine, National Defense Medical Center, Kaohsiung Medical College, Taipei Medical College, and Chungshan Medical and Dental College. See Cai Jinfeng et al, *Zhongguo yixue tongshi*, 563–570.
38. Wei Huo-yao, *Wei Heyao xiansheng fangwen jilu* [‘The reminiscences of Dr. Huo-yao Wei’] (Taipei: Institute of Modern History, Academia Sinica, 1990), 53–54.
39. *Wei Heyao xiansheng fangwen jilu*, 55; Zhuang Yongming, *Taiwan yiliao shi*, 377; and Weishengshu, *Taiwan dichu gongkong weisheng faji she*, 287.
40. Cai Jinfeng et al, *Zhongguo yixue tongshi*, 553.
41. Xinsheng News, ed., *Taiwan nianjin*, N27; *Gongjia jianshe congkan*, vol. II, 212.
42. The creation of the National Health Administration resulted from the recommendation of Dr. Ivan L. Bennett, Jr.— deputy to President Lyndon B. Johnson’s science advisor Dr. Donald Hornig—and General Dick Loo, Director of the National Defense Medical Center in Taiwan. See Richard N. Pierson, Jr., Sidney Blumenthal, and John R. Watt, eds., *The Future of Health Services in Taiwan, R.O.C. Papers and Discussions from a Conference Held in New York, December 1981* (New York: The American Bureau for Medical Advancement in China, Inc. 1982), 14–15. See also Weishengshu, *Taiwan dichu gongkong weisheng faji shi*, 259; and Department of Health, Taiwan Provincial Government, *Taiwan’s Health, 1970 and 1971* (Taipei: Department of Health, 1971), 1–2.
43. Xinsheng News, ed., *Taiwan nianjin*, N27.
44. *Guojia jianshe congkan*, vol. II, 215; Gao Yingdu et al, *Zhonghuaminguo neizheng zhi*, 541.
45. Ka-che Yip, “Disease and the fighting men: Nationalist anti-epidemic efforts in wartime China, 1937–1945,” in David P. Barrett and Larry N. Shyu, eds., *China and the Anti-Japanese War, 1937–1945: Politics, Culture, and Society* (New York: Peter Lang, 2001), 182–183. See also Darwin Stapleton’s chapter in this book.
46. M.C. Balfour, “Letter to Dr. George K. Strode. The Rockefeller Foundation, August 29, 1946,” folder 359, box 44, series 601, RG 1 ; and R.B. Watson, “Letter to James Grant, June 13, 1949,” folder 361, box 44, series 601, RG 1. In RAC.
47. Xinsheng News, ed., *Taiwan nianjin*, N27; Zhuang Yongming, *Taiwan yiliao shi*, 533; R.B. Watson, “Annual report of activities, 1946,” and “Annual report of activities, 1947,” both in folder 600, box 217, series 3, RG 5, IHB/D. In RAC.
48. The Rockefeller Foundation’s program has been criticized by some historians who argue that the Foundation tended to ignore social and economic developments and consequences. See, e.g., Richard E. Brown, “Public health in imperialism: early Rockefeller programs at home and abroad,” *American Journal of Public Health* 66 (1976), 897–903; Armando Solorzano, “Sowing the seeds of neo-imperialism: the Rockefeller Foundation’s yellow fever campaign in Mexico,” *International Journal of Health Sciences*, XXII:3 (1992), 529–554; and Marcos Cueto, “Sanitation from above: yellow fever and foreign intervention in Peru, 1919–1922,” *Hispanic American Historical Review* LXXII:1 (1992), 1–22.
49. Darwin H. Stapleton, “The dawn of DDT and its experimental use by the Rockefeller Foundation in Mexico, 1943–1952,” *Parassitologia* 40 (1998), 149.

50. Darwin H. Stapleton, “The dawn of DDT,” 149.
51. Sze Szeming, *The Origins of the World Health Organization: A Personal Memoir, 1945–1948* (Boca Raton, Florida: L.I.S.Z. Publications, 1983).
52. For the work of WHO during its first two decades, see World Health Organization, *The First Ten Years of the World Health Organization* (Geneva: WHO, 1958); and World Health Organization, *The Second Ten Years of the World Health Organization, 1958–1967* (Geneva: WHO, 1968). For a critique of WHO’s approach and the domination of international medicine by rich industrialized nations it facilitated, see Sheldon Watts, *Epidemics and History: Disease, Power, and Imperialism* (New Haven: Yale University Press, 1997).
53. Randall M. Packard, “‘No other logical choice’: global malaria eradication and the politics of international health in the post-war era,” *Parasitologia* 40 (1998), 226–227. The decision to eradicate rather than control malaria was made despite concerns voiced by some health experts. The culture of the time exuded overwhelming confidence in biomedicine and technology. See Peter J. Brown, “Culture and the global resurgence of malaria,” in Marcia C. Inhorn and P.J. Brown, eds., *The Anthropology of Infectious Diseases: International Health Perspectives* (Newark, N.J.: Gordon & Breach, 1997), 119–141.
54. World Health Organization, *The First Ten Years*, 177–178.
55. World Health Organization, *The First Ten Years*, 178–179. See also Gordon Harrison, *Mosquitoes, Malaria, and Man: A History of the Hostilities since 1880* (New York: E.P. Dutton, 1978), 235–238.
56. For more details of some of the anti-malaria activities from 1947–1949, see Taiwansheng wenxian weiyuanhui, *Taiwansheng tongzhi gao* [A draft chronology of Taiwan] (Taipei: Taiwansheng wenxian weiyuanhui, 1953), 200–204.
57. Taiwansheng yaochi yenchiuso, *Annexes to the Plan of Operations for Malaria Eradication in China (Taiwan)* (Ch’ao Chow, Ping-tung: Taiwan Malaria Research Institute, 1963), 47.
58. Nan Wiegersma and Joseph E. Medley, *US Economic Development Policies towards the Pacific Rim: Successes and Failures of US Aid* (New York: St. Martin’s Press, 2000), 20–22. See also Robert Lathan, *The Liberal Moment: Modernity, Security, and the Making of Postwar International Order* (New York: Columbia University Press, 1997).
59. Randall M. Packard, “No other logical choice,” 220. I am not suggesting that the support of malaria eradication was part of a postcolonial conspiracy; rather I want to point out the congruence of interests between disease control and socio-economic development. The postwar definition of development differed from the extremely exploitative and coercive approach that had underpinned colonial rule in the past.
60. Randall M. Packard, “No other logical choice,” 221.
61. Nan Wiegersma and Joseph E. Medley, *US Economic Development Policies*, 35.
62. Neil H. Jacoby, *US Aid to Taiwan: A Study of Foreign Aid, Self-help and Development* (New York: Praeger, 1966); and Simon Long, *Taiwan: China’s Last Frontier* (New York: St. Martin’s Press, 1991), 80–81.
63. John D. Montgomery, *The Politics of Foreign Aid: American Experience in Southeast Asia* (New York: Praeger, 1962), 287; table 2.
64. R.B. Watson, “Letter to Dr. George K. Strode, the Rockefeller Foundation, September 17, 1949,” folder 361, box 44, series 601, RG 1. In RAC.

65. T.H. Shen, *The Sino-American Joint Commission on Rural Reconstruction: Twenty Years of Cooperation for Agricultural Development* (Ithaca: Cornell University Press, 1970), 53–55.
66. T.H. Shen, *The Sino-American Joint Commission*, 213; and Weishengshu, *Taiwan pu ji jishi* [A record of malaria eradication in Taiwan] (Taipei: Weishengshu, 1993), 27–29; 31–33.
67. The agreement can be found in Taiwansheng yaochi yenchiuso, *Annexes to the Plan of Operations*, 69–80.
68. Weishengshu, *Taiwan pu ji jishi*, 56–80; See also Gao Yingdu et al, *Zhonghuaminguo neizheng zhi*, 499–500, and Ka-che Yip, “Malaria eradication,” 122.
69. Taiwansheng yaochi yenchiuso, *Annexes to the Plan of Operations*, 77.
70. Zhuang Yongming, *Taiwan yiliao shi*, 534–535; and Ka-che Yip, “Malaria eradication,” 122.
71. Weishengshu, *Taiwan pu ji jishi*, 96; 100–106; and D.J. Pletsch, “Innovative procedures used in the Taiwan malaria eradication program,” *Kao Hsiung I Hsueh Ko Hsueh Tsa Chih* 7:5 (May 1991), 256–262.
72. Weishengshu, *Taiwan pu ji jishi*, 92; and D. J. Pletsch, “Innovative procedures used in the Taiwan malaria eradication program”
73. T.H. Shen, *The Sino-American Joint Commission*, 219.
74. Weishengshu *Taiwan pu ji jishi*, 35.
75. Weishengshu, *Taiwan pu ji jishi*, 148.
76. Taiwansheng yaochi yenchiuso, *Annexes to the Plan of Operations*, 3.
77. Taiwansheng yaochi yenchiuso, *Annexes to the Plan of Operations*, 47–49.
78. Weishengshu, *Taiwan pu ji jishi*, 127–129; 131.
79. W.I. Chen, “Malaria eradication in Taiwan, 1952–1964—some memorable facts,” *Kao Hsiung I Hsueh Ko Hsueh Tsa Chih* 7:5 (May 1991), 263–270.
80. Department of Health, Taiwan Provincial Government, *Taiwan’s Health, 1970 and 1971*, 18. See also Zhuang Yongming, *Taiwan yiliao shi*, 534–535.
81. Weishengshu, *Taiwan pu ji jishi*, 315.

CHAPTER 8

1. World Health Organization, *Country Cooperation Strategy: WHO China Strategic Priorities for 2004–2008* (Geneva: World Health Organization, 2004), 28.
2. Y. T. Yao, L.C. Ling, and K. B. Liu, “Studies on the so-called changch’i, Part I: changch’i in Kweichow and Kwangsi border,” *Chinese Medical Journal* 50 (1936), 762–738; and Y. T. Yao, L.C. Ling, and K. B. Liu, “Studies on the so-called changch’i: Part II: changch’i in Yunnan,” *Chinese Medical Journal* 50 (1936), 1815–1828.
3. Ho Ch’i, “Studies on malaria in new China,” *Chinese Medical Journal* 84:8 (1965), 491–497; and Zhou Zu-jie, “The malaria situation in the People’s Republic of China,” *Bulletin of the World Health Organization* 59:6 (1981), 931–933.
4. Weishengshu, “A preliminary survey of the endemicity of malaria in Nanking, Soochow, Hangchow, Wukong, and districts along the Yangtze Valley,” *Chinese Medical Journal* 46 (1932), 719–726.
5. L.C. Feng, “Malaria and its transmission in Kwangsi, China,” *Chinese Medical Journal* 50 (1936), 1799–1814; and K.C. Hsu, “Malaria in southern and western Szechuan with a note on the occurrence of *Schistosoma japonicum*,” *Chinese Medical Journal* 66 (1948), 319–323.

6. D.T. Jamison et al, *China: the Health Sector* (Washington, D.C.: The World Bank, 1984), 130.
7. K.Yip, "Antimalarial work in China: a historical perspective," *Parassitologia* 40 (1998), 29–32.
8. For a discussion of the medical problems of refugees during the war, see Si Fu et al, *1937–1938 Nanjing Zhengfu da chetui* [The great retreat of the Nanjing Government in 1937–1938] (Beijing: Tuanjie Chubanshe, 1998), 277–278; and Ka-che Yip, "Guomindang's refugee relief efforts, 1937–1945," in Cindy Yik-yi Chu and Ricardo K.S. Mak, eds., *China Reconstructs* (Lanham: University Press of America, 2003), 89–90. See also B. He "Wo guo nujie liuxing shi (1949 nian qian)" [History of the prevalence of malaria in China before 1949] *Zhonghua yishi zazhi* [Chinese Journal of History of Medicine] 18:1 (1988), 5–6.
9. Editorial Committee of the Research on the Prevention and Treatment of Malaria, *Zhongguo neuji di fangzhi yu yanjiu* [Research on the prevention and treatment of malaria in China] (Beijing: People's Publishing Co., 1991), 9; and Tang Linhua, "Progress in malaria control in China," *Chinese Medical Journal* 113:1 (2000), 89.
10. For a discussion of the theme of health and national reconstruction in modern China, see Ka-che Yip, *Health and National Reconstruction in Nationalist China: the Development of Modern Health Services, 1928–1937* (Ann Arbor: Association for Asian Studies, 1995), 35–41.
11. Cai Jingfeng et al, eds., *Zhongguo yixue tongshi: xiandai juan* [A general history of medicine in China: volume on the contemporary period] (Beijing: Renmin weisheng chubanshe, 1999), 2.
12. Chen Haifeng, *Zhongguo weisheng baojian* [Hygiene and health in China] (Beijing: Renmin weisheng chubanshe, 1985), 1–15.
13. Chen Haifeng, *Zhongguo weisheng baojian*, 87.
14. Editorial Committee of the Research on the Prevention and Treatment of Malaria, *Zhongguo neuji di fangzhi yu yanjiu*, 292–294.
15. Chen Haifeng, *Zhongguo weisheng baojian*, 88–89.
16. For a discussion of the development of health services under the Nationalists, see Ka-che Yip, *Health and National Reconstruction in Nationalist China*.
17. Huang Shuze, *Dongdai Zhongguo di weisheng shiye* [Health enterprise in contemporary China], vol. I (Beijing: China Social Science Publishing Co., 1986), 43.
18. Editorial Committee of the Research on the Prevention and Treatment of Malaria, *Zhongguo neuji di fangzhi yu yanjiu*, 294; and Huang Shuze, *Dongdai Zhongguo di weisheng shiye*, 255.
19. Chen Haifeng, *Zhongguo weisheng baojian*, 90.
20. Chen Haifeng, *Zhongguo weisheng baojian*, 14.
21. Fang Shih-shan, "Memorandum on the public health and hygiene movement in new China," *Chinese Medical Journal* 70 (September–December 1952), 641–648; and Fu Lien-chang, "Summing up report on the activities of the Chinese Medical Association since the eighth general conference," *Chinese Medical Journal* 71 (May–June 1953), 233.
22. Cai Jingfeng, et al, *Zhongguo yixue tongshi*, 12.
23. Huang Shuze, *Dongdai Zhongguo di wensheng*, 59–66.
24. Qian Huilin and Tang Linhua, "Zhongguo wushi nian nueji fangji gongzuo di chengjiu yu zhanwang" [Achievements and prospects of the work to prevent and control malaria in China in the last fifty years], *Zhonghua liuxingbingxue zazhi* [Chinese Journal of Infectious Diseases] 21:3 (June 2000), 225.

25. Chen Haifeng, ed., *Chinese Health Care: A Comprehensive Review of the Health Services of the People's Republic of China* (Lancaster: MTP Press Ltd., 1984), 158.
26. Huang Shuze, *Dongdai Zhongguo di wensheng shiye*, 62–63.
27. Feng Lan-chou et al, "Research on parasitic diseases in new China," *Chinese Medical Journal* 80:1 (1960), 16–17; and Hou Tsung-ch'ang et al, "Achievements in the fight against parasitic diseases in new China," *Chinese Medical Journal* 79 (1959), 512.
28. Zhou Zu-jie, "The malaria situation in the People's Republic of China," 933.
29. Editorial Committee of the Research on the Prevention and Treatment of Malaria, *Zhongguo neuji di fangzhi yu yanjiu*, 295.
30. Hou Tsung-ch'ang et al, "Achievements in the fight against parasitic diseases in new China," 503–504.
31. Ho Ch'i, "Studies on malaria in new China," 495.
32. Ho Ch'i, "Studies on malaria in new China," and Hou Tsung-ch'ang et al, "Achievements in the fight against parasitic diseases in new China," 504–505.
33. Feng Lan-chou et al, "Research on parasitic diseases in new China," 14.
34. Tang Lin-hua, Qian Hui-lin and Xu Shu-hui., "Malaria and its control in the People's Republic of China," *Southeast Asia Journal of Tropical Medicine and Public Health* 22:4 (December 1991), 467.
35. Zhou Zu-jie, "The malaria situation in the People's Republic of China," 934.
36. Editorial Committee of the Research on the Prevention and Treatment of Malaria, *Zhongguo neuji di fangzhi yu yanjiu*, 294; Tang Lin-hua et al, "Malaria and its control in the People's Republic of China," 470; and Tang Linhua, "Progress in malarial control in China," 91.
37. Xingzhu Liu and Junle Wang, "An introduction to China's health care system," *Journal of Public Health Policy* 12:1 (Spring 1991), 109.
38. Xingzhu Liu and Junle Wang, "An introduction to China's health care system," 110–111.
39. "Quality/Equality of life in China," *China Church Quarterly* 54 (Spring 2003), 6.
40. Yuanli Liu, "China's public health-care system: facing the challenges," *Bulletin of the World Health Organization* 82:7 (July 2004), 535.
41. World Health Organization, *The World Health Report 2000—Health Systems: Improving Performance* (Geneva: World Health Organization, 2000).
42. A. Sleight, S. Jackson, X. Li, and K. Huang, "Eradication of schistosomiasis in Guangxi, China, Part 3: community diagnosis of the worst affected areas and maintenance strategies for the future," *Bulletin of the World Health Organization* 76 (1998), 581–590.
43. Ofra Anson and Shigand Sun, *Health Care in Rural China. Lessons from HeBei Province* (Burlington: Ashgate Publishing Co., 2005), 67.
44. C.P. MacCormack, "Health and the social power of women," *Social Science and Medicine* 26 (1988), 677–684.
45. John Kohut, "Officials 'hush up' Beijing diphtheria outbreak," *South China Morning Post* (February 17, 1990), 12.
46. World Health Organization, *Roll Back Malaria Monitoring and Evaluation: China* (Geneva: World Health Organization, 2005), 2.
47. Editorial Committee of the Research on the Prevention and Treatment of Malaria, *Zhongguo neuji di fangzhi yu yanjiu*, 301.
48. Editorial Committee of the Research on the Prevention and Treatment of Malaria, *Zhongguo neuji di fangzhi yu yanjiu*, 375–376.

49. Tang Lin-hua et al, “Malaria and its control in the People’s Republic of China,” 472.
50. Xu Bozhao, Li Hanfan and R.H. Webber, “Malaria in Hubei province, China: approaching eradication,” *Journal of Tropical Medicine and Hygiene* 97:5 (October 1994), 278–279.
51. D.P. Luo et al, “Alphamethrin-impregnated bednets for malaria and mosquito control in China,” *Transaction of the Royal Society of Tropical Medicine and Hygiene* 88 (1994), 625–628; and H.L. Cheng et al, “Large-scale spraying of bednets to control mosquito vectors and malaria in Sichuan, China,” *Bulletin of the World Health Organization* 73 (1995), 321–328.
52. Editorial Committee of the Research on the Prevention and Treatment of Malaria, *Zhongguo neuji di fangzhi yu yanjiu*, 305.
53. Editorial Committee of the Research on the Prevention and Treatment of Malaria, *Zhongguo neuji di fangji yu yanjiu*, 297.
54. Tang Lin-hua, et al, “Malaria and its control in the People’s Republic of China,” 470; Qian Hui-lin and Tang Linhua, “Achievements and prospects of the work to prevent and control malaria in China,” 226; and Sukhan Jackson, Adrian C. Sleigh, and Xi-Li Liu, *Economics of Malaria Control in China: Cost, Performance and Effectiveness of Henan’s Consolidation Programme* (Geneva: TDR document center, World Health Organization, 2002), 28.
55. Yuanli Liu, “China’s public health–care system,” 536.
56. Editorial Committee of the Research on the Prevention and Treatment of Malaria, *Zhongguo neuji di fangzhi yu yanjiu*, 303.
57. Xu Bozhao, Li Hanfan, and R.H. Webber, “Malaria in Hubei province, China,” 281.
58. Editorial Committee of the Research on the Prevention and Treatment of Malaria, *Zhongguo neuji di fangzhi yu yanjiu*, 299–300; 306; Lin Shiyuan and Lin Peizheng, “Hainan kan nue shilue” [A short history of anti-malaria work in Hainan], *Zhonghua yi shi zazhi* 21:4 (1991), 223; Tang Lin-hua et al, “Malaria and its control in the People’s Republic of China,” 470; and Teh-wei Hu, “Financing and organization of China’s health care,” *Bulletin of the World Health Organization* 82:7 (July 2004), 480.
59. Yuanli Liu, “China’s public health-care system,” 536.
60. Office of the World Health Organization Representative in China, *Public Health Options for China: Using Lessons Learned from SARS* (Beijing: Office of the World Health Organization Representative in China, 2003).
61. Editorial Committee of the Research on the Treatment and Prevention of Malaria, *Zhongguo neuji di fangzhi yu yanjiu*, 307.
62. Sukhan Jackson, Adrian C. Sleigh, and Xi-Li Liu, *Economics of Malaria Control in China*, 6.
63. Qian Huilin and Tang Linhua, “Achievements and prospects of the work to prevent and control malaria in China,” 227; and China Hygiene Yearbook Editorial Committee, *Zhongguo weisheng nianjin, 1990* [China hygiene yearbook] (Beijing: Remin weisheng chubanshe, 1990), 139.
64. Ofra Anson and Shifang Sun, *Health Care in Rural China*, 68.
65. Editorial Committee of the Research on the Treatment and Prevention of Malaria, *Zhongguo neuji di fangzhi yu yanjiu*, 378–379.
66. Advisory Committee on Parasitic Diseases, “Yijiujiusan nian quanguo nueji xingshi” [Malaria situation in China in 1993], *Zhongguo jishengchongxue yu jishengchong bing zazhi* [Chinese Journal of Parasitology and Parasitic Diseases] 12 (1994), 161–164; and 13 (1995), 161–164.

67. Chev Kidson and K. Indaratna, "Ecology, economics and political will: the vicissitudes of malaria strategies in Asia," *Parassitologia* 40 (1998), 41.
68. Ofra Anson and Shifang Sun, *Health Care in Rural China*, 69. See also D.F. Zhu, "The malaria situation on the frontiers of Yunnan province, China," *Southeast Asian Journal of Tropical Medicine and Public Health* 25 (1994), 19–24.
69. World Health Organization, *Roll Back Malaria Monitoring and Evaluation*, 1.
70. World Health Organization, *Roll Back Malaria Monitoring and Evaluation*, 2; Tang Lin-hua et al, "Malaria and its control in the People's Republic of China," 472; and Tang Linhua, "Progress in malaria control in China," 91.
71. World Health Organization, *Roll Back Malaria Monitoring and Evaluation*, 2.
72. World Health Organization, *Country Health Information Profile: Statistical Tables* (Geneva: World Health Organization, 2006), 408.
73. World Health Organization, *Roll Back Malaria Monitoring and Evaluation*, 2.
74. Office of the World Health Organization Representative in China, *Public Health Options for China*, 6.
75. World Health Organization, *Country Cooperation Strategy*, 7–8.
76. Sukhan Jackson, Adrian C. Sleight, and Xi-li Liu, *Economics of Malaria Control in China*, 8; 10; 30–32.
77. Ofra Anson and Shifang Sun, *Health Care in Rural China*, 118–120.
78. World Health Organization, *Country Cooperation Strategy*, 4.
79. See also Yuanli Liu, "China's public health-care system," 533.

CHAPTER 9

1. Mark Harrison, *Public Health in British India: Anglo-Indian Preventive Medicine, 1859–1914* (Cambridge: Cambridge University Press, 1994), 4.
2. Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin, 1962); and U.S. Environmental Protection Agency, *DDT Regulatory History: A Brief Survey (to 1975)* (Washington, D.C.: Environmental Protection Agency, 1975).
3. Scott Calvert, "DDT has resurgence in developing nations," *Baltimore Sun*, August 27, 2006, 1A.
4. Tom Masland, "Malaria malpractice," *Newsweek* (March 24, 2004), 44–46.
5. World Health Organization, *The World Health Report 1999* (Geneva: WHO, 2000), 55. See also, K. Kidson, "Global malaria challenge: the Amsterdam summit," *Southeast Asian Journal of Tropical Medicine and Public Health* 23:4 (1992), 635–640.
6. World Health Organization, *The World Health Report 1999*, 62.

Index

- Acupuncture: 110
Amami: 61
American Bureau for Medical Aid to China (AMBAC): 92, 93
Ando, Teibi: 37
Anopheles: 2, 11, 34, 35, 36, 39, 40, 43, 44, 50, 52, 66, 67, 68, 69, 70, 93, 117
Anopheles authropophagus: 94, 114
Anopheles barbumbrosus: 50
Anopheles minimus: 50, 81, 109
Anopheles sinensis: 50, 94
Anti-epidemic stations, China: 106, 108, 112, 116
Anti-four pests campaign: 108
Antipyrine: 55
Artemisinin: 110, 123, 124
Atebrin: 50, 78, 81
Avian influenza: 28, 103
Ayres, Phineas: 16, 17
- Balfour, M.C.: 80
Barefoot doctors: 74, 106, 111, 113, 115.
See also Village Doctors, China
BCG (bacillus calmette-guerin): 24
Bed-nets: 49, 53, 109, 114, 118, 119, 124
Bernhard Nocht Tropical Disease Institute: 36
BHC (benzene hexachloride): 109
Bowring, John: 16
British Scientific Mission to China: 81
Burma Road: 75, 80, 81, 83
- Cambodia: 3
Carter, J.C.: 93
Center for Disease Control and Prevention (CDC), China: 116, 117, 118, 119
Chadwick, Edwin: 3
Chadwick, Osbert: 17, 19, 20
Changshan: 51
Chaozhou (Chiao Chow): 83, 93, 94, 98
Cheeloo University: 75
Chefang: 80, 81
Cheung, K. H. Dr.: 24
China Medical Board: 72, 92
Chinese Communist Party: 105, 106, 107
Chinese Medical College, Taiwan: 92
Chloroquine: 26, 110, 115, 123
Cholera: 13, 16, 22, 23, 24, 25, 50, 52, 63, 89, 90, 92, 96, 103, 120
Chongqing: 80, 81, 90, 93
Ciuca, Mihai: 89
Colonial medicine: 59, 61, 62–65, 67, 69, 70, 122
Colonial model of malaria control: 4–6. See also Colonial Medicine
Colonial Surgeon, Hong Kong: 11, 12, 14, 16, 17
Co-operative medical insurance, China: 113
Council for United States Aid: 98
Cultural Revolution: 108–109, 111, 114
- DDT (dichloro-diphenyl-trichloroethane): 2, 7, 8, 62, 67, 82, 83, 93–94, 96, 111, 122, 123; residual spraying in China,

- 109, 114; residual spraying in Hong Kong, 22, 24; residual spraying in Yaeyama, 68–70; residual spraying in Taiwan, 95, 97–99, 101
- De Jesus, Pable: 75
- Dempster, J. Carroll: 16
- Den, Kenjiro: 41, 42
- Dengue: 103, 120
- Deng, Xiaoping: 112
- Densenbyo Kenkyujyo (Institute for Infectious Disease): 63–65
- Des Voeux, G. William: 15
- Diphtheria: 24, 89, 92, 96, 113
- Dysentery, 13
- Epidemiological transition: in China, 112; in Hong Kong, 26; in Taiwan, 87
- European District Reservation Ordinance, Hong Kong: 16
- Feng, L.C. (Feng Lanzhou): 81, 104
- Four modernizations: 112
- Five guarantees: 105
- Fudobyō*: 50
- Fukoko hyohei*: 33
- Ganeko, Rakuichio: 66
- Gaoxiong (Kaohsiung): 55, 56, 98
- Global Fund to Fight HIV, TB, and Malaria: 117
- Gongyi* (state medicine): 88
- Goto, Shinpei: 41, 63, 86
- Grant, John B.: 78
- Grassi, Giovanni Battista: 18
- Great Leap Forward: 107, 108
- Greece: 69
- Guandong Leased Territories: 65
- Hara, Takashi: 42
- Harvard University: 72, 74
- Hatori, Jyuro: 66
- Hatori, Shigero: 37
- Health structure in China: before 1949, 88–89; after 1949, 106–107
- Hennessy, John Pope: 16
- Hetrazen: 83
- Hippocrates: 3
- Hill stations: 13
- Hoko*: 35, 41, 43, 44, 55, 57, 86
- Hong Kong: 1, 3, 4, 5, 6, 11, 12, 13, 14, 15, 16, 17, 27, 28, 63, 64, 79, 121, 122, 124; anti-malaria campaigns in, 18–26; housing in, 20–21
- Hong Kong fever: 11, 13
- Hookworm: 71, 89, 93, 106
- Horiuchi, Tsugio: 39
- Hospital Authority: Hong Kong, 28
- Hsioxhu (Xinzhu) earthquake: 57
- Hsu, Shi-Chu (Xu Shiju): 81, 104
- “Human approach” of malaria control: 35–40, 44, 45, 47, 48, 87
- India: 2, 3, 4, 5, 13, 19, 25, 36, 72, 75, 76, 95, 97, 121
- Indonesia: 79, 97
- Interior Extensionism in Taiwan: 5, 41–42
- International Health Board (Division): 71–72, 74, 75, 77, 78, 79, 80
- Iriomoto: 69
- Ishigaki: 62, 65, 66, 69
- Jackson, R.B.: 21
- Jia’nan irrigation system: 56–57, 58, 60
- Jiasian: 36
- Jilong (Keelung): 90, 93, 94
- Johns Hopkins University: 72, 74; School of Hygiene, 75
- Kaifong: 23
- Kala-azar: 89, 106
- Kato, Takaaki: 65
- Katagai, Tatsuo: 50
- Keio University: 42, 64, 65
- Kinoshita, Kashichiro: 36–37, 50, 64
- Kitajima, Taichi: 63
- Kitasato Institute: 63–65
- Kitasato, Shibasaburo: 63, 64
- Koch, Robert: 4, 35, 50, 63, 87
- Koizumi, Makoto: 64
- Koloshan: 81
- Korea: 65, 97, 107, 108
- Kuroshima, Naoki: 68
- Laos: 3, 117
- Laveran, Charles: 4, 33
- League of Nations: 6, 51; Health

- Organization of: 89, 94, 100, 104;
 Malaria Commission of, 6, 89
 Lobscheid, William: 11
- MacDonnell, Richard: 13
 Mackay, George: 49
 Malaria: drug-resistant, 26, 58, 69, 115,
 123; global eradication of, 2, 7, 8, 24,
 25, 69, 70, 94–95, 97, 101, 111, 123;
 perceptions of, 11–15, 33–34, 41–42,
 44, 50, 104. See also Colonial model
 of malaria control, Taiwan model of
 malaria control, Technological model
 of malaria control/eradication, U.S.
 model of malaria control/eradication
 Malaria Bureau, Hong Kong: 12, 21–22, 24
 Malaria Eradication Office, Yaeyama: 62,
 66–68, 70
 Malaria Therapy Laboratory: 32, 44
 Malariology: 4, 31, 33, 34, 40, 49, 50, 51,
 52, 53, 55, 56, 57, 58, 59, 60
 Malariotherapy: 51
 Manson, Patrick: 4, 18
 Mao, Zedong: 107, 112, 115, 118, 120
 Marshall Plan: 96
 Mass line: 105, 107
 Massachusetts Institute of Technology
 (MIT): 75
 Measles: 25, 103
 Medicine, Chinese traditional: 14, 33, 49
 Mepacrine: 81
 Miasma: 3, 13, 33, 34, 49, 50
 Microscopy: 34, 99, 115
 Migration and malaria: 45, 53, 58, 60,
 61–62, 68, 70, 78, 104, 112, 117
 Miura, Moriharu: 33
 Miyahara, Hatsuo: 55
 Miyajima, Mikinosuke: 64
 Miyako: 61, 68
 Morishita, Kaoru: 35, 50, 55, 59, 65, 69
 “Mosquito approach” of malaria control:
 35, 42–44, 45, 46, 47, 48, 87
 Myanmar: 3, 117
- Nanyo Leased Territories of Micronesia: 65
 National Epidemic Prevention Bureau: 89
 Needham, Joseph: 81
 Noda, Hiroshi: 50
Nue: 33
- Ohama, Shinken: 68, 69, 70
 Okinawa: 1, 2, 4, 5, 7, 33, 61, 62, 63, 64,
 65, 66, 67, 68, 69, 121, 122, 124
 Omori, Nobuhiko: 50
 Otsuru, Masamitsu: 67
- Pakistan: 25, 95
 Paludrine: 83, 110
 Pan American Sanitation Bureau: 95
 Panama Canal: 20, 40
 Paris green: 56, 78, 81, 90
 Pasteur, Louis: 4
 Patriotic health campaigns: 105, 108, 122
 Paul, J. Harland: 93
 Peking Union Medical College: 72, 73, 80,
 81, 104
 People’s communes: 115
 Philippines: 2, 67, 73, 75, 77, 78, 97
 Plague: 3, 5, 15, 17–18, 19, 20, 21, 22, 23,
 27, 44, 50, 52, 63, 64, 96, 121
 Plasmochin: 50
Plasmodium falciparum: 2, 57, 99, 104, 123
Plasmodium inui: 57
Plasmodium malariae: 2, 57, 61, 99, 104
Plasmodium ovale: 2
Plasmodium vivax: 2, 55, 57, 99, 104
 Primaquine: 110
Pucha puzhi: 109
 Pyrimethamine: 110
- Qinghaosu*: 51, 110, 115
 Quinine: 4, 5, 19, 21, 35, 36, 37, 39, 49, 50,
 51, 52, 53, 55, 56, 57, 58, 62, 65, 66,
 67, 69, 70, 81, 87, 90
- Robinson, William: 17
 Rockefeller Foundation: 2, 7, 71, 72, 73,
 74, 75, 78, 79, 80, 81, 83, 92, 93, 94,
 95, 97, 98, 100, 101
 Rockefeller University: 71
 Rockefeller, John D.: 71, 72
 Rockefeller Sanitary Commission for the
 Eradication of Hookworm Disease: 71
 Roll Back Malaria: 124
 Ross, Ronald: 4, 18, 19, 35, 40
 Royal Navy Mobile Malaria Hygiene Unit:
 22
 Russell, Paul: 78

- Ryukyu Islands: 61, 62
 Ryukyu Kingdom: 33, 61, 70
- Sakuma, Saumao: 52
 Sanitary Board, Hong Kong: 17, 18, 20
 Sanitation Police: 35, 41, 43, 55, 57, 58, 66, 86, 91
 SARS (severe respiratory syndrome): 29, 103, 117
 Sasa, Manabu: 67
 Sawyer, Wilbur A.: 80
 Schistosomiasis: 89, 106, 113
 Scientific Colonialism: 86–87
 Scientific Medicine: 86, 87, 89, 100
 Senega: 55
 Shek Kip Mei: 23
 Shimomura, Hachigoro: 40
 Shimojo, Kumaichi: 67
Shokusan kogyo: 33
 Shuili: 93
 Sino-American Joint Commission on Rural Reconstruction: 83, 97, 98
 Smallpox: 22, 23, 24, 26, 89, 90, 96
 Sri Lanka (Ceylon): 2, 7, 69, 76, 83, 75, 95
 Suzuki, Shintaro: 40
 Sweet, W.C.: 80
 Syphilis: 51
 Sze, Szeming: 94
- Taizhong (Taichung): 55
 Taihoku Imperial University School of Medicine: 67, 68, 69
 Tainan: 40, 46, 56
 Taipei (Taipei): 54, 55, 59, 90
 Tai Ping Shan: 15, 16, 17
 Taiwan: Japanese anti-malaria policy in, 1, 2, 4–6, 7, 31–48, 49–60, 65, 82–3, 86–7; Japanese assimilation policy in, 5, 32, 41–42, 47.
 Taiwan Malaria Research Institute: 83, 93, 94, 98, 99
 Taiwan model of malaria control: 4, 5, 62, 64, 65, 66, 67, 70
 Taiwan University College of Medicine: 92
 Takagi, Tomoki: 34, 37
- Takagi, Tomoe: 52, 63, 64, 66
- Technological model of malaria control/eradication: 6–7, 71, 73, 75, 77, 79, 81, 83, 92, 93, 94, 122, 123
 Thailand: 3, 97
 Tokyo Imperial: 33, 63, 64, 67
 Tropical medicine: 3, 4, 19, 40, 64, 65, 69, 70
 Tsuboi, Jiro: 50
 Tuberculosis: 12, 22, 23, 24, 26, 89, 93, 95, 96, 117
 Tung Wah Hospital: 14, 15, 18, 19
 Typhoid fever: 13, 89
- United Nations International Children's Emergency Fund (UNICEF): 93, 95
 United Nations Malaria Committee: 69
 United Nations Relief and Rehabilitation Administration (UNRRA): 69, 96
 United States Civil Administration of Ryukyu (USCAR): 68
 United States Foreign Operations Administration: 98
 United States International Co-operation Administration: 83, 98, 99
 United State model of malaria control/eradication: 62, 67–70
 United States Public Health Service: 80
 University of Philippines: 75
- Vietnam: 3, 8, 25, 117
 Village Doctors, China: 113, 115, 116, 119.
 See also Barefoot Doctors
 Vincent, George: 73
 Von Jauregg, Julius Wagner: 51
- Wada, Toyotane: 51
 War Malaria incident: 66, 67, 70
 Watson, Robert B.: 93, 97
 Wellington, A.R.: 21
 Wheeler, Charles M.: 68
 Wheeler Plan: 7, 62, 68–70
 World Health Organization (WHO): 2, 7, 8, 24, 25, 31, 58, 62, 69, 83, 85, 93, 94, 95, 98, 99, 100, 101, 103, 109, 111, 115, 116, 117, 123, 124
 Wushantou Dam: 56

Xiafang: 112

Yaeyama Islands: 61, 67, 68, 70

Yen, F.C.: 80

Yoshino, Kozen: 67

Zhang: 3, 33, 45

Zhangqi: 49, 104