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Advisors: Benjamin Elman and Janet Chen

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ABSTRACT

My dissertation explores the history of modern China through the lens of a group of Overseas Chinese medical personnel who brought to China new ideas, practices, and knowledge of Western science and medicine. Drawing from fourteen archives on three continents, I present a comprehensive account of twentieth-century medicine in China by considering this understudied group of historical actors who created and led institutions of medicine across China from 1911–1970. In investigating the leaders of Western medicine in China, I found that many of them were ethnic Chinese born outside of China and received their medical and nursing degrees in America and Britain. Representatives of this community included doctors Lim Boon Keng, Wu Lien-teh, Robert Lim, and Khaw Oo-Keh. They led the ministry of health and universities, headed departments of physiology and parasitology, formed quarantine bureaus and anti-plague services, expanded the Chinese Red Cross, created new medical training centers, and started the first Chinese blood bank. My approach thus provides an alternative narrative to the existing research, which has primarily focused on the geographical and temporal focus on scientific research, public health, and epidemic control in North and Central China from 1911 to 1937.

This dissertation was motivated by the desire to understand why the Chinese largely accepted the tenets of Western medicine and science in the twentieth century, given that China was never fully colonialized by other western nations. My contribution is to show that sustained efforts of the Overseas Chinese medical personnel in instituting medicine mattered in creating opportunities for the proliferation of new forms of Western medical knowledge and practices. The Overseas Chinese medical personnel came to work
in China and leveraged their ethnic Chinese identities, as well as mobilized financial, technical, and medical resources from America, Britain, and Southeast Asia to create new centers of science and medicine. In turn, their endeavors provided critical platforms for the production, adaptation, and projection of Western science, medicine, and technology in China.

By emphasizing the interaction of science, medicine, and technology, my dissertation sheds new light on modern Chinese history. In particular, my project seeks to revise the narrative of Second World War China and the Chinese Civil War (1937 – 1950), which was long thought by many scholars to be two consecutive periods where the Chinese government and civil society lacked the basic capacity and resources to aid the multitudes of sick and wounded. In contrast, my longue durée approach shows how these Overseas Chinese medical personnel, whose endeavors at instituting medicine in China began in the 1910s and 1920s, organized a comprehensive wartime medical system that treated more than three million Chinese soldiers and civilians, and trained more than twenty thousand medical personnel. These transnational efforts resulted in an understated transformative experience for Chinese medicine and society, which in turn provided important institutional legacies for health care, public health, and medical education in post 1949 China and Taiwan.
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It is to my family that I dedicate this dissertation. To my parents, Soon Heong Toh and Agnes Tan Yin Foong, and my brother, sister-in-law, and three nieces, Soon Sze Meng, Rachel Yeo, Chuan En, Chuan Min, and Chuan Wen, for their unwavering support throughout the years. To my wife, Hong-hong Tinn, for her limitless patience, understanding, love, and insights throughout this extended process. To anyone I inadvertently missed – thank you.
### ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AMC</td>
<td>Army Medical College</td>
</tr>
<tr>
<td>ABMAC</td>
<td>American Bureau for Medical Aid to China</td>
</tr>
<tr>
<td>CCP</td>
<td>Chinese Communist Party</td>
</tr>
<tr>
<td>CRCMRC</td>
<td>Chinese Red Cross Medical Relief Corps</td>
</tr>
<tr>
<td>EMSTS</td>
<td>Emergency Medical Service Training School</td>
</tr>
<tr>
<td>KMT</td>
<td>Kuomintang (Chinese Nationalist Party)</td>
</tr>
<tr>
<td>NAACP</td>
<td>National Association for the Advancement of Colored People</td>
</tr>
<tr>
<td>NDMC</td>
<td>National Defense Medical Center</td>
</tr>
<tr>
<td>PUMC</td>
<td>Peking Union Medical College</td>
</tr>
<tr>
<td>RAC</td>
<td>Rockefeller Archives Center</td>
</tr>
<tr>
<td>ROC</td>
<td>Republic of China</td>
</tr>
<tr>
<td>PRC</td>
<td>People’s Republic of China</td>
</tr>
<tr>
<td>UCR</td>
<td>United China Relief</td>
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<tr>
<td>USC</td>
<td>United Services to China</td>
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</tbody>
</table>

### ROMANIZATION

In this work, I have used *hanyu pinyin* to Romanize places, names, political parties, and institutions. The only exception is the Chinese Nationalist Party, which was traditionally called the Kuomintang (KMT). I have chosen to use the preferred names of historical actors. Historical actors who did not have an English name will be rendered in *hanyu pinyin*.
Introduction

Coming from Afar, 1910–1970

In 1947, Robert Lim Ko Sheng (林可勝 1897–1969), the head of the military medical corps in China, was pleased with his accomplishments despite the raging civil war between the Chinese Nationalist Party and the Chinese Communist Party. Lim had established a 125 acre medical training center six miles away from the famous Shanghai Bund district lined with international banks, shops, and offices. Called the National Defense Medical Center (NDMC Guofang yixueyuan 國防醫學院), it was composed of a general hospital, a medical school, a research laboratory, a dental institute, a nursing college, a blood bank, and the first pyrogen-free fluid plant in China. The Center had begun training more than 2,000 students in its first intake in 1947, and the head surgeon had successfully operated on General Chen Cheng (陳誠 1897–1965), who would later become the vice-premier of the Republic of China. Foreign dignitaries and local luminaries such as the head of the U.S. Army in China and the wives of Chinese leaders affirmed their support for the center after their visits.

In the winter of 1948, Robert Lim received the order to retreat from Shanghai to Taiwan. Many of his fellow medical personnel, however, refused to leave with Lim because they did not want to leave families and loved ones behind. Others questioned whether the center would survive in Taiwan or whether they would be jobless on the island. Some doctors even persuaded fellow colleagues to move north to Manchuria instead, where there were many new job openings. Would the National Defense Medical Center succeed in Taiwan? Who were the medical personnel that would be willing to move from China to Taiwan?
Such vicissitudes of war, migration, international politics, and human nature shaped the history of Western medicine in twentieth century China. Robert Lim, who was born in Singapore and received his doctorate of science at Edinburgh University, was at the heart of negotiating these complex configurations affecting the institutions of Western medicine in twentieth-century China. My dissertation focuses on the nature of medicine in modern China and the agents of medicine who have facilitated the development of medical institutions in China. In my research, I have found that many of these personnel, like Robert Lim, were ethnic Chinese who grew up in Southeast Asia and obtained their doctorates or medical degrees from the United States or the United Kingdom.

My dissertation seeks to explicate how these Overseas Chinese propagated new knowledge and practices of Western science and medicine in China through the creation of scientific and medical institutions. Through the establishment of medical training centers, anti-plague units, research laboratories, blood banks, and mobile medical units, they provided a critical platform for the propagation, production, adaptation, and dissemination of Western science and medical knowledge. By taking a longer and broader view of Chinese medical history, I show how the pre-war geographically limited, elitist, and laboratory-based medical system shifted to an expansive, mobile, and fieldwork-based health care system after the outbreak of the Second World War in China. Combining the institutional, biographical, and social histories of medicine across China over six decades, and researching fourteen archives in three continents, my dissertation develops an alternative narrative to the existing literature that focuses on isolated historical events and individual medical themes in urban China and Manchuria in the pre-war period.
My dissertation makes two claims. First, Overseas Chinese were critical to the institutionalization and transformation of medicine in twentieth century China. As I will show, the Overseas Chinese—ethnic Chinese who were born abroad or China-born Chinese who spent most their lives abroad—led a myriad of medical and scientific institutions in China. I focus on five individuals and their endeavors in China: Robert Lim Ko-sheng (林可勝 1897–1969), Lim Boon Keng (林文慶 1869–1957), Wu Lien-teh (伍連德 1879–1960), Khaw Oo-Keh (許雨階 1884–1983), and Yi Chien Lung (易見龍 1904–2003). Besides these five doctors, more than fifteen other Overseas Chinese medical personnel will make brief appearances in the dissertation.

They are but a few of the thousands of ordinary Overseas Chinese nurses, technicians, donors, and drivers from across the world who from 1910 to 1970 contributed to the financial, technical, and operational elements of these medical institutions. The importance of the five doctors can be seen in their leadership of several medical and scientific institutions in this period. They led the Ministry of Health and universities, headed departments of physiology and parasitology, formed quarantine bureaus and anti-plague services, expanded the services of the Chinese Red Cross, created new medical training centers, and operated the first Chinese blood bank. While

\[1\] Born in Singapore and trained at Edinburgh, Lim Boon Keng was briefly the first Minister of Health in Republican China (1911), the Inspector-General of Beijing hospitals (1911 -1912), and the President of Xiamen University (1924 – 1936). Penang-born and Cambridge-educated Wu Lien-teh directed the North Manchurian Plague Prevention Service (1912-1930), and led the National Quarantine Bureau in Shanghai from (1930 -1937). Robert Lim headed the department of physiology at the Peking Union Medical College (1925-1936), and founded and directed the Chinese Red Cross Medical Relief Corps (1938 to 1942), the Emergency Medical Service Training School (1938 to 1943), and the National Defense Medical Center (1947-1950). Penang-born and Edinburgh-educated Khaw Oo-Keh was a senior administrator at Xiamen University (1924 – 1925), the head of department of Parasitology at the Peking Union Medical College (1925 – 1937), and the deputy director of college (1937 – 1939). He joined Robert Lim at the National Defense Center as the head of the parasitology department in 1947, where he remained until his death in 1983. Born in China, Yi Chien-lung did his post-doctorate studies at the University of Toronto in Canada. He was the director of the first Chinese blood bank (1944 – 1955), and headed the Hunan Medical College in mainland China (1949 – 1950).
this study does not claim to be an exhaustive study of all the prominent medical personnel in modern China, it covers the organizations—especially Robert Lim’s wartime military medical complex—that would save more lives and train more people than any other institutions in the first half of the twentieth century.

I show how Overseas Chinese lobbied the Chinese and American government, offered their medical and technical expertise, donated money to medical relief efforts, instructed indigenous Chinese in the knowledge of Western medicine, drove medical trucks that shipped supplies from Burma to China, persuaded Chinese of the efficacy and safety of Western medicine, and inspected local environments for pollutants. Their efforts, however, were not without opposition. Indigenous intellectuals, local medical personnel, and several American leaders in the government and non-governmental sectors opposed their medical plans, reduced their funding, questioned their scientific expertise, and challenged their cultural authenticity. For every detractor, however, there were many more supporters.

Overseas Chinese medical personnel garnered support from the diaspora community, with hundreds of ethnic Chinese nurses, drivers, technicians, and doctors signing up to join their efforts, especially during the Second World War. In addition, from 1910 to 1945, the Rockefeller Foundation, American Bureau for Medical Aid to China (ABMAC), and United China Relief led the way in providing funding and technical expertise for many of the medical institutions in China. After 1945, when traditional sources of funding began winding down, several members of the U.S. Congress, U.S. Army, and U.S. Navy stepped in to assist these medical personnel in
facilitating the survival and growth of the National Defense Medical Center in Shanghai, and later Taiwan.

Second, Overseas Chinese efforts at medical institutionalization resulted in the expansion of Western medicine in China. From 1910 to 1937, they created the North Manchurian Plague Prevention Service to combat plague in North China, headed the department of physiology and parasitology at the Peking Union Medical College in Beijing, provided for the emphasis on the sciences at Xiamen University, led the Ministry of Health in Nanjing, and represented China abroad as medical representatives. They were involved in expanding public health services, managing universities and academic departments, and conducting research on science and medicine. Such endeavors in the pre-war period, however, were limited to urban regions in North and Coastal China.

During the Second World War in China, Overseas Chinese medical personnel created a military medical complex in Southwest China, composed of the Chinese Red Cross Medical Relief Corps, the Emergency Medical Service Training School, and the first Blood Bank. After the war, these institutions were reconstituted in Shanghai as the National Defense Medical Center. These institutions heralded the introduction of extensive medical surveillance, rapid medical responses, mass medical training, and frequent inspection and adaptation of new medical technologies, even when the actual implementation and outcome of these values fell short of the promises of the medical elites. My dissertation demonstrates that the success of Overseas Chinese efforts was contingent on multiple factors: technological expertise necessary to operate the institutions, the time given to develop institutions, political support, and, crucially, funding for such endeavors.
Revising Modern Chinese History

My dissertation contributes in three ways to the history of Modern China. First, I emphasize the dynamism of medicine in relationship to Chinese society by adopting a *longue durée* approach towards the history of twentieth century Chinese medicine. Second, my dissertation shifts attention from the existing literature that focuses on the collective suffering and trauma of the Chinese in the Second World War to the expansion of the medical system that treated more than three million soldiers and civilians. These two approaches contribute to a revision of the traditional epochs of twentieth century Chinese history. Third, this study revisits the history of Overseas Chinese and shows how they were not just interested in their host societies but were also deeply interested in the affairs of China.

My project complements efforts by Chinese historians in revisiting the traditional periodization of twentieth-century Chinese history – revolution (1911), warlordism (1912 – 1926), consolidation (1927 – 1936), war and aborted revolution (1937 – 1949), liberation (1949 – 1950), and new China (post 1950). I draw inspiration from scholars who have eschewed focusing on just one of these periods but have instead taken a *longue durée* approach towards understanding twentieth century China. Two recent monographs stand out. Janet Chen examines national, provincial, and municipal authorities’ attitudes towards the urban poor in Beijing and Shanghai from 1900-1953. She reveals surprising continuities in the Chinese elites’ intellectual and economic assumptions towards the urban poor, regardless of who was in power. Likewise, Xu Guoqi shows that the effort by

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the Republic of China in Taiwan to prevent the participation of the People’s Republic of China in the Olympics during the Cold War had its origins in the historical Chinese tensions between nationalistic rhetoric and ambivalence towards the Olympics in the early Republican period. These cold war tensions also threatened to overshadow their accumulation of medals at the Olympics in the post-Cold war era.³

Similarly, a longer history of medicine in the twentieth century reveals a different temporality. I show how the limited, elitist, urban, and laboratory-based medicine system in the pre-war period shifted to a more expansive, mobile, and field-based medical system after the outbreak of the Second World War in China in 1937. The Chinese people, who experienced new modes of quarantine, surveillance, and university-based scientific education in pre-war North and Southeast China, would now see new institutions of military-style medical training in Southwest China, and later in Shanghai. They would have donated blood to the first Chinese blood bank in Kunming, experienced rapid care and evacuation in Yunnan by mobile units, and studied in a comprehensive medical center in the heart of Shanghai. Many of these institutions operated and led by the Overseas Chinese – the Peking Union Medical College, the National Defense Medical Center, anti-plague services, hospitals, and blood banks – continue operating in post 1949 China and Taiwan. Certain elements of continuities (efforts at institutionalization, the leveraging of international resources, and the support of the diaspora), and discontinuities (nature of institutions, types of resources, and the shifting discourse by and of the Overseas Chinese) can be gleaned from my analysis of medicine in twentieth-century China.

Second, my dissertation builds on the earlier focus on the collective suffering and trauma of the Chinese, who were caught in the vicissitudes of a global and civil war, to an emphasis on the expansion of a wartime medical system that sought to alleviate the worst of their sufferings. Most historians of the Second World War in China, otherwise known as the War of Anti-Japanese Resistance or the War of Resistance (kangri zhanzheng 抗日戰爭 1937–1945), are focused on the military and diplomatic history of the war. While these works were useful in providing important political, diplomatic, and economic contexts for the medical history of the war, they provide fewer insights into the experiences of the Chinese people during the War. Other scholars who have focused on the social and cultural history of the period have shown how this period was marked by the debilitating effects of the war on the mental state and physical conditions of the ordinary Chinese soldiers and civilians.

Furthermore, they emphasized how the war had pernicious effects on the effectiveness and the popularity of the Nationalist government led by general-turned president Chiang Kai Shek, reinforcing the notion of the Chinese government as deeply corrupt and incompetent. As a result, the Chinese state could not cope adequately with

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wartime challenges in their numerous monographs. In contrast, scholars such as Rana Mitter, Helen Schneider, and Nicole Barnes have sought to revise these dominant narratives in recent years. They argue that “Chiang Kai Shek and affiliated organizations did in fact undertake significant efforts in the field of social rehabilitation and welfare in wartime China” after examining new archival materials on the central and municipal governments’ support for medical care and social welfare in the wartime capital of Chongqing.7

I complement their work by going beyond the examination of the state’s capacities to consider the role of semi-autonomous organizations such as the Chinese Red Cross Medical Relief Corps and the Emergency Medical Service Training School, which operated outside of the wartime capital, and drew most of their funding from the Overseas Chinese. In examining the history of these wartime medical institutions, I argue that Wartime China was an important catalyst for the transformation of medicine in China. It brought together people, resources, technologies, and ideas from the world over, and accelerated the pace of medical relief, innovation, and training in China. Wartime China was not simply a period filled with what Lloyd Eastman calls “seeds of destruction,” because its residents did benefit from the fruits of medical knowledge and practices brought by the Overseas Chinese to China.

Similarly, historians of the Chinese Civil War have emphasized how the Nationalists’ tendency to resort to the financial printing press to fund the war against the

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Communists and its inability to control corruption, sustain economic growth, and enact monetary reforms led to widespread inflation and social unrest. These factors, coupled with the Nationalists’ largely reduced military power because of the Second World War, eventually brought down the Nationalist regime and ushered in the Communist Party. I suggest that the challenges and the problems of Chinese society during the War of Resistance and the Chinese Civil War should frame our discussion of these two periods rather than over-determine the analysis and representations of the periods in question.

Robert Lim and his colleagues overcame multiple problems associated with this period—unreliable electricity, hyperinflation, polluted water, blood contamination, political opposition, and students’ unrests—which impeded the growth of medical institutions in China. The creation from 1937 to 1945 of a military medical complex that spanned the cities and surrounding regions of Changsha, Kunming, Guiyang, and Shanghai resulted in the treatment of more than three million soldiers and civilians. The medical training school also trained 20,000 soldiers, tripling the number of pre-war Western medical personnel in China. At the heart of this enterprise was the Overseas

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9 I draw part of my description of “military medical complex” from the term “military-industrial complex.” U.S. President Dwight Eisenhower warned Americans of the unchecked growth of the complex in 1961, popularizing the term. See Yi Han, “Institutional Logics, Extended Rationality, and the Effects of Military Background of Business Leaders,” PhD. diss., University of Arizona, 2008, for a historical overview of the scholarship on the complex. Han shows that the existing scholarship has been critical of the growth of an unaccountable nexus of military institutions and large profiteering corporations. As I will show, some of the opposition to the military industrial complex in America in the 1960s (lack of accountability, unchecked growth, stubborn leadership) resonated with the opposition by groups such as the United China Relief to the growth of the military medical complex led by Robert Lim in the 1940s. However, the enterprise in China was not wholly negative. The process of creating a military medical complex in China represented the relative success of the ability for Overseas Chinese medical personnel in attracting medical personnel from abroad, consolidating international and domestic resources, expanding medical infrastructure, and overcoming logistical, geographical, and political limitations posed by the war.
Chinese adaptation of new preventive care medical technologies, blood banking, and medical training from the United States to fit local wartime conditions in China.

Third, this dissertation revisits the relationship between Overseas Chinese and China. Scholars have argued for the significance of Overseas Chinese in the 1911 revolution, although Mary Wright argued in 1971 that New Army officers and soldiers as well as reform-minded students and workers within China were more important in overthrowing the Qing government than Sun Yat-sen (孫中山 1866-1925) and his Overseas Chinese allies.\(^{10}\) Since Wright’s successful attempts to shift attention away from Overseas Chinese, historians have rarely discussed the role of Overseas Chinese in China beyond the 1911 focal point. Recent monographs on China that have Overseas Chinese as their main protagonists pay little attention to their diaspora identities and experiences.\(^{11}\) As a result, American-based historians of the Overseas Chinese have focused more on their economic endeavors and cultural adaptation in the Americas and Southeast Asia.\(^{12}\) Overseas Chinese are depicted as disdaining the politicians and societies they left behind in contrast to their enthusiasm for their new host societies. In


\(^{11}\) For example, Karl Geith and Klaus Mühlhahn downplay the diasporic identity of Wu Tingfang (伍廷芳 1842-1922), a main historical actor in their monographs. Wu was a Singapore-born and Hong Kong-trained lawyer who undertook constitutional reforms in criminal law and led the boycott of Japanese products in China. He was an accomplished diplomat and acted as Premier briefly in 1917. See Karl Geith, *China Made: Consumer Culture and the Creation of the Nation* (Cambridge, MA: Harvard University Press, 2003) and Klaus Mühlhahn, *Criminal Justice in China: A History* (Cambridge, MA: Harvard University Press, 2009).

Philip Kuhn’s words, Chinese in China reminded those in the diaspora of the “Qing officials from whom so many emigrants [had] been glad to escape.”

I argue, however, that Overseas Chinese were central to medical and scientific development within China. They were active on the mainland, not simply secondary supporters from faraway lands. They were not just rich merchants or overworked coolies but respected intellectuals. They were not monolithic and had diverse strategies in reaching out to and working in China. Being able to move freely between China and their host societies, their values became important enough to be either appreciated or disputed by key scholars within China proper. Their fate as leaders of Western science and medicine in China and later in Taiwan was affected by the wider context of twentieth century Chinese history, even as their efforts at the construction of medical institutions was transformative for residents in the Republic of China on the mainland and later in Taiwan.

**Reinterpreting Twentieth Century Medicine in China and the World**

Besides making the above three historiographical contributions to modern Chinese scholarship, the dissertation aims to elucidate broader and more diverse histories of medicine in twentieth century China and the field of Western medicine. The diversity of Western medicine in China can be seen in the geographical and temporal expansiveness of the Overseas Chinese efforts at creating and leading institutions across China, as well as their efforts at embarking on a myriad of science projects, medicine, and technology. In addition, their endeavors show new forms of adapting and innovating Western medicine to non-Western spaces, thus moving away from narratives that stress subjugation and resistance.

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13 Kuhn, *Chinese Among Others*, 270.
Because the field of the history of medicine in Republican China (1911–1949) is a relatively recent field, historians of Republican Chinese medicine have emphasized specific themes and interests in the history of medicine from a narrow temporal base (1911–1937) in North China. These trends are reflected in three broad historiographical research fields. First, research on the Peking Union Medical College (PUMC 北京协和医院)—a premier institution of medicine that the Rockefeller Foundation founded in Beijing in 1905—has largely emphasized the many Americans who facilitated the growth of the college but has made relatively little mention of the college’s Chinese medical personnel.¹⁴ Until very recently, most of the research has focused on the history of the institution from 1911 to 1937.¹⁵ Second, besides the influence of the United States in shaping Western medicine in China, scholars have also emphasized the importance of Japan in bringing Western institutions of science, medicine, and technology to China. Ruth Rogaski’s 2004 work is representative of this field of study. She argues that the Japanese appropriated the pre-modern term of “weisheng/eisei” 衛生 (which referred to the acts of self-nourishment to guard one’s life) and transformed it to a term that represented the ambitious project by the Japanese and their collaborators in Tianjin in 1912 to remodel the physical landscape to improve the

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¹⁴ Historians of the Peking Union Medical College have largely focused on the Americans who supported, facilitated, and worked at the college, with relatively little mention of the Chinese medical personnel. My approach seeks to investigate the ethnic Chinese doctors at PUMC, many of whom grew up and studied abroad. See Mary Bullock, An American Transplant: The Rockefeller Foundation and Peking Union Medical College (Berkeley, CA: University of California Press, 1980), John Bowers, Western Medicine in a Chinese Palace: Peking Union Medical College, 1917-1951 (Philadelphia, PA: Josiah Macy, Jr. Foundation, 1972), and Mary Ferguson, China Medical Board and Peking Union Medical College: A Chronicle of Fruitful Collaboration 1914-1951 (New York, NY: China Medical Board of New York, 1970).

¹⁵ See Bullock, Oil. Mary Bullock’s 2011 monograph takes the PUMC narrative briefly to the post-war period.
health of the population as well as to educate the Chinese about the concept of communicable diseases.\(^\text{16}\)

Since Rogaski’s pioneering work, many scholars have used “weisheng” to refer to public health in modern China.\(^\text{17}\) Much of “weisheng” studies are focused on North China and Taiwan from 1911 to 1937, where the influence of Japanese hygienic modernity was the strongest. Third, recent attempts at broadening the field focus on the endeavors of Penang-born and Cambridge-educated Wu Lien-teh, who was critically acclaimed for successfully fighting plague in North China. While much of the historiography surrounding Wu continues to emphasis his innovations in medical epidemiology and his brilliance as a plague fighter,\(^\text{18}\) other scholars have broadened this view by seeing Wu as a historian of medicine as well as a medical reformer who introduced new hygienic practices such as the “Lazy Susan” turntable commonly found in Chinese restaurants across the world.\(^\text{19}\) Yet, the research on Wu, like that of the Peking Union Medical College and hygienic modernity, is basically research on early Republican medicine, with


little emphasis on the changes and continuities that occurred in Chinese medicine after
the Second World War broke out in 1937.20

In attempting to reconstruct the history of Western medicine in the under-
investigated period of Wartime China, I reveal a more expansive Republican Chinese
medicine. Not only were multiple physical institutions of medicine created during the
Second World War, I show the emergence and flourishing of new medical theories and
practices. They include mass military-style medical training, fieldwork-based medical
research, grouping of multiple facilities of medicine under one institution, treatment by
mobile units, blood banking, and preventive medical care. More importantly, I argue that
two important overarching principles emerged during the war: the values of adaptability,
portability, and mobility as well as the idea that the state should provide healthcare for all
its residents.

The former philosophy undergirded the development of mobile blood bank,
evacuation, and delousing units in Wartime China, and the latter underpinned the
ambitions and actions of the Overseas Chinese medical personnel during the Second
World War and after. These new medical practices signified a larger narrative addressing
the intensification of medical institutionalization and vibrancy and dispelling the
impression that efforts at building public health universities and hospitals was confined to
the early Republican period. Their efforts meant that new ideas of scientific medicine and
public health came not only via Japan or America to China but also via Overseas Chinese
to multiple cities and regions across China. These cities and regions included Beijing,
Changsha, Guiyang, Manchuria, Nanjing, Kunming, and Taipei. My dissertation
incorporates and expands on the many events that constitute the history of Republican

20 A notable exception is Barnes’s dissertation.
Chinese medicine. It restores agency to forgotten Overseas Chinese and American medical aid personnel.

This dissertation also contributes in three ways to the broader field of the history of medicine. First, it illustrates the potential of seeing alternative trajectories of Western science and medicine in non-Western spaces. Scholars of global medicine such as David Arnold, Meaghan Vaughan, and Warwick Andersen have focused on the contestations and interactions between colonial medical officers and indigenous populations. My research draws on such approaches in delineating the relationship between Overseas Chinese doctors and indigenous Chinese people. At the same time, I shift attention from such an approach to understanding the possibilities of Western medicine in China on its own terms. I show how Peking Union Medical College and the Emergency Medical Service Training School provided opportunities for Overseas Chinese doctors to develop new pharmaceutical drugs to combat communicable diseases, to conduct laboratory research on the physiology and pathology of digestion, and to investigate new vector-borne disease hosts such as the marmot and the *Clonorchis sinensis*, a tropical worm. They published research in U.S. and U.K. journals, contributing to the creation of a global scholarly community in the West. In addition, Overseas Chinese drew on the lexicon of pre-modern Chinese terms to describe Western medical ideas and practices that would appeal to an indigenous Chinese audience, which was not always convinced of the Overseas Chinese’s agenda and opposed some of their endeavors.

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Second, the dissertation reveals the importance of military medicine in shaping society. Historians of military medicine have largely focused on the psychological aspects of military medicine, and the problems of wartime medical ethics. My dissertation will show that the Chinese experience encompassed a broader range of military medical practices such as blood transfusion, delousing, mobile surgery, veteran rehabilitation, mass medical training, and delousing. In taking a more comprehensive analysis of the relationship between military medicine and society, I join an emerging scholarship that examines how military medicine critically shaped, created, and influenced experiences of a majority of soldiers and civilians in Britain and the United States. Similarly, I argue that military medicine was not simply practiced by specialized medical doctors and their patients, but its nature was so encompassing that military medicine played a critical role in sustaining the Nationalists’ fight against the Japanese.

Third, my dissertation reveals the workings of medical technology beyond existing research on the histories of diagnostic and curative machines as well as reproductive technologies in hospitals and laboratories. My research extends the analysis to the warfront through examining how Overseas Chinese medical personnel

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24 See Mark Harrison, Medicine and Victory: British Military Medicine in the Second World War (Oxford, UK: Oxford University Press, 2004) and Margaret Humphreys, Marrow of Tragedy: The Health Crisis of the American Civil War (Baltimore, MD: John Hopkins University Press, 2013). Harrison and Humphrey argue that the superior development of military medicine in Britain and in the Union Army was critical to their respective victory in the Second World War and the American Civil War.

brought medical technologies from the United States directly to the Chinese people. Doctors, nurses, engineers, and technicians traveled, worked, and lived in mobile blood bank, surgical, delousing, and special dietary units that brought them to Chinese camps, schools, and courtyards. These personnel, rather than doctors and nurses in hospitals and laboratories, were the agents who sought to work out new technologies. Adaptability, portability, and mobility became emblematic of Western medicine in such a process. These mobile units provided for the opportunity for the Overseas Chinese medical personnel, students, laborers, intellectuals, and soldiers to negotiate the rate of acceptance and resistance to new medical practices of blood transfusion, delousing, and nutritional intervention. Such understated intervention in Western medical practice, technologies, and theories by the Overseas Chinese shows the non-Western spaces were not simply a transplant for the Western personnel and technologies, but also a place where new forms of innovative scientific medicine could emerge and flourish.

My dissertation adds substantially to the history of twentieth century medicine in China by revealing the diversity of new medical practices, ideas, and initiatives brought about by the Overseas Chinese institutionalization of Western medicine. The expansion of medical care, training, and facilities in the Second World War and the Chinese Civil War argues for a revision of the portrayal of the Chinese state and people as helpless in these periods. It shows the potential of a temporal reinterpretation of twentieth-century China. A new understanding of the Overseas Chinese on their own terms, as well as in relations to indigenous Chinese actors and global medical agents, will shed new light on

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26 My approach draws on Keith Wailoo’s work that shows how wider racial trends in the United States were shaping and being shaped by medical technology and medical professionalization. Keith Wailoo, *Drawing Blood: Technology and Disease Identity in Twentieth-Century America* (Baltimore, MD: Johns Hopkins University Press, 1999).
the complex contestations and constitutions of the global and local in twentieth century China.

**Research Methodology**

I draw much of my research from three archival collections located in the United States and Taiwan—the American Bureau for Medical Aid for China Collection at the Columbia University Rare Books and Manuscript Library, the United Service to China Records at Princeton University Mudd Manuscript Library, and Robert Lim’s personal papers at the Institute of Modern History at Academia Sinica in Taiwan (*Jindaishi yanjiusuo Dang’anguan 近代史研究所檔案館*). The correspondence among the organizations’ key personnel in New York and China as well as their multiple unpublished reports were fundamental to my reconstruction of the the history of wartime and post-war medicine in Southwest China and Shanghai from 1937 to 1970. In addition, for this period, I consulted materials related to international medical aid and the workings of the military medical complex from the Ministry of Foreign Affairs (*Waijiaobu 外交部*) collection and Department of Health (*Weishengshu 衛生署*) materials at Taiwan’s Academia Historica (*Guoshiguan 國史館*), reports on various diasporic figures at the Nationalist Party History Archives in Taiwan (*Guomindang dangshiguan 國民黨黨史館*), proposed reforms on blood banking in the People’s Republic of China at the Beijing Municipal Archives (*Beijingshi dang’anguan 北京市檔案館*), China Defense Supplies files as well as ABMAC materials at the Hoover

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27 To my best knowledge, feasible access to the ABMAC and Robert Lim archives were only possible after 2009 with the creation of finding aids.
28 In China, archival and library collections in the Southwest are either inaccessible to researchers, or yet to contain declassified materials on the Nationalists. The narrative at the archives and libraries is still very much that the Communists fought the War of Resistance although mainland Chinese academics have taken major steps to revise this narrative over the last five years.
Institution’s archives, and files on the Chinese blood bank in the National Association for the Advancement of Colored People Collection at the Library of Congress in Washington, D.C.

For the history of Western medicine from 1911 to 1937, I draw extensively from the China Medical Board, Inc., collection at the Rockefeller Archives, which gave me insights into Robert Lim and other diasporic Chinese’s scientific research and involvement in military medicine at the Peking Union Medical College. In addition, I consulted the archives at the University of Cambridge and Edinburgh University to explain initial Overseas Chinese interest in the affairs of China, the academic subjects they studied, and the professors they worked with in Britain. I also consulted materials at the National Archives at Kew in the United Kingdom, which revealed how a letter of Robert Lim’s became important for sympathetic British politicians and leaders who lobbied for aid to wartime China. Finally, I used the Nanjing Provisional Government collection (Nanjing linshi zhengfu dang’an 南京臨時政府檔案) at the Second Historical Archives in Nanjing (Zhongguo Dierishi dang’anguan 中國第二歷史檔案館) as well as Xiamen University’s archival documents to reconstruct Lim Boon Keng’s time in Beijing and Xiamen.

Besides drawing on previously closed archives, I consulted newspapers and journal articles published in the United States, the United Kingdom, China, Taiwan, and Singapore for references to twentieth century medical institutions, public health, and the Overseas Chinese. In addition, I drew upon three recent oral history publications (kousu lishi congshu 口述歷史叢書), which included interviews with National Defense Medical Student doctors and alumni who moved to Taiwan from 1949 to 1950, from the Institute
of Modern History at Academia Sinica. I also use the numerous public writings, medical reports, and academic articles of Overseas Chinese doctors to understand their affinities with China and to explore their scientific and medical interests and research.

**Chapter Outlines**

Chapter 1 shows how Overseas Chinese doctors institutionalized Western science and medicine in the Late Qing and Republican periods (1910-1937). I show how they instituted public health measures through the North Manchurian Plague Prevention Services (1911-1930), developed China-based scientific research in physiology and parasitology at the Peking Union Medical College (1926-1936), and created new modes of scientific education at the Xiamen University (1922-1936). Their efforts led to the development of an extensive public health surveillance apparatus and the formation of an indigenous culture of Western medical research. They also brought to fruition large-scale philanthropic and government aid. The Rockefeller Foundation, foreign diplomats, and Overseas Chinese philanthropists provided an independent and diverse base of funding for these institutions. As a result, the Overseas Chinese medical personnel enjoyed a high degree of autonomy and could pursue their own medical and scientific interests independent of the government’s agenda. Even though these efforts created critical nodes of medical change across the country, they were largely limited to the urban cities in China and the region of Manchuria.

In chapter 2, I emphasize the intensification of medical outreach and institutionalization in the Second World War through Robert Lim’s Chinese Red Cross Medical Relief Corps. Such intensification was due to higher levels of political pressure from the state on the medical relief corps, as well as an outpouring of support from
Overseas Chinese for war relief efforts. The latter was crucial to the funding, operations, conceptualization, and development of medical relief from 1937 to 1942. These efforts culminated in the establishment of a comprehensive military medical system. Undergirding this system was an emphasis on preventive medical care such as delousing and nutritional intervention as well as the unprecedented use of mobile medical units. These units also doubled as mobile clinics and evacuation units in rural China. As a result of their intervention, the Chinese Red Cross Medical Relief Corps treated more than three million soldiers with various ailments, representing an underappreciated effort in the fight against the Japanese.

To supply manpower for the medical corps, Lim also developed a new medical training center, known as the Emergency Medical Service Training School (EMSTS), which I explore in chapter 3. Operating from 1938 to 1945, the school trained a total of 15,000 medical personnel, doubling the total medical personnel in the country. Such training was underpinned by the idea of mass medical training, where medical personnel would be trained quickly in large numbers for the war relief efforts. While Lim initially supported such a philosophy, he began actively to propose an alternative six-year medical program as the desired curriculum to improve medical education in wartime China. Such a proposal was controversial, and became quickly embedded in the wider battle for medical resources in the war. The American Bureau for Medical Aid to China and its rival, United China Relief, battled for control over the organization, with the latter criticizing the “impractical” six-year medical program proposal as a proxy to attack Lim and the American Bureau for Medical Aid to China. Both sides marshaled support from Chinese generals, local politicians, and Hong Kong- and Chongqing-based medical
personnel. Indigenous Chinese politicians saw this battle as a test case to extend the reach of the state into the institution’s everyday workings. As a result of these political battles, Lim had to leave his position as the head of the institute in late 1943. He would then take on the role of bringing a blood bank from the United States to China. His departure did not mean the end of his ideas, as he was able to install his preferred successor as the head of the medical training center.

Lim recruited several Chinese-American doctors, nurses, and technicians to set up the first Chinese blood bank in Kunming to draw blood for wounded soldiers on the battlefront, as delineated in chapter 4. Overseas Chinese creatively adapted imported blood bank technology to local wartime conditions to overcome the lack of clean water, the absence of reliable electricity, and the multiple cases of blood contamination. The chapter draws attention to the important role of medical technology in the operation of medical institutions. It also sheds light on the ordinary Chinese soldier and civilian’s reception of Western medical ideas, in this case, blood transfusion and blood banking. The blood bank personnel set up mobile units to draw blood from soldiers. But many refused, as they: 1) criticized the lack of communication by medical personnel on the nature of blood transfusion; 2) disliked the medical personnel’s high rejection rates of fellow soldiers who were allegedly too weak to donate; and 3) feared the potential debilitating effects of blood withdrawal. Eventually, the fortuitous intervention of supportive academics, students, and laborers in propagating the virtues of blood transfusion and blood banking ensured the bank’s relative success, and their efforts saved Chinese soldiers’ lives on the warfront.
In chapter 5, I seek to show how Lim tried to reconstruct the wartime complex of training centers, mobile medical units, and a blood bank in the form of a comprehensive National Defense Medical Center in Shanghai, and later in Taipei. The Chinese Civil War period (1945-1950) proved to be even more challenging than the War of Resistance with high levels of inflation and student unrest, declining support from the United States and Overseas Chinese, and more crippling, the impending defeat of the government by the Chinese Communist Party. Besides relying on ad-hoc support from indigenous Chinese leaders as well as from old allies such as American Bureau for Medical Aid to China, the leaders of the Center also sought out sympathetic allies in the U.S. Army and Congress after the Center moved to Taiwan. The U.S. Foreign Operations Administration agreed to fund the institution in 1954 on the pretext of drawing Overseas Chinese students away from the Communists and saved the National Defense Medical Center in Taiwan from financial and medical ruin.

In my conclusion, I point to the persistence of medical institutions from the Republican period to the present in China and Taiwan. For example, the National Defense Medical Center grew to a mid-sized campus near National Taiwan University. In 1999, the center moved to a new campus in Neihu, where, as of 2013, its enrollment is more than 1,800 students. American-style mobile blood bank services, which began in the Second World War, were reconstituted in Taiwan in the 1970s on the campus of National Taiwan University and in Mainland China on the Qingdao University’s campus in the 1990s. Xiamen University, which was run by Lim Boon Keng, remains a flagship

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institution of science in Fujian. These Republican-era institutions not only represented new workings of science, medicine, and technology and persisted in contemporary China and Taiwan, but they also were the harbingers of medical and scientific institutions, ideas, and practices to come.

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Chapter 1
From the British Empire to China, 1910–1937

A plague swept across the plains of Manchuria in 1910 killing more than 60,000 people in less than a year. It was brought under control by Wu Lien-teh, a Penang-born and Cambridge-trained medical doctor. Wu introduced strict quarantine measures, enforced the cremation of infected corpses, and mandated the wearing of masks by medical personnel in the region. His efforts are much celebrated in numerous historical narratives on the history of medicine in modern China, and reflect the beginnings of an expansive Western public health system in China.\footnote{See for example Carsten Flohr, “The Plague Fighter: Wu Lien-teh and the beginning of the Chinese public health system,” *Annals of Science* 53:4 (1996): 361-380.} Just ten years later, however, another plague broke but reflected the limitations of Wu’s efforts in the region. During the 1921 plague, local Chinese in Manchuria chose to ignore Wu, who sought to repeat the strategies he used in the 1910 plague. Wu propagated strict quarantine measures: he put controls on drugs recognized as ineffective in treating the plague and employed masks and protective gears in disposing of corpses. Manchurians reacted differently and turned mainly to local Chinese physicians, many of whom were trained in a combination of Chinese and Western medicine. These local doctors dispensed drugs freely, disposed of corpses without masks, and promoted opium smoking to alleviate symptoms of the plague.\footnote{Wu Lien-teh, *Plague Fighter; the Autobiography of a Modern Chinese Physician* (Cambridge, UK: Heffer, 1959), 119-121.}

By 1921, Wu had created an extensive anti-plague institution staffed with numerous doctors and inspectors. In addition, he had a network of isolation hospitals, and the support of the local police, who cooperated in stopping local Chinese from breaking relevant quarantine laws. An example of this new regime was an inspection officer’s
decision to stop and send a local laborer to the hospital after seeing the worker spit up fresh red blood.\(^3\) At the hospital, however, doctors found no traces of blood but rather the residual color of red apples that the worker had consumed hours ago. On the one hand, these strict measures reduced individual autonomy by sending individuals suspected of the plague to the hospital. On the other hand, this false positive illustrated the extent to which Wu sought to enforce anti-plague measures in Manchuria. These strict measures eventually saved many lives. As a result of Wu’s intervention, fewer than 10,000 people died in the 1921 plague compared to 60,000 in 1911.\(^4\) The 1921 plague also showed that while Wu’s efforts at institutionalizing Western medicine in Manchuria were effective at staving off the plague, he was less successful in changing individual Chinese behaviors. The plague demonstrated the limitations of a supposedly expansive pre-war medical system in North China. Measures to combat the plague were expensive, required the support of multiple stakeholders in the region, and were enacted at the expense of individual autonomy.

Besides Wu Lien-teh, there were several other Overseas Chinese doctors in China who faced similar challenges in their efforts in building up institutions of Western medicine and science in China. In addition to Wu, I will focus on two other doctors, Lim Boon Keng and his son Robert Lim Ko-sheng, who held prominent roles in China’s pre-war institutions of science and medicine. I will also briefly examine the careers of Penang-born Khaw Oo-Keh or O.K. Khaw and Wu Changyao (伍長耀), two physicians who assisted Wu and the two Lims in their respective institutions. As well as investigating their careers in China, I will delineate the nature of the institutions they

\(^3\) Wu, *Plague Fighter*, 120.

directed in China from 1911 to 1937. Lim Boon Keng served for a brief period as the first minister of health in republican China, the inspector-general of Beijing hospitals from 1911 to 1912, and the president of Xiamen University from 1924 to 1936. Wu Lien-teh fought the plague in North China in 1910, and directed the North Manchurian Plague Prevention Service from 1912 to 1930. He later led the National Quarantine Bureau in Shanghai from 1930 to 1937. Lim Boon Keng’s son, Robert Lim, headed the department of physiology at Peking Union Medical College from 1924 to 1936, and from 1936 to 1951 he directed the Chinese Red Cross Medical Relief Corps, the Emergency Medical Services Training School, and the National Defense Medical Center.

This chapter will delineate the diversity of the reasons for their participation in China and how they carried out their mission through an examination of their endeavors in China, as well as the opposition they faced in their medical and scientific duties. In the case of Lim Boon Keng, he appropriated the Late Qing reformer Kang Youwei’s (康有為 1859–1927) ideas of Confucianism to explain his beliefs and intentions in strengthening China’s public health and disseminating medical knowledge in the 1890s. Lim Boon Keng, who held on to his views of Confucianism, was not wedded to the political personalities of the day. He switched allegiance from Kang Youwei to Sun Yat-sen and later to Yuan Shikai (袁世凱 1859–1916) to maintain his position as a public health leader. Lim Boon Keng’s son, Robert Lim, was much less interested in Confucianism and the reform movement than his father. In contrast, Robert Lim saw his endeavors in China in the 1920s as a way to change popular perception of China as the “Sick Man of Asia.” Similarly, Wu Lien-teh saw scientific medicine as key to redeeming China’s dignity and its sovereignty among the nations of the world. Their diverse views were underpinned by
commonalities in their medical education in Britain and America, as well as their commitment in drawing Overseas Chinese into their existing networks of science and medicine. They were not only managers of public health projects in China, but they were also historians of medicine, leaders of universities, laboratory researchers, public intellectuals, and pioneers of military medicine. They worked in cities and regions across China (Xiamen, Beijing, Manchuria, Shanghai, Nanjing) and reached across international boundaries (the United States and Britain).

Part of the opposition to their endeavors, as I will show, reflected the rapid changes in Western medical sciences in the early half of the twentieth century. Foreign doctors based in China opposed Wu Lien-teh’s “new” ideas that diseases spread through the air, and through tabagans. Instead, they held on to the older views of communicable diseases, the plague in particular, were transmitted by rats. In addition, such opposition also reflected changes in the intellectual and social milieu of early and mid-Republican China (1911–1937). Elder Lim’s views, which were seen as radical by intellectuals in the 1900s, were considered dated and autocratic by the 1920s. Lu Xun (魯迅 1881–1926), a prominent May Fourth intellectual, led the attack, in 1926, on Lim Boon Keng’s views on science and Confucianism when he was working at Lim’s university, and presented a more progressive and liberal vision of what the university should be. Lu Xun’s departure represented a missed opportunity for the development of liberal humanities in South China, but it also reflected the relative endurance of the Overseas Chinese participation in China.

More important, this chapter reveals the factors underpinning the growth and limits of Western medicine prior to the Second World War. I argue that the high level of
funding for the Overseas Chinese was instrumental for the growth of Western medical institutions. Donations from Overseas Chinese in Southeast Asia as well as from the Rockefeller Foundation in the United States meant that these Overseas Chinese had ample financial resources to advocate for science, medical research, and Western-style public health. Their medical knowledge, physical mobility, networking abilities as well as their strong command of English were crucial to their relative success in developing institutions of Western science and medicine in China.

Yet, a relative absence of accountability came with this high level of non-governmental funding and the trust the government accorded these doctors. Overseas Chinese saw fit to take their time and focus on their own interests and thus were less interested in changing the everyday behavior of the Chinese people towards Western science, medicine, and technology. The extensive expansion of the infrastructures of public health, medical research, and medical training in the early years of the Republic was real and substantial, even though their proclaimed ambition at reshaping the everyday practices of hygiene and medicine remained largely unfulfilled.

Western Medical Training

British colonialism in Malaya provided the impetus for the education of many of these Overseas Chinese doctors. The British governor of Malaya founded the Queen’s scholarships in 1885 to fund the education of young Malayans in the United Kingdom. A total of forty-five students studied medicine, law, and engineering in Britain from 1886 to 1910, and a few ended up in China after graduation. The Queen’s scholarship was as a key mechanism of British colonial authorities who hoped to create pro-British elites who

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5 Wu Lien-Teh, and Ng Yok-Hing, The Queen’s Scholarship of Malaya 1885-1948 (Penang: Penang Premier Press, 1949)
6 Ibid.
would exemplify the advantages of education and exude the spirit of the metropole after their return to the colonies. In 1887, Lim Boon Keng was the first ethnic Chinese in Singapore to win a Queen’s scholarship, and the scholarship funded Lim’s medical studies at the University of Edinburgh from 1888 to 1892. At the University of Edinburgh, Lim undertook a comprehensive and broad study of the sciences that were the basis of biomedicine. He attended classes on botany, anatomy, practical physiology, institute of medicine, pathology, surgery, and clinical medicine. He graduated with a first class honors, the only student of 204 graduates to be so honored that year. Even though Lim did not enroll in public health classes at the University, he would, in 1911, use British texts in public health to establish the health services for the new Republic of China.

Similarly, Wu Lien-teh, who also received a Queen’s scholarship, in 1896, studied medicine at the University of Cambridge. Besides learning the basic sciences and geology, Wu took classes in pharmaceutical chemistry as well as in human anatomy and physiology. After graduating from Cambridge, Wu obtained a residency at St Mary’s Hospital where he was awarded the Kerslake Scholarship in pathology in 1901 and the Cheadle gold medal for clinical medicine in 1902. He traveled and studied briefly with Ronald Ross at the Tropical Disease Institute at Liverpool, bacteriologist Karl Fraenkel at

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7 University of Edinburgh, “Graduation in Medicine and Surgery; Degrees and Diplomas in Medicine and Surgery, 1893-1894,” University of Edinburgh Archives.
9 Lim Boon Keng Matriculation File for the Department of Medicine, University of Edinburgh Student Records, University of Edinburgh.
10 See “Second Examination for Medical and Surgical Degrees” for the years 1898 and 1899 as well as “Third Examination for Medical and Surgical Degrees, Easter Term, 1901,” Cambridge University Archives, Cambridge University.
Halle-an-der-Saale, and immunologist Elie Metchnikoff at the Pasteur Institute. In studying with these bacteriologists and immunologists across Europe, Wu was aware of the latest research in the field. In particular, his experiences in Britain were formative for his later career. "Practical medicine," such as the sanitary sciences (pioneered by John Snow, Edmund Parkes, and John Simon), vaccination (promoted by James Simpsons), tropical medicine (begun by Patrick Manson), and antiseptic surgery (developed by Joseph Lister), represented cutting edge scientific medicine in late nineteenth century United Kingdom. Wu was armed with the latest early twentieth century knowledge of communicable diseases, which proved to be fortuitous in his fight against the plague in North China.

Besides the "pull" factor of job opportunities in China, the case of Wu Lien-teh also revealed the "push" factor that saw Wu moving from Malaya to China. Upon Wu’s return to Malaya in 1903, he embarked on an active anti-opium campaign, which irritated the British colonial government and local Chinese opium traders. In the case of Wu, who strongly felt that ridding Malaya of opium would improve health conditions, the Queen’s scholarship brought about an opposite result: instead of bolstering pro-British

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11 Howard L. Boorman, Richard C. Howard, and Joseph K. H. Cheng, Biographical Dictionary of Republican China (New York, NY: Columbia University Press, 1967), 440-443. Ronald Ross was a close friend and star student of Patrick Manson, one of the first British doctors to investigate tropical medicine in China in the 1860s. Ross and Manson exchanged 173 letters between 1895 and 1899. He later fell out with his mentor in 1912. With the help of Manson, Ross won the Nobel Prize in 1902 for uncovering mosquito transmission of malaria. See E. Chernin, “Sir Ronald Ross vs. Sir Patrick Manson: A Matter of Libel,” Journal of the History of Medicine and Allied Sciences 43, no. 3 (1988): 262-273. Elie Metchnikoff was a prominent Russian scientist who would later win the Nobel Prize in 1908 for his research on the comparative pathology of inflammation. Clearly Wu was working with scientists who were at the cutting edge of medical research on bacteriology, immunology, and tropical medicine.

12 See Michael Worboys, Spreading Germs: Disease Theories and Medical Practice in Britain, 1865-1900 (New York, NY: Cambridge University Press, 2000) and Benjamin Elman, On Their Own Terms: Science in China, 1550-1900 (Cambridge, MA: Harvard University Press, 2005), 289-290. Patrick Manson established the London School of Tropical Medicine in 1898, which focused on fighting diseases such as malaria.

13 Wu, Plague Fighter, 242-246.
elite attitudes it created a civic-minded doctor who would challenge the orthodoxy on opium and governance in Malaya. To undermine his position, the colonial authorities soon charged Wu with illegal possession of an ounce of the drug, which Wu had kept in his clinic. Wu saw this charge as a warning by the colonial government against his advocacy and decided against staying in Malaya for the long term. In 1908, he moved to China to take up the position of vice-director of the Imperial Medical College in Tianjin at the behest of Yuan Shikai, then the grand councilor of the Qing government.

Robert Lim’s trajectory was not unlike his father and uncle’s. He completed his undergraduate degree in medicine and surgery at the University of Edinburgh, and following a short stint in France as a medical officer in the British Army, Lim returned to Edinburgh to finish his doctorate degree in histology and physiology. His advisor Sir Edward Scharfer (1850–1935) praised Lim as one of the “few Chinese students who are prepared themselves for teaching the fundamental sciences.” Under Scharfer’s guidance, Lim published eight articles to fulfill his doctorate requirements. The articles ranged from the histology of tadpoles fed with thyroid to the effects of adrenalin on pulmonary circulation. His research focused on general histology, which was the study of the anatomy of cells and tissues of plants and animals under varying experimental conditions. In addition, America by the 1920s had emerged as an attractive option for Lim as the American medical sciences grew in strength and reputation. In 1924, after a short stint of teaching at Edinburgh, He accepted a Rockefeller Fellowship to conduct

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14 Ibid. It was allegedly required that a registered doctor apply for a license to dispense opium, even though it could be bought freely from any opium shop in British Malaya. The local courts fined Wu one hundred Straits dollars.
15 Schafer to Greene, October 20, 1922, folder titled “Physiology – Lim R.K.S.,” Box 123, Folder 890, China Medical Board (CMB) Inc., Rockefeller Archive Center, Sleepy Hollow, New York (hereafter designated RAC). Schafer was then the chair of physiology at Edinburgh University and one of the first in the world to research insulin.
research with AJ Carlson, a Swedish-American physiologist who headed the department of physiology at the University of Chicago. When the time came for hiring a senior member in the physiology department at Peking Union Medical College, Lim was more than qualified with his credentials from Edinburgh and Chicago.

In sum, all three doctors excelled in their respective medical education, which provided the skills and knowledge base for their medical activities in China. This was, however, a necessary but insufficient condition for them to flourish in China. They had to exhibit their interests in China, be they ideas of Confucianism or desires for medical modernity in the emerging nation-state.

**Acting Chinese and Changing Loyalties**

A few years after his return to Singapore in 1892, Lim Boon Keng became a supporter of the reform movement in China led by Kang Youwei (康有為 1858–1927). Kang was then an active scholar who sought to organize study groups across China to promote his ideas for a strong and wealthy China. He joined the Qing Imperial Court in 1898 and sought to bring about dramatic reforms in the Qing government. He, however, only lasted for only 100 days before the Empress Dowager deemed Kang’s reforms as too radical for the court. The Dowager purged Kang and his followers from the Imperial Court, and Kang left Beijing soon thereafter. Kang by then had likened himself to a reform-minded Confucius, an “uncrowned” King, akin to a Christian savior, who would save the Chinese people. Lim was attracted by Kang’s discourse and espoused similar views in the *Straits Chinese Magazine*, a magazine he founded to reach out to the Overseas Chinese in Southeast Asia, Britain, and the Americas. Lim believed that

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Confucianism should be the national religion for all Chinese Overseas and the religion should be based on rationality and logic. He argued that Western sciences were compatible with Confucianism, as they were inherently logical and rational.\textsuperscript{18} Such attempts to articulate views of science and Confucianism among the Overseas Chinese in English were particularly appreciated by Kang Youwei and his protégé, Liang Qichao (梁啓超 1873–1929). Kang, in particular, reached out to Lim Boon Keng after Kang had been purged from Beijing. Kang had asked Lim Boon Keng to contact his friends in the international community to save Kang and his followers from obliteration by the Qing government.\textsuperscript{19} Lim presumably did so, but it was to no avail as both Kang and Liang were exiled from China soon after.

After Kang and Liang went into hiding, Lim turned to working for the Qing government. In 1908, the Qing state appointed Lim as their main medical representative abroad. In a trip to the Dresden International Hygiene Exhibition in 1911,\textsuperscript{20} Lim led the Chinese delegates and received praise from a United States delegate who noted that the Chinese presentation demonstrated their desire to “introduc[e] hygiene methods in [their] society.”\textsuperscript{21}

Even as he was working for the Qing government, Lim was supporting Sun Yat-sen-led revolutionaries on the sly. When Sun succeeded in toppling the Qing government

in 1911, he appointed Lim as the first head of the Department of Health in the Ministry of Internal Affairs of the temporary Republican government in Nanjing. There, Lim supervised quarantine facilities at customs, monitored the outbreak of viruses and plagues, and kept track of the sales of medicine and recreational drugs (xihaoxin 嗜好品) in China. After the Sun government collapsed in Nanjing, Lim accepted an invitation from Yuan Shikai, Sun’s opponent, an invitation to become the inspector of hospitals in Beijing. In Beijing, he published a Chinese primer, *Elements of Popular Hygiene*. The book was based on the British doctor E.S. Reynold’s *Primer of Hygiene* and was funded by Lim Kwee Eng of the Singapore Chinese Chamber of Commerce. Distributed from Beijing and Singapore, the handbook lectures were divided into eleven chapters covering the causes of diseases, the origins of bacteria, the necessities for proper food preparation, the design of modern buildings and furniture that facilitate hygienic living, and the development of a modern public health system. *Popular Hygiene* was a handbook to reshape Beijing according to British standards of public health.

During his time in Nanjing and Beijing, the elder Lim also began working on his Chinese-language book, *The Principles of Confucianism* (*Kongjiao Dagang* 孔教大綱), which was published in Shanghai in 1914. The book was a programmatic vision of how Confucianism should operate in the new Republic of China. Lim based his version of Confucianism on the triangulation of the *ti-yong* 體用 formula and theories that

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23 Lim, *Putong*.
advocated wholesale Westernization of China. To appeal to a nationalistic Chinese audience Lim used the pre-modern concept of *gezhi* 格致 to tie the importance of science to Chinese traditional learning. Moreover, *Principles* also had a clear overseas Chinese component as Lim boasted that he had developed his ideas through leveraging his numerous years of encounters with the West and Europe. His support for reformers, and later revolutionaries, as well as his own exposition of the relationship between science and Confucianism were important factors that propelled him to the highest level of public health administration in China. His frequent shifts in political loyalty were less important than his knowledge of Western medicine, which allowed him to shape public health in Nanjing and Beijing. In addition, his strong command of the English language allowed him to be the face of public health in China while abroad at medical conferences.

Like his father, Robert Lim studied medicine at the University of Edinburgh, where he received a Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B) in 1919. He continued at Edinburgh and earned a Doctorate of Science (D.Sc) and Doctor of Philosophy (PhD) in 1920 and 1924, respectively, at the university. During his time in Scotland, Lim was deeply concerned about medical conditions in China. In a 1921 essay, “The Medical Needs of China,” the younger Lim saw China as the “Sick Man of Asia”

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25 Unlike the pure ti-yong formula, which stressed that the Chinese had to keep their exceptional essences when appropriating Western learning for practical purposes, Lim’s theory suggested that the West and Japan shared a fundamental metaphysical principle with China. While the ti-yong formula excluded and differentiated essences between the East and the West, Lim’s ideas included the possibility that each society has the potential to prosper through strengthening its cultural structures. Understanding how the West and Japan drew upon their essences—not just analyzing their science and technology—is therefore essential to understanding how China can similarly become powerful and wealthy. Lim, however, was unsympathetic to those who called for wholesale Westernization. He warned the Chinese to avoid “negative” Western behaviors such as excessive consumption of liquor, meat, and drugs. To Lim, emulating the Confucian sage (*shengren* 聖人); fulfilling rites and principles (*liyi* 礼仪); acting upon morals (*daode* 道德); and respecting one’s ancestors (*zuzong* 祖宗) remained fundamental aspects of being Chinese. To Lim, the Chinese people should redeem themselves by acting upon the Confucian essences embedded within Chinese culture rather than mindlessly appropriating Western values that were harmful.
because of its lack of modern Western medical doctors. To provide China with medical
students, Lim called for doctors to produce a national medical curriculum that
incorporated translations of Western medical writings and medical tracts by indigenous
doctors. ²⁶ He urged doctors to use the official language in China (Guan hua 官话) to
communicate with the public at large, instead of using local dialects or English. He urged
them to have “complete esprit de corps” to further medical goals in a united fashion. Like
his father, he did not reject the influence by the West. He acknowledged the historical
contributions of missionaries in setting up hospitals in China and urged foreigners to do
more to aid China’s medical modernization. Even though Robert Lim had never been to
China, he identified his medical vision and concerns with that of China rather than the
colony of Singapore or his adopted land of Britain.

The Rockefeller Foundation, which had sought to make Peking Union Medical
College more Chinese, looked favorably upon Robert Lim’s identification with China. It
set up the China Medical Board to take over the operation of Peking Union Medical
College in 1914 and poured more than 45 million US dollars into the organization from
1914 to 1949. ²⁷ By the 1920s, the College was the premier medical institution in China,
largely because of the Rockefeller Foundation’s financial resources and political will. ²⁸ In
1921, John D. Rockefeller, Jr. (1874-1960) publicly stated, “So we must look forward to
the day when most, if not all, of the positions on the Faculty…will be held by Chinese,

²⁷ Johnson, Childbirth, 131.
²⁸ The Rockefeller Foundation was a philanthropic organization and private foundation founded in the
United States in 1913 by the Rockefeller family. John D. Rockefeller (1839-1937) was the founder of
Standard Oil. The Rockefeller Foundation set up the China Medical Board in 1914, which took over the
operation of the Peking Union Medical College from a group of American and British Missionaries in
1914. These missionary organizations had founded the College in 1906.
when the Board of Trustees…will include leading Chinese.” Recruiting Chinese faculty members, however, proved too difficult as the bar was set high. The College required professors to have a good command of English, international medical training, relevant teaching experience, and willingness to work in Beijing on Peking Union Medical College salaries. Such requirements automatically excluded the vast majority of Chinese people in China. As a result, few people were actually qualified to be “Chinese” faculty members at Peking Union Medical College.

To fulfill these requirements, Peking Union Medical College leaders looked towards reputable Chinese intellectuals for their advice and offered a probation period for recently-trained Chinese scientists in the form of fellowships and visiting appointments. Dr. Alfred Sze (施肇基 1877-1958), a key Chinese diplomat and then China’s representative to the United States, recommended Robert Lim to the College’s Acting Director Roger Greene. When Greene asked Lim’s advisor, Sir Edward Albert Sharpey-Schafer, the chair of the physiology department at Edinburgh, who coined the term “insulin,” for his recommendation, Schafer praised Lim as one of the “few Chinese students who have [sic] prepared themselves for teaching the fundamental sciences.” Acting Director Roger Greene went ahead and appointed Lim as a visiting professor of physiology in 1923. Greene liked Lim during this probationary period and saw him as a potential leader at the College. He was still unsure, however, whether he should go ahead with the difficult task of replacing the existing non-Chinese head of physiology with Lim.

Greene consulted Wu Hsien (吳憲 1893–1959), a Chinese professor of biochemistry,

29 Bullock, Transplant, 22.
30 See folder entitled “Physiology – Lim R.K.S.,” Box 123, Folder 890, RAC. This was reminiscent of Alfred Sze’s recommendation of Wu Lien-teh in 1908 to the Qing government.
31 Schafer to Greene, October 20, 1922, folder entitled “Physiology – Lim R.K.S.,” Box 123, Folder 890, CMB Inc., RAC.
who agreed to interview Lim. Wu’s confidential report was telling of the inherent tension in increasing the number of Chinese faculty members:

Wu went on to say that while Lim is originally by race a Chinese, we would have to consider that he is foreign-born and reared and educated, so that from many practical aspects he is unfamiliar to North China, or indeed to China as a whole, as a Westerner might be, and this would perhaps give us some pause. If however this should be outweighed by the fact of his pure Chinese blood, and observation of his teaching work should produce as favorable an impression as his personality has made thus far, he would be in favor of offering Lim the post.  

On paper, the college was looking to recruit more Chinese faculty. In reality, many of these eligible Chinese considered were neither born nor trained in China. Was Peking Union Medical College hiring based on ethnicity, abilities, personalities, outside perceptions of the institute, or recommendations? Dr. Robert Lim told the College’s new director Henry Houghton that if he was recruited based on his race, and only nearly as good as the foreigner he was replacing, he would not accept the post for the head of physiology. Houghton wrote back to Lim that he was offered the job based primarily based on his scientific and academic suitability but that Peking Union Medical College felt an “obligation to build up as rapidly as seems feasible the Chinese membership of our staff.” Even though race was a secondary factor in Lim’s hire, his identification with

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32 Conversation with Dr. Wu Hsien, November 27, 1924, folder entitled “Physiology – Lim R.K.S.,” Box 123, Folder 890, CMB. Inc., RAC.
33 Houghton to Eggleston, April 23, 1925, folder entitled “Physiology – Cruickshaw,” Box 122, CMB. Inc., RAC.
34 Houghton to Lim, April 15, 1925, folder entitled “Physiology – Lim R.K.S.,” Box 123, Folder 890, CMB. Inc., RAC.
China was nonetheless an important factor. It married the concerns of Robert Lim as an medical expert who happened to be ethnic Chinese and the concerns of the College, which wanted to make the institution more Chinese.

Lim’s appointment also opened doors for other Overseas Chinese to work there. He recommended Penang-born O.K. Khaw to Greene on June 3, 1924, calling him “a good student and hard worker.”

Khaw received a Queen’s Scholarship in 1907, and studied medicine at the University of Edinburgh. In the 1920s, he worked in Xiamen University as the chief aide to University President Lim Boon Keng. Greene appreciated Robert Lim’s recommendation and saw Khaw’s hire as an opportunity to develop teaching materials for Chinese universities with Xiamen University.

Khaw waited till December 15, 1928 to take up the position of assistant professor of parasitology and pathology at Peking Union Medical College. Khaw did well at the College and was promoted in 1935 to associate professor. On September 7, 1937 the College governing council appointed Khaw associate superintendent of the Hospital and Public Outpatient Services and later the head of the Department of Public Health after the departure of many scholars to South China during the Second World War. As the final chapter will show, Khaw joined Lim at the National Defense Medical Center in Shanghai, where he became the head of parasitology, and he later moved with the institution when it settled in

35 Lim to Greene, June 13, 1924, folder entitled “Physiology – Lim R.K.S.,” Box 123, Folder 890, CMB. Inc, RAC.
36 Wu, Queen, 10.
37 Greene to Lim, June 18, 1924, folder entitled “Physiology – Lim R.K.S.,” Box 123, Folder 890, CMB. Inc, RAC.
38 Khaw to Houghton, April 16, 1927, folder entitled “Parastiology- Staff, OK Khaw,” Box 114, Folder 826, CMB. Inc. RAC.
39 Hoeppli to Committee of Professors, April 13, 1935, folder entitled “Parastiology- Staff, OK Khaw,” Box 114, Folder 826, CMB. Inc. RAC.
40 Governing Committee, Medical Services Division, September 7, 1937, folder entitled “Parastiology-Staff, OK Khaw,” Box 114, Folder 826, CMB. Inc. RAC.
Taipei. As with Lim, a similar pattern of peer recommendation and work evaluation led to the rise of Khaw at Peking Union Medical College.

Besides Khaw and Lim, there were two other “Chinese” department heads: Fujian-born Wu Hsien, the head of biochemistry who studied at the Massachusetts Institute of Technology and Harvard University, and Penang-born Lim Chong-eang (林宗揚 1891-1988) (no relation to Lim Boon Keng and Robert Lim), the head of bacteriology who obtained his degrees at Hong Kong and Johns Hopkins University. Their dominance as the heads of department suggests that the “Chinese” recruitment process at Peking Union Medical College required ethnic Chinese doctors to be fluent in English, to be medically trained in the West, and to want to work and live in Beijing. These requirements meant that only a select group of individuals, for example, Overseas Chinese medical personnel and indigenous Chinese trained abroad, could work at the Peking Union Medical College. They helped train many of the 185 medical students who graduated from the College from 1924 to 1937.41

Robert Lim (I): Developing Scientific Research in Beijing (1924-1937)

Existing historiography on Peking Union Medical College stresses the contributions of Americans at the institution, in particular, the role of John Grant in introducing public health to rural communities in the vicinity of Beijing.42 Except for the oft-mentioned archeological and medical uncovering of the Peking Man by the College, little is known about the work of Chinese colleagues at the institutions or the scientific

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41 Gerald Choa, “Heal the Sick” Was Their Motto: The Protestant Medical Missionaries in China (Hong Kong: Chinese University Press, 1990), 234.
As I will show, Lim and his colleagues were active in conducting scientific and medical research at the College, using the College and different field-sites in China as laboratories for their research.

Lim, in particular, was willing to collaborate with scientists across departments and from other colleges to further research on physiological studies of nutrition. Together with Wen Chao Ma and An Chang Liu of the anatomy department, Lim showed in 1927 the prominent role the Golgi apparatus played in gastric secretion as well as in other bodily functions. Because the Golgi apparatus was found to work with gastric secretion, Lim suggested that an understanding of the formation of gastric cells could be derived from earlier research on the formation of similar cells. In understanding the history of the formation of such cells, Lim, Ma, and Liu’s research offered new clues to the history of the stomach.

After seeking to understand the formation of gastric cells, Lim wanted to know what constituted “normality” in gastric metabolism. One of the fundamental principles of physiology was to first understand the normal so as to identify the pathological. Lim wanted to know what elements of the body were utilized by the body during metabolism, controlling for other gastric phenomena. Lim conducted his experiments on vivi-perfused stomachs of dogs and showed that sugar and lipids were normally utilized in glandular

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44 Wen Chao Ma, RKS Lim, An-Chang Liu, “Changes in the Golgi Apparatus of the Gastric Gland Cells in Relation to Activity,” Chinese Journal of Physiology 1, no. 3 (1927): 305-330. Lim was one of the co-founders of the Chinese Journal of Physiology. The Golgi apparatus was uncovered in 1898 and is integral in modifying, sorting, and packing macromolecules for cell secretion or use within cell.
metabolism, but not blood or oxygen.\textsuperscript{46} A 1928 experiment by Lim and Tsang-gi Ni on the carbohydrate metabolism of the normal, phlorizinised, and diabetic vivi-perfused stomachs showed a similar phenomenon.\textsuperscript{47} There was no substantial increase in sugar intake occurring in the non-secreting phlorizinised and diabetic stomach, but sugar intake was observed in over half of the normal stomach. In so doing, Lim and Tsang-ni concluded that it was not the stomach that required sugar but the process of secretion that needed sugar.\textsuperscript{48}

After this research on the “normality” of the stomach, Lim and his associates were interested to know what would increase gastric secretions to “pathological” levels. They decided to find out if calcium would do so. Research prior to 1930 had shown that increases in calcium intake caused no increase in gastric secretion levels. In previous experiments, observations of post-calcium intake were made for only a few hours. Lim’s insistence in increasing the length of observation from a few to 18 hours appeared to show otherwise. Gastric secretion following a 200gm meat meal with feeding bones increased greatly after 18 hours as compared to the first 4 hours.\textsuperscript{49} However, when Lim gave pig’s hooves, hard rubber, and brass tubing to the dogs, it had the same stimulating effect as that of the bones. Lim concurred with the existing theory that calcium did not increase stimulation, but with the additional knowledge he concluded that the ingestion of

\textsuperscript{46} Tsang-gi Ni and RKS Lim, “The Gas and Sugar Metabolism of the Vivi-perfused Stomach,” \textit{Chinese Journal of Physiology} 2, no.1 (1928): 45-86. Vivi-perfused stomachs are stomachs deprived of nerve supply.
\textsuperscript{48} Ibid. They concluded that sugar “is continuously absorbed by the quiescent organ, so that any increase in utilization would probably be reflected in an augmentation of the intake.”
hard objects increases the level of gastric secretion; that is, the stimulation of gastric secretion is mechanical.

Besides making critical advances in the physiology of nutrition, Robert Lim collaborated with two colleagues in other departments in research on the nervous system. They were interested in discovering if nerve impulses can go through parts of the body induced by narcosis, otherwise known scientifically as depressed or phrenic regions. Some scientists argued that nerve impulses could travel through narcotized nerves, but most scholars generally agree that Dr. Toyojiro Kato (1916–1944) of the Tohoku Imperial University School of Medicine in Sendai showed that nerve conduction stops almost immediately in these phrenic regions. Lim improved on the research of scientists working on the Kato’s school of thought by avoiding three major defects: the irregularity in the caliber of the nerves, the internal and external spread of the current, and the use of toxic narcotic fluid to create depressed regions. With the fine-tuning of these perceived defects, Lim too saw that nerve impulses could not go through a region of depression. He concluded in favor of Kato’s argument after conducting an experiment that created a region of neural depression by a process of cooling the nerves of dogs and other animals to low temperatures instead of through toxic narcotics. He used these animals’ mechanical reaction as a proxy for direct measurement of nerve reactions.

O.K Khaw’s main research at the College was an article he co-authored with the head of the parasitology department on the *Clonorchis sinesis*, a tropical worm that infected many Chinese in South China with clonorchiasis. Patients suffering from the

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disease, if left untreated, face symptoms related to a liver infection, ultimately leading to the failure of the organ. Khaw and his colleague published a 269-page extensive investigation of clonorchiasis published in the *American Journal of Hygiene* in 1927. The article reported on fifty-three clinical cases from the central and south China provinces of Hunan and Guangdong. They undertook research on the epidemiology of the clonorchis worm, the life cycle of the worm and its manifestation as an adult, experimental therapy for clonorchiasis, as well as ways of preventing the diseases. Their experiments showed that the key to avoiding contracting the disease was to avoid consuming raw fish from unclean waters. Khaw also went on to investigate a tropical lung fluke called *Paragonimus westernaii*.\(^5^2\) Khaw discovered that people ingested this lung fluke from eating crabs “pickled in native wine and shrimps, seasoned in soy sauce or vinegar.”\(^5^3\) However delicious the cuisine, he warned of possible cysts infected by the tropical lung fluke.

Animals at the Peking Union Medical College, as well as worms and flukes in central and south China provided the basis for Lim and Khaw’s substantial research, which ranged from revealing the physiology of digestion and nutrition to a comprehensive exposure of the *Clonorchis sinesis* problem in China. Together, they published their findings in international journals such as the *American Journal of Physiology, American Journal of Hygiene, Experimental Physiology*, and the *Journal of Parasitology*. They undertook serious research in China using the model of Western science and medicine and published their results in prestigious international and domestic journals.


\(^{53}\) Ibid.
Robert Lim (II): Birth of Military Medicine in China (1928–1937)

Besides his active involvement in research at Peking Union Medical College, Robert Lim was also interested in promoting the organization of professional military medical corps in China. His interests stemmed from having participated in the British medical corps in his undergraduate days. As early as 1928, Lim headed south from Beijing to Nanjing for a medical conference held by the newly formed Nationalist government. Lim was dissatisfied with the existing Army Medical College, which Japanese-trained Chinese medical personnel led, and proposed the organization of a British-style military medical corps, which would be led by Wu Lien-teh.\(^5^4\) Wu could not take up his suggestion because at the time he was involved in protracted diplomatic negotiations with the Japanese and Russians, who were expanding their sphere of influence in Manchuria in late 1920s. Wu was seeking, instead, to maintain the presence of the North Manchurian Plague Prevention Services in Manchuria.

Having previously advocated for a British-style military medical corps, Lim seized the initiative to establish a similar body when the Japanese briefly invaded Jehol, North China in 1932. Together with the minister of health and Peking Union Medical College professor Lui Rui-heng (劉瑞恆 1890–1961) and 21 College hospital staff members and students, Robert Lim spent three months in North China provisioning medical aid to wounded Chinese soldiers. Lim also tapped into wider Chinese Red Cross resources to set up a medical system that would treat wounded Nationalist soldiers on the warfront instead of evacuating them hundreds of miles away to Beijing or Tianjin as had been traditionally done. In a particularly memorable incident, Lim enforced a medical

\(^{54}\) Lim to Houghton, July 18, 1928, folder entitled “Physiology – Lim R.K.S.,” Box 123, Folder 890, CMB. Inc, RAC.
blockade that prevented senior Nationalist officials from retreating in their motorcades without the wounded infantrymen, an action that earned him fame beyond academic circles. After hospital staff and students returned to the College in 1933, Lim organized them officially into the Peking Union Medical College Medical Corps. He also required the students to undergo hour-long bi-weekly drills and to attend weekly lectures and demonstrations on first aid, field sanitation, and field medical administration. Lim’s 1932 intervention initiated the birth of modern military medicine, but it finally came to fruition only in 1937 when, during the War, he worked towards forming a military medical complex in Southwest China.

In sum, in collaborating with researchers across disciplines and fostering an active research culture, Lim and his colleagues were contributing to the development of Peking Union Medical College as a serious and viable international research institution. It helped that the Rockefeller Foundation and the China Medical Board supported it unreservedly and that senior Peking Union Medical College officials dealt with external political pressures from China and America, thus freeing Lim to conduct his medical research and activism in China in an unabated fashion. Robert Lim and his colleagues in the physiology department also started new academic journals such as the *Chinese Journal of Physiology* and contributed to a global community of scholarship in international journals. Furthermore, Lim’s interventions in military medicine helped saved lives and connected Peking Union Medical College with the wider medical concerns of China. The

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55 “Notes by Dr. Robert McClure on Peking Union Medical College war-workers, August, 31, 1938,” in folder entitled “Criticism 1933-44,” Box 35, Folder 250, CMB Inc., RAC.
56 “Chapter of the Acting Director for the Academic Year Ended June 30, 1944,” Box 49, Folder 341, CMB Inc., RAC.
College’s role as a research institution and as an institution at the forefront of active military medicine was unprecedented in Chinese medical history. Lim and his diasporic networks were indispensable to the College’s success in the early and mid-Republican period.

**Lim Boon Keng: Building the Sciences at Xiamen University (1921-1936)**

At the same time Robert Lim was working in North China, his father, Lim Boon Keng, was creating a premier institution of science at Xiamen University (*Xiamen Daxue* 廈門大學). He had the help of three prominent Overseas Chinese: Parasitologist O.K. Khaw became Lim Boon Keng’s de-facto personal secretary and spokesman from 1921-1925; Engineer Liu Shuqi (劉樹杞 1890–1935), a former professor at Columbia University, headed the sciences at Xiamen University from 1921–1928; and Tan Kah Kee (陳嘉庚 1891–1961), a Singapore-based businessman, founded the University. Tan had made his fortune in the 1910s from his rubber plantations, manufacturing, real estate, rice trading, and import and export brokerage in Southeast Asia. Committed to developing education in his native land, Tan founded Xiamen University in 1921, and invited Lim Boon Keng to be the first president of the University. Tan supported Lim’s endeavors to the point of selling some of his assets during the Great Depression to continue funding the University.\(^{58}\) It was no wonder that Lim announced in a 1922 report that the University would established a “Tan Kah Kee College of Science” (*Chen Jiageng* 陈嘉庚 College of Science)...

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\(^{58}\) See Boorman, *Tan*, 168.
to conduct interdisciplinary research and conduct research in chemistry, physics, biology, geography, and zoology.\textsuperscript{59}

Lim’s commitment to the sciences was supported by a biological view of the University. In a 1931 speech at Xiamen University, Lim argued that the University was a living organism: its buildings were the body, the teaching staff and the Council of Administration the nervous system, and students served as the “vegetative function of the organism.”\textsuperscript{60} In line with his belief that science cannot coexist without a spiritual essence, he argued that students have souls that needed to be nourished and nursed in a clean and hygienic environment so as to become citizens of a model community. Students in such a community should exercise regularly and learn to be gentlemen in order to be healthy and refined. The sense of control towards the enterprise of Xiamen University was undergirded by biological analogies. Lim explained:

\begin{quote}
The emphasis on scientific teaching has not only benefited our University alone by attracting to it the earnest workers in science, but has also produced by a natural repercussion good results elsewhere in the whole country, compelling school and college authorities to pay close attention to the teaching of science.\textsuperscript{61}
\end{quote}

Lim singled out the zoology and botany departments for their cutting edge research as well as their ability to attract world-renowned professors. In addition, Lim called for a medical school at Xiamen University in partnership with Wu Lien-teh, who

\textsuperscript{59} Lim Boon Keng, “Lin Wenqing xiaozhang baogao 林文慶校長報告 [Report by the President Lin Wenqing]” in Xiamen daxue xiaoshi ziliao 廈門大學校史資料 [The Historical Materials of Xiamen University], ed. Xiamen daxue xiaoshi bianweihui (Xiamen: Xiamen daxue chubanshe, 1987), 224-229.

\textsuperscript{60} Lim Boon Keng, \textit{On the Tenth Anniversary of the Founding of Amoy University} (Unknown publisher, 1931), 14.

\textsuperscript{61} Ibid., 3.
had just set up quarantine stations in Xiamen on behest of the Nationalist government. Even though Lim was unable to fulfill his dream of developing a medical school at Xiamen University, he could still push for the sciences at the University. The overall importance of the sciences at Xiamen University was reflected in the records of the local gazette. Out of the 122 graduates noted in the *Xiamen Gazetteer*, 73 of them were from Xiamen University, and 26 of the University graduates, the largest group among graduates, were from the science and engineering departments.\(^{62}\)

In sum, the flourishing of Xiamen University from 1921-1937 was due to the longstanding support of Lim Boon Keng and his colleagues for the sciences, even though as I will show in the final section of this chapter, some of this support for the sciences came at the expense of the humanities. The financial support of Tan Kah Kee was also significant, as the very success of a private university in South China was highly contingent on the financial commitment of donors to the enterprise.

**Wu Lien-teh: the Plague Fighter and Medical Historian (1908-1937)**

Xiamen and North China were not the only places where Overseas Chinese were active in the promotion of science and medicine in China. At the behest of the Qing government, Wu had gone to Manchuria in 1910 to investigate an unknown disease that had taken the lives of more than ten thousand people. He brought with him a Singapore-born and Cambridge-trained doctor, Dr. Chen Sze-Pang,\(^{63}\) to carry out autopsies on

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\(^{62}\) Xiamen Shi difang zhi bian zuan weiyuan hui, *Xiamen shi zhi: Mingguo* 廈門市志：民國 [Xiamen Gazetteer: Republican Period] (Beijing: fangzhi chubanshe, 1999), 331 and 361-367. A total of 2,013 students graduated from Xiamen University from its founding until 1947. In 1947, there were around 300 teachers and 1,227 students in Xiamen University, with the majority of the students in the science, technical, and law departments.

\(^{63}\) Wu Lien-teh, *Plague Fighter*, 384.
infected corpses and to acquire samples of the deceased’s’ organs and blood. Like his counterparts in Europe, Wu examined these body parts under microscopes and found characteristic plague bacilli. Wu concluded that the plague was spread by the transmission of bacteria from one person to another rather than through rats, as had been previously thought. The origins of the germs were from the infected lungs of the tabagan, a species of marmot valued for its pelt. Hunters and farmers in Manchuria who came into contact with the tabagan were the first to be infected with the plague bacilli, which subsequently spread to the rest of the population through contact with infected individuals.

Wu went on to institute preventive health measures in North China hospitals, insisting that medical doctors, orderlies, and patients wear masks to prevent human-to-human transmission of the plague, especially in local hospitals. Wu mobilized police officers, medical doctors, and unskilled laborers to serve as sanitary attendants, stretcher-bearers, ambulance men, carters, and gravediggers. Furthermore, Wu introduced the concept of medical isolation, and constructed Western-style hospitals in the region to enforce such quarantine measures. Wu also sought the approval of the Qing Court for the cremation of diseased bodies, facing down opposition by local officials who refused to undertake a practice that went against Chinese burial practices. As a result of these medical reforms, the plague was brought under control in less than five months.

What has been neglected in the existing literature was the extent to which this crisis brought about a financial windfall for the North Manchurian Plague Prevention

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64 Andrew Cunningham, “Transforming Plague: The Laboratory and the Identity of Infectious Disease,” in *The Laboratory Revolution in Medicine*, ed. Andrew Cunningham and Perry Williams (Cambridge, UK: Cambridge University Press, 1992), 236-238.

Service and, by extension, was a key factor in the development of public health in China. The viceroy of Manchuria gave Wu 21,000 British pounds for the construction of four large hospitals in the region, as well as for the operations of the new North Manchurian Plague Prevention Service (Dongshansheng fangyi shiwu zongchu 東三省防疫事務總處). This funding, which had been earmarked in the dying days of the Qing Empire, prompted a reconsideration by the Maritime Customs Service in Beijing after the fall of the Qing dynasty. In the new Republic of China customs revenue was to be jointly collected by the Chinese Ministry of Foreign Affairs and by foreigners appointed by the various international powers active in China. Wu called on the British, German, French, and American ambassadors to pressure the Maritime Customs and the Chinese Ministry of Foreign affairs to fund the North Manchuria Plague Prevention Service, and by 1917, he was able to secure a firm commitment of around 9,000 British pounds per year from the customs revenue. Wu recalled in his memoirs how “he was thankful” that he could “now go ahead with the work of organization without further interruption.” Through the mobilization of friendly foreigners in the region Wu was able to turn a medical crisis into steady funding for the newly established anti-plague service.

With money came talent. Wu was able to attract the ambitious doctors of the day with his well-funded organization. Besides Chen Sze-Pang, twelve other doctors including F.E. Reynolds, a young graduate of Edinburgh who had specialized in bacteriology, J.W.H. Chun, a graduate of Cambridge and London who came from a well-to-do family in Shanghai, and Robert Pollitzer, an Austrian pathologist and linguist who

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66 Wu, Plague, 377.
67 Ibid., 384.
68 Ibid.
later became an important official in the World Health Organization, joined Wu at the Plague Prevention Service.\textsuperscript{69}

The North Manchuria Plague Prevention Service measures were mostly effective in curbing the incidences of plague in Manchuria, although a major outbreak in occurred in 1921. As this chapter’s introduction notes, this new surveillance regime comprised of quarantine hospitals, isolation units, health inspectors, and local police stopped the plague from moving beyond the city of Harbin to other cities in the region.\textsuperscript{70} At Harbin, anti-plague personnel were able to isolate the infected, limiting the total death to 9,300. Even though the total number of victims was high in 1921, it was far fewer than the estimated 60,000 lives lost a decade earlier.

Under Wu’s leadership, the North Manchurian Plague Prevention Service expanded its role to fighting an outbreak of cholera in Manchuria in 1919. It also became an important site of scientific and medical research on the plague.\textsuperscript{71} The latter effort of Wu and his colleagues culminated in a 1924 book on the plague published by the League of Nations.\textsuperscript{72} The publication of the book was a key to Wu’s eventual Nobel Prize nomination in 1935. While Lim Boon Keng’s efforts were concentrated in Beijing and Nanjing in 1911, Wu was creating an extensive public health system in Manchuria based on the mobilization of the population, a widespread campaign of inoculation, the construction of isolation hospitals, and changes in burial practices.

\textsuperscript{69} Ibid., 386. Chun and Pollitizer would later leave with Wu for Shanghai to aid in his new position as the director of the National Quarantine Services in 1931.
\textsuperscript{71} Ibid., 5.
\textsuperscript{72} Wu Lien-teh, \textit{A Treatise on Pneumonic Plague} (Geneva: League of Nations, 1926).
In a 1930 incident, Japanese military police harassed Wu as he detrained in Manchuria, reminding him that a more aggressive Japanese military was increasingly replacing civilians in the region. Consequently, Wu decided to leave Manchuria for Shanghai, and the North Manchurian Plague Prevention Service shuttered a year later after the establishment of a Japanese puppet-state in Manchuria.\(^\text{73}\) The head of the Nationalist government, Chiang Kai Shek (蔣介石 1887–1975), then appointed Wu to head the Shanghai-based National Quarantine Service, where he was director from 1930-1937. Wu brought three of his officers from Manchuria to Shanghai, one of whom was his nephew from Penang – Wu Changyao.\(^\text{74}\) At the National Quarantine Service, the two Wus and their colleagues established a comprehensive system of quarantine, fumigation, and health inspections in ports across China including the most important ports of Shanghai, Hankou, and Xiamen.\(^\text{75}\) International powers in China acknowledged Wu’s conscientious efforts and agreed to hand over to the National Quarantine Service the responsibility for inspecting their own emigrants and visitors. The significance of this transfer of power meant that Wu enabled the Nationalist government to gain sovereignty over its port system and strengthen its international prestige and domestic support.

Besides working to reform the port system, Wu also launched an ambitious anti-cholera campaign in Shanghai in the 1930s. He fought cholera through health campaign messages, inoculating Shanghai residents, contributing articles to academic journals,

\(^{73}\) Wu, Plague Fighter, 401.

\(^{74}\) Wu Changyao became the Chinese Red Cross chief liaison officer in Hong Kong in 1937, where he moved supplies from the West to China via the British colony. At the receiving end in China was Robert Lim’s Chinese Red Cross Medical Relief Corps.

\(^{75}\) Yip Ka-che, Health and National Reconstruction in Nationalist China: The Development of Modern Health Services, 1928-1937 (Ann Arbor, MI: Association for Asian Studies, 1995), 117-120.
writing manuals on cholera for local doctors, encouraging hospital admissions for cholera patients, and creating stringent quarantine facilities at the ports.\textsuperscript{76}

Wu’s thirty-year effort to institute public health and medicine in China was met with accolades. Liang Qichao claimed in 1924 “fifty years after the emergence of Science in China, the only individual with the capability to converse in such knowledge with the world is Dr. Wu Lien-teh.”\textsuperscript{77} The Young Companion (Liangyou Huabao 良友画報), an influential weekly magazine in Shanghai, remarked that Wu was a great medical teacher who needed no introduction because he was respected inside and outside of China (Jiuwe izhongwai suo gongyang 久為中外所共仰).\textsuperscript{78} Folke Henschen, then Professor of pathological anatomy at the Karolinska Institute and later chairperson of the Medical Nobel Committee (1942–46), nominated Wu Lien-teh in 1935 for the Nobel Prize in Physiology or Medicine. Henschen praised Wu for his achievement in discovering the role of tarbaga in the transmission of plague and for his lifetime role in researching the nature of pneumonic plague.\textsuperscript{79} Wu was the first ethnic Chinese to be nominated in this field, and so far has been the only ethnic Chinese nominated for the prize.

\textbf{Wu Lien-teh: Avid Historian of Medicine}


\textsuperscript{77} Liang Qichao, “Kexue shuru Hua wushian guozhong nengyi xuezhe zige yu shijie xiangjianzhe Wu Xinglian boshi yiren eryi” 科學輸入華五十年國中能以學者資格與世界相見者伍星聯博士一人而已 [After fifty years of the introduction of Modern Science in China, the only scholar that can interact with the world on this issue is Dr. Wu] in Manzhou li shuyi fangbing baogao (1924 nian wuyue) 滿洲里鼠疫防疫病報告 (1924 年五月) [Manchuria plague prevention service report, May 1924], ed. Wu Lien-teh (Manchuria: Manchurian Plague Service, 1924).

\textsuperscript{78} “De zhi yu ren, yong zhi yu ren,” 得之與人，用之與人 [If you draw your resources from the people, you should work towards returning your gains as a result of these resources back to the people] The Young Companion 5 (1937): 16-17.

Besides fighting the plague, Wu was also an active historian of medicine. Through history, Wu believed he could share with global audiences his research on diseases in China. In particular, his discussion of the history of disease was embedded in his wider medical publications. For example, Wu had historical chapters in each of his two published volumes on the plague and cholera in China.

Besides introducing to the public changes and continuities in the etiology and treatment of such diseases over time, Wu’s choice of nomenclature had longstanding ramifications. For example, Wu chose to use the pre-modern Chinese term *huoluan* 霍乱 to describe cholera rather than appropriate the Japanese term *huliela/korera* 虎列拉/コレカ, which was directly translated from English. In addition, Wu knew that some scholars were using an entirely new term *Diaojiasha* 吊脚痧 (Contraction of the Tendons of the Legs Disease) to represent cholera. Nonetheless, Wu still endorsed the use of *huoluan*, which post-1830s Chinese doctors used. Wu thought the use of the new terminology was so strange that people would fail to understand the disease. He felt that it was entirely possible for the pre-modern manifestations of *huoluan* to be commensurable with modern experiences of cholera. The use of a pre-modern Chinese lexicon suggests that Wu wanted Chinese audiences to understand how pre-modern societies had dealt with the same diseases in relations to new modes of understanding in the twentieth century. Multiple terms co-existed in the 1930s China, but Wu’s term for cholera was more popular and persisted in the Chinese-speaking world.

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82 Ibid.
Wu’s support for pre-modern lexicons was not unusual. Lim Boon Keng had used the pre-modern Chinese term for sciences, *Gezhi* 格致, to denote the study of modern science in the twentieth century instead of the more popular and “modern” term of *Kexue/Kagaku* 科學. Lim sought to emphasize the importance of drawing on Chinese essences and histories of the sciences in one’s investigation of modern sciences in China. Both Wu and Lim’s appropriations of pre-modern lexicons suggest that they were not ideologically opposed to traditional notions of science and medicine as many iconoclastic intellectuals in China were in the twentieth century. They sought to draw upon the past to forge their own vision of a more modern scientific and medical future.

Besides writing short chapters on the history of diseases in China, Wu began working in 1916 on a comprehensive history of Chinese medicine from the ancient days (2689 B.C) to the present (1920s) with Wang Jimin (王吉民 1889–1972), a doctor versed in Chinese medicine. They published the 706 page volume *History of Chinese Medicine: Being a Chronicle of Medical Happenings in China from Ancient China to the Present Period* in 1932, with a revised 906 page edition in 1936. The book was comprehensive in its coverage and included an analysis of the classic tract, the *Yellow Emperor’s Inner Canon* (*Huangdi Neijing* 黃帝內經 111 A.D.). It discussed the influence of Daoism and Buddhism on Chinese medicine (126–960), offered biographies of leading physicians in the Song Dynasty (960–1279), and the advent of Western biomedicine in China (1830–

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84 Ibid.

Its depiction of pre-modern medicine eschewed disdain and opposition, which was a stance taken by reformers and revolutionaries in China.\textsuperscript{86} In contrast, Wu and Wang consulted hundreds of primary and secondary texts over a period of sixteen years in an effort to show the dynamism of pre-modern Chinese medicine. In the second edition, they included additional chapters on pre-modern Chinese medicine, even as they praised new developments in Western-style public health under the new Nationalist government in Nanjing.

Reception of the book was generally positive. J.F McClendo, reviewing the book for the journal \textit{Science} in 1934, called it “indispensable to the student of the history of medicine.”\textsuperscript{87} A reviewer for \textit{Nature} commented that Wu and Wang, in a bulky and “well documented” volume, “endeavored to present a connected history of medical science in China from the earliest times to the present day.”\textsuperscript{88} The \textit{Journal of the American Medical Association} was equally generous with its praise:

\begin{quote}
...the book is one inciting much rereading and is provocative of meditation, both on account of the underlying philosophies and because of the revelations of the behavior of the human animal in face of the mysteries of disease and death. It is a book for the thoughtful practitioner, for the library of every medical school, university, learned society and
\end{quote}

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medical missionary, and for the student of human culture, and is a prize
for the book lover.\(^{89}\)

The large number of citations in academic and public settings shows the lasting
importance of their work. The 1932 edition has been cited 214 times in seven different
languages. It has been cited 128 times post-1993.\(^{90}\) In contrast, another history of
medicine, Dominique Hoizey’s 1993 *A History of Chinese Medicine* has been cited 46
times.\(^{91}\) Wu and Wang’s high number of citations in multiple venues reveals the book’s
lasting impact and its place as a forerunner to present-day transnational and comparative
work on medicine. The book was a culmination of Wu’s work in Cambridge, Penang,
Manchuria, Beijing, and Shanghai, and it reveals the diversity of international
experiences that he sought to reflect in his work on the history of medicine in China.

**Context of Broader Trends in Traditional Chinese Medicine**

The 1936 revised version of the *History of Chinese Medicine* represented Wu’s
ambivalent views on Chinese medicine. On the one hand, his alliance with Wang
suggested that he was most willing to cooperate with doctors of Chinese medicine to
produce a text that brought together two traditions of medicine. On the other hand, Wu
participated in the Nationalist government’s 1929 efforts to abolish the practice of
“native” Chinese medicine, practices they delineated in the second edition of the *History

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\(^{90}\) Google Scholar’s citation search for *History of Chinese Medicine*,

\(^{91}\) Dominique Hoizey and Marie-Joseph Hoizey, *A history of Chinese medicine* (UBC Press, 1993); Google Scholar’s citation search for *A history of Chinese medicine*
of Chinese Medicine. Wu had sat in on the meeting the Nationalist government had with seventeen other doctors to discuss the regulation of Chinese medicine. The gathering was based on the premise that native practices were “arbitrary,” “old-style,” devoid of proper diagnostic methods, and more philosophical than practical. Yet in his dispassionate historical voice, Wu chronicled the community’s resistance, which culminated in the Nationalist government’s reversal of most of its earlier policies. Wu documented how the Nationalist government supported the formation of a Bureau of Native Medicine (Zhongyang Guoyiguan 中央國醫館) in 1930. Therefore, a deeper analysis of Wu shows his relatively more moderate position on the issue on abolishing native Chinese medicine.

His moderation was on display in his 1930 speech to the Singapore-based United Chinese Medical Organization (Zhongyi Yiyao Lianhehui 中醫醫藥聯合會). Wu began the speech by agreeing with the host that both Western and Chinese medicine had their own advantages (keyou suochang 各有所長). He argued that more important than determining which medical system was better was the actual acts of saving lives. The rest of Wu’s speech, however, focused solely on his endeavors in fighting the plague in North China using Western medicine and how his efforts led to the development of Western medicine in the country. It appeared that while Wu saw himself not as an enemy of Chinese medicine, he saw Chinese medicine largely as an instrumental tool that could be...

92 Wu Lien-teh, “Struggle Between the Old Forces and New Forces,” in Wong Chimin and Wu Lien-teh, History of Chinese medicine: Being a chronicle of medical happenings in China from ancient times to the present period (Shanghai: National Quarantine Services, 1936), 159-168. Advocates of Chinese Medicine termed their medical system as “native,” as opposed to what they saw as foreign Western medicine. Doctors trained in Western medicine preferred the term “old-style medicine.” Wu adopted both terms in his History of Chinese Medicine.

93 Ibid.

appropriated for the advancement of Western science. Wu’s stance was similar to Lim Boon Keng’s use of *gezhi* to denote the sciences in China, even though it was deemed antiquated by the 1920s. Both Wu and Lim believed that pre-modern Chinese science and medicine provided historical lexicons and an underlying spirit of inquiry for modernization efforts in China.

**Facing Opposition Inside and Outside of China**

Lim Boon Keng, Wu Lien-teh, and Robert Lim’s time in China was not without opposition. As I have shown in the introduction, Wu’s efforts at institutionalizing medicine, aided by ample financial resources, meant that an expanded public health infrastructure could cope with medical emergencies such as the outbreak of a pandemic. It was less successful, however, in changing individual behavior or attenuating the relatively high levels of opposition from locals when the plague broke out. In peaceful times, however, there were no recorded cases of opposition to the infrastructure in place. There was an uneasy truce between the forces of a medical regime that practiced surveillance (limited during peacetime to medical research) and the ordinary people in Manchuria.

Most of the opposition to Wu came from rival medical elites, instead. In the 1911 plague for example, a French national and professor from the Beiyang Medical College, Dr. Girard Mesney, opposed Wu’s theory that the plague was spread through the air and through direct human contact. Mesny insisted that rats were the main carriers of the plague based on his many years of experience observing the plague in North China. Transmission through air was preposterous and unproven, he claimed. Mesny rejected

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96 Ibid.
Wu’s calls for doctors and medical staff to wear protective gauze masks, and for patients and their contacts to be strictly isolated. To prove his point, Mesny began examining plague patients in the local hospitals without a mask. He died of pneumonic plague six days later, however, confirming Wu’s arguments. Superior to Mesny’s experience in the region, Wu’s scientific methods increased trust in laboratory medicine in China among medical personnel.

In the case of Lim Boon Keng, his tenure at Xiamen University came under intense scrutiny from professors schooled in the humanities. One of them was Lu Xun (魯迅 1881-1936), one of China’s most famous twentieth century writers and intellectuals. Lu Xun, who was teaching at Xiamen University, disliked Lim’s emphasis on the study and internalization of Confucianism in the university, as well as Lim’s implicit claim that such studies were an integral component of the humanities. By 1926, Lu Xun and fellow intellectuals saw Lim’s ideas of Confucianism as thoroughly dated. Times were different than the 1890s when Lim’s ideas were judged to be progressive. Lu Xun publicly attacked Lim’s views in a weekly assembly at the university on October 14, 1926:

Respecting Confucius, honoring Confucianism, reading the classics, and returning to the past in order to save China; these tunes have recently been sung louder and louder. In reality, those who advocated reading the classics have ulterior motives. They want people to read the classics to

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97 Lin Yutang, another prominent Chinese writer, invited Lu Xun and other intellectuals involved in China’s May Fourth movement, such as Lu Xun, Gu Jiegang, and Shen Jianshi to teach at Xiamen University in 1926. They had escaped from Beijing University after a crackdown on intellectuals by the local government. After their arrival at Xiamen University, Lim Boon Keng and Lin Yutang promised them jobs at the new Institute of Sinology. The intellectual dominance of Northern China momentarily shifted to the southern port city of Xiamen with the arrival of these four intellectual heavyweights.
become filial and compliant; and to become honorable and economizing model women. In so doing, they can show their arrogance and ambition and ride roughshod above people’s heads.98

Lu Xun continued his criticism of Lim after he repudiated Lu’s claims. In 1927, Lu Xun argued that Lim Boon Keng was a “British Chinese” who had written a forgettable book about Confucianism.99 Lu Xun’s criticism also emerged from the revelation that Lim Boon Keng’s finance manager had held back funds for publishing Institute of Sinology journals and books, as well as for the purchase of basic necessities.100 Promises of a new building for the Institute never materialized, even while funding for the sciences continued unabated. The University’s bias against the humanities was symbolized in the hosting of the Institute of Sinology in the biology building, reflecting the metaphorical dominance of the sciences at Xiamen University.101 Students affiliated with the Institute protested against Lim, with opposition becoming so widespread that Lim briefly took refuge in Singapore.102 The impasse also led Lu Xun and the other intellectuals to leave Xiamen University within a year of their appointment. Their departure represented not only a missed opportunity for Xiamen University to become a leader in the humanities,

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100 Lu Xun Quanji, 421.
102 Jiaoyu zazhi 教育雜誌 [Education magazine] 19, no. 3 (March 20, 1927), in Xiamen daxue xiaoshi ziliao; diviji 廈門大學校史資料，第一集 [Historical materials of Xiamen University; first series], ed. Huang Zongshi and Zheng Wenzhen (Xiamen: Xiamen University Press, 1987), 283-284.
but it also represented a missed opportunity for Xiamen University students and faculty to force out Lim Boon Keng. He remained Xiamen’s president, and the sciences and engineering flourished, even though the humanities never regained the prestige it had in 1926.

Robert Lim faced fewer challenges to his leadership at Peking Union Medical College. Though, as I will show in subsequent chapters, Lim’s challenges increased exponentially in complexity and size during the Second World War. The political urgency for medical relief reached unprecedented levels as the Nationalist government lost ground rapidly to the Japanese military. Almost bankrupted from the war, Lim had few resources from the Chinese government. He had to raise funds internationally while at the same time quickly training medical personnel for a military medical complex comprised of the Chinese Red Cross Medical Relief Corps, the Emergency Medical Services Training School, the first Chinese blood bank, and auxiliary hospitals and mobile units. Furthermore, he faced enormous pressures from American non-governmental aid officials, hostile Chinese generals, Hong Kong-based medical administrators, and his own colleagues to drop a proposed six-year medical training program. In 1942, the controversy surrounding the training program led to Lim’s brief ouster as the head of military medicine. The allocation of scarce wartime resources in the context of unprecedented numbers of sick and wounded Chinese soldiers brought heightened levels of urgency toward and attention to the efficacy of military medicine. An eagerness to rehabilitate the greatest number of wounded soldiers in the shortest possible time so that they could fight an increasingly difficult total war meant that Lim’s policy was constantly under scrutiny by Chiang Kai Shek, Chinese and American generals, and various
international aid agencies. Because attention was less intense in the pre-war period, Lim Boon Keng and Wu Lien-teh had a far freerer hand than did Robert Lim, and they enjoyed greater resources at their disposal to pursue their medical aims and scientific goals.

**Medical Training in Twentieth-Century China**

The expansion and limitations of Western medicine can be seen clearly in the wider context of Overseas Chinese endeavors. Within the changing field of medicine in pre-war China, there was a modest expansion of medical education in the country, with the establishment of seven new medical colleges between 1911 and 1930. These schools, however, suffered from a chronic lack of funding, resources, and teachers. They received little assistance from the local or national government. For example, a League of Nation inspector criticized the Chinese government in 1931 for failing to provide any funding for the Beijing-based National University Medical College. As a result, “laboratories and class-rooms for the pre-clinical work are very bad and those for the clinical teaching are worse.” Similarly, the report noted that the Army Medical College provided insufficient medical training because “political disturbances” resulted in irregular and inadequate funding. In contrast, the report noted that Peking Union Medical College was “extraordinarily well equipped with all the neccessary facilities for

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103 Knud Faber, *Report on Medical Schools in China* (Geneva: League of Nations, 1931), 11. The National University of Peiping Medical College (1911), Manchurian Medical College (1911), the West China Union University Medical School (1914), the Army Medical College (1918), the National Central University Medical College (1927), and the Dongnan Medical School (1924) were modest enterprises that graduated around 8 to 68 students annually by 1930.

104 Ibid., 12-13. The instability of local regimes across China meant little financial support from the state for medical and scientific endeavors, especially in the city of Beiping/Beijing. More than six different political leaders ruled Beijing sporadically from 1911 to 1937.

105 Ibid., 14-15. As a result, much of military medical assistance for the Chinese troops in North China in 1932 was provided instead by Robert Lim and his colleagues at the Peking Union Medical College.
pre-clinical and clinical teaching and research.”\textsuperscript{106} Specifically, the inspector praised the College’s impressive levels of scientific research that infused the atmosphere with a “scientific spirit” and enabled effective medical training. The report concluded that the College was “surpassed by no other institutions in China.”\textsuperscript{107} The juxtaposition of well-funded independent institutions such as Peking Union Medical College, the North Manchurian Plague Prevention Services, and Xiamen University and the poor state of government-funded medical institutions pointed to the structural inequalities of medical outcomes and care in China. They also reflected the ability of Overseas Chinese to leverage international resources and personnel to create viable institutions in pre-war China.

During the Nanjing decade, Overseas Chinese efforts were part of a broader endeavor by Chiang Kai Shek’s government to improve health conditions in China. Chiang appointed the then-nominal head of the Peking Union Medical College, Liu Ru-heng, to lead the new Ministry of Health. Liu oversaw the creation of the Nanjing-based Central Field Health station, which conducted some medical research and treated more than 10,000 patients from 1928 to 1936.\textsuperscript{108} He also formed the National Health Administration School Health Program, where, in the same period, he led a campaign that immunized 200,000 students.\textsuperscript{109} These efforts, while admirable, were surpassed by the endeavors of the Overseas Chinese. Wu Lien-teh saved more than 40,000 lives in

\textsuperscript{106} Ibid.
\textsuperscript{107} Ibid.
\textsuperscript{108} Yip, Health, 127.
\textsuperscript{109} Ibid.
Manchuria from 1911 to 1930.\textsuperscript{110} As the head of the National Quarantine Bureau from 1930 to 1937, he immunized more than 1.7 million Chinese.\textsuperscript{111}

Despite these modest efforts in improving medical education, scientific research, and health care in China from 1930 to 1937, Chinese medical care, research, and education remained elitist, urban, limited, and unequal. A 1931 League of Nations report revealed that 13 out of 22 prominent medical schools in China were located in the large cities of Shanghai, Beijing, and Guangdong.\textsuperscript{112} Another 1935 report by two Chinese medical doctors concluded that 39 percent of China’s 5,390 Western-trained physicians practiced in the coastal province of Jiangsu, home of Shanghai.\textsuperscript{113} In contrast, the report revealed that less than two percent of doctors were working in the Southwest provinces of Sichuan and Guangxi. Most doctors thus preferred to practice in the relatively prosperous regions of coastal China. Such a concentration of physicians in Shanghai might have affected the mortality rates in these regions. A 1935 report revealed that the mortality rate in Shanghai (8.8 per 1000 persons) was significantly lower than Beijing (14.4 per 1000 persons) and Guangzhou (18.6 per 1000 persons).\textsuperscript{114} These three reports reflected the

\textsuperscript{110} I arrive at this figure by comparing mortality rates in the three plagues from 1910 to 1921. In 1910-1911, 60,000 Chinese died of the plague in Manchuria. The North Manchurian Plague Service’s efforts at fighting the plague contributed to the mortality rate falling to 16,000 and 9,000 in the 1917-18 and 1920-21 plagues respectively. Assuming that the plague was likely to be equally virulent in all three cases, I deduce that around 30,000 lives were potentially saved in 1917-1918 plague, and more than 50,000 saved in the 1920-21 plague. If we only attribute half of the lives saved to Wu’s endeavors, I arrive at a conservative figure of 40,000 Chinese saved by his efforts. For the various mortality figures, see Wu Lien Teh, “Plague in the Orient with Special Reference to the Manchurian Outbreaks,” \textit{Journal of Hygiene (London)} 1 (June 1922): 62-76.

\textsuperscript{111} Iris Borowy, “Thinking Big – League of Nation Efforts Towards a Reformed Health Care System,” in \textit{Uneasy Encounters: The Politics of Medicine and Health in China, 1900-1937}, ed. Iris Borowy (Frankfurt am Main: Peter Lang, 2009), 205-228.

\textsuperscript{112} Faber, \textit{Report}.


expansion of medical training in China since the founding of the Republic in 1911; such an expansion benefitted mostly the residents of Shanghai.

In the following chapters I show the trend was to change significantly during the Second World War when the expansion of medical care and training took place in Southwest China and ultimately led to the tripling of the number of Western-trained medical personnel in China. As money and expertise for expansion poured in from Overseas Chinese communities in Southeast Asia, Europe, and the Americas, the center of medical education and care would shift from Beijing and Shanghai to Southwest China. The southwestern provinces of Sichuan and Guangxi would become important sites of medical relief and training, fieldwork science, and medical expansion. The expansion also meant that the Nationalist government would demand much more from these institutions, as the stakes for victory became much higher in a war against a far superior enemy.

**Revisiting the Diasporic Agents of Science and Medicine**

The biographical history of the diasporic Chinese and the institutions they led reveal five characteristics about pre-war Western medicine and scientific education. First, Lim Boon Keng, Wu Lien-teh, and Robert Lim could set their agenda for reforming public health and disseminating Western medical ideas in pre-war China (1911-1937) without much external pressure or opposition. They could propagate, disseminate, and teach the virtues of Western medicine without having to be constantly accountable to multiple forces. Furthermore, they could travel in and out of China for professional and personal reasons easily, and they held relatively high position in their respective institutions. Overall, with the exception of an occasional pandemic that inspired urgency
from the state and medical personnel, there was less pressure from local authorities on the two Lims and Wu for an immediate and comprehensive plan to develop new forms of public health and scientific research in China. They took their time and were not rushed into confrontations with the wider Chinese population over issues of biomedicine. Opposition led by Lu Xun, Dr. Mesny, doctors trained in Chinese medicine, and ordinary Chinese were real and substantial, but it did not severely undermine their overall career paths in China. It would take the advent of the Second World War for resistance towards Western medicine to become more significant. For example, as I will show in chapter 4, Chinese soldiers expressed widespread opposition to withdrawal and transfusion of blood during the Second World War.

Second, the growth of Western medical institutions was contingent on strong financial and political commitment to Western medicine and science by the government, Overseas Chinese, and international organizations. Tan Kah Kee gave around 8 million Straits dollars (or around US$3.5 million at 1921 exchange rates) to fund Xiamen University from 1921 to 1937.115 The Qing Viceory of Manchuria (1911), the Ministry of Foreign Affairs and the Martime Customs in the various Republican regimes (1911–1930), and Chiang Kai Shek (1930–1937) financially supported Wu in an uninterrupted fashion. The Rockefellers were deeply committed to Peking Union Medical College and poured US$45 million into the College from 1913–1949. They gave Robert Lim wide latitude for his work and research, valuing him as a “Chinese” doctor who helped the College fulfil its goal of sinicizing the institution.

Third, their efforts at instituting Western medicine were remarkably diverse. Public health efforts involved changing the everyday practices of the Chinese people, cleaning up the environment, eliminating the sources of disease transmission, and adopting new approaches towards sanitation and waterworks. Medical research ranged from examining the physiology of digestion and nutrition to uncovering vectors of communicable diseases in China. International medical journals based in the United States published the research done at Peking Union Medical College. Propagation of Western science and medical research appeared in journals, assemblies, manuals, posters, and speeches. In the absence of pandemics, most ordinary Chinese were neither active opponents nor active propagators of Western medicine. Rather, new modes of understanding science, medicine, and public health took hold in the minds of local elites and urban planners. The broad trends of expanding public health infrastructure, conducting medical and scientific research, and spreading new hygienic practices were replicated elsewhere by local elites, with the general public offering little opposition to the new approaches.\footnote{Liping Bu argued that the Peking Union Medical College health education programs in the 1920s reached out to the Chinese population beyond Beijing. In addition, Dong Wang showed that scientific research had already become “essential regular work” in Liangnan Colleges by the 1940s. Furthermore, Frank Dikötter noted Xiamen was transformed after 1928 into a beautiful modern city, with a new sewage plant in town. He also noted that in 1927, the first radio station in Guangzhou broadcasted news about public sanitation and personal hygiene. See Liping Bu, “Social Darwinism, Public Health and Modernization in China, 1895-1925,” in Uneasy Encounters: The Politics of Medicine and Health in China, 1900-1937, ed. Iris Borowy (Frankfurt am Main: Peter Lang, 2009), 93-125; Dong Wang, “From Lingnan to Pomona: Charles K Edmunds and His Chinese American Career,” in China's Christian Colleges: Cross-Cultural Connections, 1900-1950, ed. Daniel Bays and Ellen Widmer (Stanford, CA: Stanford University Press, 2009), 173-185; and Frank Dikötter, Exotic Commodities: Modern Objects and Everyday Life in China (New York, NY: Columbia University Press, 2006), 111, 259.}

The opposition that did exist came from indigenous elites, foreign doctors, and sometimes doctors trained in Chinese medicine.\footnote{For opposition by some traditional Chinese medical doctors to Western medical doctors in China, see Sean Lei Hsiang-Lin, “Chinese Medical Revolution versus National Medicine Movement – Medical Group Formation in the Field of the State,” in When Chinese Medicine Encountered the State: 1910-1949 (PhD diss., University of Chicago, 1999), 69-120.} Yet, it is worth
remembering that Wu collaborated with Wang Chimin, a doctor trained in Chinese medicine, to produce the 1934 publication *History of Chinese Medicine*.

Fourth, Overseas Chinese strategies of participation in China were equally diverse. Even though all were educated in Britain, they held different views on what it meant to be Chinese in a rapidly changing political environment. Lim Boon Keng was invested in his idea of Chinese Confucianism and brought his views to China, where he met with a wide range of responses. Yet he was not particularly wedded to any political force. Lim’s tendency to go with the political winds appeared unprincipled, but it was an important strategy for him to maintain his leadership positions in China and later in Singapore when he took on the unenviable task of collaborating with the Japanese. Similarly, Wu claimed to be a firm Chinese patriot, but he did not hold back from seeking the assistance of foreign ambassadors to lobby the Chinese government when needed. Both the elder Lim and Wu believed in the historical continuities of scientific lexions, rejecting May Fourth iconoclasts who wanted to discard completely the pre-modern. They believed a modern medical approach towards understanding science, medicine, and technology was compatible with the approaches of the past. Robert Lim had no special insights into the intellectual histories and philologies of China as his father did, but he believed strongly in building a modern Chinese health care system that would stop China from being the “Sick Man of Asia.” The younger Lim believed in the nation-state and sought to further the study of Chinese physiology and laboratory sciences in the 1920s. In the 1930s, he sought to develop military medicine and sought to mobilize students and staff at Peking Union Medical College to assist Chinese soldiers on the frontline. Wu Changyao and O.K. Khaw, who were further down the medical hierarchy and left scant evidence of their
personal views of China, nonetheless, under the patronage of the two Lims and Wu, produced medical research that promoted the sciences and public health in Beijing.

Fifth, the networks of Overseas Chinese doctors were not fixed in this period. Even though most worked within one organization, they often had multiple connections, some lengthier than others, with different doctors during their stints in China. For example, both Lims would mention Wu Lien-teh as a potential leader of military medicine or as a future director of a new Xiamen University medical school. Wu Lien-teh would attend numerous conferences with Robert Lim during the Nanjing decade from 1927 to 1937. O.K Khaw, who worked for Lim Boon Keng at Xiamen University from 1921 to 1924, worked alongside Robert Lim at Peking Union Medical College from 1925 to 1937 and at the National Defense Medical Center from 1949 onwards. Wu Changyao, who assisted Wu Lien-teh in the pre-war period, would move to Hong Kong during the Second World War to aid Robert Lim in the latter’s efforts at getting resources from the West to China. The purpose then of including each of them in this chapter is to show the importance of the wider medical network that connected Overseas Chinese doctors in the Republican period. This network was crucial in providing a forum for professional medical discussions, opportunities for collaborative research, and more important, jobs in an era of political instability.

Finally, the positions held by Wu and the two Lims changed with the advent of the Second World War in China. The Japanese bombed Wu Lien-teh’s residence in Shanghai and destroyed most of his personal correspondences and medical research. The Japanese also took over the facilities of the National Quarantine Services.\(^{118}\) Wu was devastated, chose not to go to Chongqing with Chiang Kai Shek, and opted instead to

\(^{118}\) Wu, *Plague Fighter*, 424.
return to his hometown of Penang. He would return to private practice and withdraw from public life. As for Lim Boon Keng, he returned to Singapore in 1936 after the nationalization of Xiamen University and continued to be active in the public arena. After the Japanese army swiftly occupied Singapore in 1942, they persuaded the elder Lim to head the collaborationist Overseas Chinese Association. Similarly, O.K. Khaw stayed on at Peking Union Medical College after the Japanese occupied Beijing in 1937 and was promoted to head the public health department at the College in 1940. He left his positions at the Peking Union Medical College in 1933. He re-emerged in 1947 to head the department of parasitology at the National Defense Medical Center in Shanghai, and later in Taipei. Robert Lim was the exception in his willingness to join the Nationalists in their fight against the Japanese, and he mobilized numerous Peking Union Medical College staff members and students to head down to Southwest China. He was to leave China for Taiwan after the Chinese Civil War in 1949, and later for the United States, where he would live out the rest of his life.

While pre-war China afforded stability for these medical personnel and their institutions, the Second World War forced them to make choices that saw them fade from the limelight. Because none of the actors I have investigated stayed on in the People’s Republic of China, or worked in the newly independent states of Malaysia and Singapore, they were less important as emblems of the historical mobilizations of China, Malaysia, or Singapore. Their later historical neglect, however, did not mean they were

\[120\] Minutes of the Peiping Union Medical College, August 2 1940, in folder entitled “Parasitology – Staff, O.K. Khaw,” in Box 114, Folder 826, RAC.
\[121\] Secretary of the Peking Union Medical College to the Royal Society of Tropical Medicine and Hygiene, December 8, 1943, in folder entitled “Parasitology – Staff, O.K. Khaw,” in Box 114, Folder 826, RAC.
unimportant. Many of the institutions of science and medicine they led, founded, and worked in in the first half of the twentieth century – Peking Union Medical College, Xiamen University, the Chinese Red Cross, the National Defense Medical Center, and the Quarantine and Anti-Plague services (Fangyichu 防疫處) – continue to be important sites of education, research, and healing on the mainland or on Taiwan today. It was not just the Japanese and the Americans who were directly involved in changing the medical landscape of modern China. Indeed, Western medicine in the first half of twentieth century China owed its propagation and institutionalization to these oft-forgotten Overseas Chinese.

The Second World War and the Chinese Civil War would change the close relationships between philanthropists, the government, Overseas Chinese medical personnel, and the Chinese people and their attitudes to the advancement of Western medicine. As I will show in the following chapters, pressures on all sides took their toll as funding from the national government dried up, administrators felt pressure to train large numbers of medical personnel quickly, and opposition by the Chinese to blood donations and transfusions increased. Transnational leadership and support as well as multiple contingencies emerged to resolve some of these problems as new actors contested the dominance of the diasporic Chinese in Western medicine in China. Wartime China was the beginning of an institutionalization of Western medicine beyond the cities, with unintended consequences.
Chapter 2

Expanding Medical Relief in the Second World War, 1937-1940

Wartime represented an epistemic break in the history of medicine in modern China. Never before had the demand for immediate medical relief been higher. The Japanese occupied Tianjin, Beijing, Shanghai, Nanjing, and later Changsha in quick succession in 1937 and 1938, marking the beginning of the Second World War in Asia, also known as the War of Resistance. Surging numbers of sick and wounded soldiers, refugees, and civilians fled from Coastal and Northern China to Southwest China at the same time as there was a perceived collapse of rural health care. 1 Government officials fled China, even as the demands of governance increased. Officials in charge of medical relief had to develop new sources for funds to institute an expanded health care system even as tax revenues were collapsing. The overall situation seemed dire, as medical officials had the unenviable task of allocating scarce wartime resources to treat the most people in the shortest possible time.

In 1937, Chiang Kai Shek, the leader of the National Government and head of the Chinese Nationalist Party or Kuomintang (KMT Guomindang 国民党), designated Robert Lim to design an emergency wartime health care system that would take care of the wounded and sick. Lim accepted his appointment, and formed the Chinese Red Cross Medical Relief Corps (CRCMRC Hongshi zihui jiu hu zongdui 红十字会救总), which became wartime China’s de-facto health ministry.

As I will show in this chapter, Lim envisioned a health care system that would address the medical crisis through preventive medical care rather than a curative system

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1 For accounts of suffering during the war, see Lary, Chinese, and Schoppa, Bitterness.
based on biomedical drugs. This preventive care approach was seen in ambitious wartime nutrition and delousing programs that aimed at strengthening resistance to diseases plaguing soldiers during the war. Lim’s approach drew upon longstanding Chinese medical traditions of food as medicine, as well as Lim’s research and experiences at the Peking Union Medical College.

The main challenge for the CRCMRC was procuring necessary funding. The collapse of wartime tax revenues meant that the CRCMRC could little rely on the Nationalist government to fund its operations. Instead, the CRCMRC reached out to the Overseas Chinese, and they responded generously. Besides the Chinese diaspora, American civic organizations such as the American Bureau for Medical Aid to China, United China Relief (UCR), and the American Red Cross also contributed money, resources, and personnel to the CRCMRC. Joining the Americans in China were twenty-six medical doctors from Europe who fled Spain after the Franco war. Finally, the combination of the diasporic and international was embodied in the participation of more than 3,000 Southeast Asians, mostly ethnic Chinese, in transporting medical supplies on the Burma Road. In sum, I will show that diasporic and international interventions during the war made the formation of an expansive public health care system possible. I will also show that these medical programs alleviated the suffering and pain of more than three million soldiers and civilians, even though the overall levels of disease suffered by soldiers remained relatively high.

In this chapter, I examine the intricacies of the participation of the diaspora as well as the nature of funding at the CRCMRC, arguing that this unique historical

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2 Ong Wei Meng, Nanqiao jigong: The Extraordinary Story of Nanyang Drivers and Mechanics who Returned to China during the Sino-Japanese War (Singapore: National Archives of Singapore, 2009), 45.
phenomenon contributed to the ongoing construction of a comprehensive health care system in China. Even though this preventive medical system provided for an unprecedented prophylactic reach in China, it was unable to eliminate fully the diseases that plagued Chinese soldiers during the war. I conclude by comparing wartime Chinese health care outcomes with other medical systems around the world in the same period. Key to the qualified success of the CRCMRC was the innovative integration of global medical norms, equipment, and personnel with local conditions.

**Development of a New Wartime Chinese Red Cross**

Chiang Kai Shek appointed Robert Lim to direct the new Chinese Red Cross Medical Relief Corps in December 1938 because of his longstanding experiences with military medicine. As I have shown in Chapter 1, Lim advocated that China should abandon Japanese-style military medicine in favor of an Anglo-American-based, “modern” army medical service under Wu Lien-teh. Even though the idea was not realized, Lim sought to implement military medicine within PUMC, where, in 1932, he led a group of students to assist at the war front in North China. A year later he instituted a permanent military medical corps unit in the PUMC.\(^3\) When the war broke out in 1937, Lim was the only senior doctor and administrator to leave his position in Beijing to assist the war effort at Nanjing. As discussed in chapter 1, other senior doctors, including prominent diasporic doctors like O.K. Khaw and C.E. Lim, stayed on in occupied Beijing and were promoted to higher positions within the PUMC’s bureaucracy. Robert Lim’s retreat with the Nationalists from Nanjing to Hankou revealed his commitment to the Nationalists’ cause.

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\(^3\) “Notes by Dr. Robert McClure on PUMC war-workers, August, 31, 1938,” in folder entitled “Criticism 1933-44,” Box 35, Folder 250, RAC.
Robert Lim Ko-Sheng, 1938

[Source: “Dr. Robert Lim,” ABMAC archives, in Western Medicine in China, 1800–1950, Digital Collection, Indiana University-Purdue University Indianapolis (hereafter Western Medicine), Website: http://indiamond6.ulib.iupui.edu/cdm/singleitem/collection/WMIC/id/63/rec/1]

Robert Lim’s arrival in Southwest China also provided the opportunity for Chiang to organize a new Chinese Red Cross in “Free” China. The Shanghai-based Chinese Red Cross fell into Japanese hands in 1938. In 1937, the Red Cross wrote an urgent letter to the Chiang’s National Military Council, asking them to direct the activities of the Red
Cross beyond the confines of Shanghai. As a result, Chiang felt free to consider a new Red Cross in Free China and saw Lim as the best person to lead the new organization. The Chinese Red Cross in Shanghai quickly approved the formation of the Chinese Red Cross Medical Relief Corps, but because of the war situation it was unable to aid the CRCMRC substantially. During the war, the Chinese Red Cross in Shanghai limited its assistance to helping residents in the occupied city, and the center of wartime Chinese relief shifted to the CRCMRC in Changsha.

In addition, Lim’s potential rivals for the leadership of Chinese Red Cross Medical Relief Corps either stayed in Beijing or left China after 1936. Dr. Liu Rui-heng, the longstanding minister of health in the Nanjing government (1930–1937) and Lim’s former colleague at PUMC, was briefly in charge of the reconstituted Department of Health and the Army Medical Services after the Ministry of Health was dissolved with the fall of Nanjing in 1937. Chiang Kai Shek dismissed Liu on February 9, 1938, as he perceived Liu to be ineffective in providing relief to wounded soldiers and civilians. Liu left for Hong Kong soon after. Dr. Wu Lien-teh, the former head of the North Manchurian Plague Prevention Services and the director of the National Quarantine Bureau, left for his hometown in Penang after the Japanese decimated his home in Shanghai in 1937. Robert Lim’s father, Dr. Lim Boon Keng, who was the first Minister of Health in the Republican government and the president of Xiamen University, left Xiamen for Singapore after the KMT government in 1936 nationalized the university.

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4 1st Report of the Chinese Red Cross Medical Relief Corps, Robert Lim Papers, Institute of Modern History Archives, Academia Sinica, Taipei, Taiwan (hereafter Lim Papers), 2301001, 1-2.

5 The International Red Cross in China also chose to stay in Shanghai rather than move to Chongqing. In addition to the three Red Crosses, the Chinese Red Cross in Hong Kong grew in strength in the war, as Hong Kong became an important site of medical relief. The relationship between the multiple Red Crosses during the war was never fully clarified, opening the possibility for later conflict.

Only Dr. Yen Fu-ching, the president of Yale-China Medical College, stayed in unoccupied China. Chiang appointed him to head the National Health Administration, which dealt largely with municipal and rural health care. National health care was to be led by Robert Lim and the CPCMRC.

Other Overseas Chinese signed up to aid Lim’s organization rather than form or join competing institutions. Penang-born Wu Chang-yao helped Lim in coordinating the shipment of supplies from the West to China via Hong Kong as the director of the Hong Kong Bureau of the Chinese Red Cross and director of the Transportation and Supplies Department of CPCMRC. As I have shown in chapter one, Wu was a senior quarantine officer in Wu Lien-teh’s organizations in Manchuria and Shanghai in the 1920s and 1930s. In Hong Kong, Wu Chang-yao shipped medical supplies from the West to major cities—Shanghai and Nanjing (1937), later to Hankou and Changsha (1938), and finally to Guiyang and Kunming (1938–1940)—that the Nationalists held as the war progressed. From those cities supplies were redistributed to the rest of China. After the fall of Hong Kong, Wu left for Burma to aid the movement of supplies via the Burma Road. Without his tenacity in Hong Kong and elsewhere, it would have been impossible for the world’s resources to be channeled to where they were most needed.

Besides Wu, several Overseas Chinese medical students from Hong Kong University traveled to Kunming to aid Robert Lim. One of them was Eva Ho Tung (何嫻姿 1862–1956), daughter of the Hong Kong millionaire Sir Robert Ho Tung. Tung was

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7 1st Report of the Chinese Red Cross Medical Relief Corps, Lim Papers, 1.
8 “Sons of Malaya,” The Straits Times, October 2 1940, 78. Wu Changyao also served as the technical expert to the National Health Administration in Nanjing, and organized and published minutes to the Far Eastern Association of Tropical Medicine 1934 annual conference held at Nanjing.
9 University of Hong Kong, Growing with Hong Kong: The University and its Graduates: the First 90 Years (Hong Kong: University of Hong Kong, 2002), 67.
the first female graduate of Hong Kong University medical school, as well as the first woman doctor to direct a mobile field unit.¹⁰ During the early years of the War of Resistance, Hong Kong was not only a conduit for resources from the West to China but also a center from which medical personnel would depart to aid the war relief effort in China.

**Funding the CRCMRC—Global Strategies, Diasporic Diversity**

Besides gathering the personnel needed for the medical relief corps, the main obstacle Lim faced was raising national health care funds to replace the collapse in tax receipts as the Nationalist government retreated to Southwest China. The government lost 85 percent of custom receipts, 65 percent of the salt tax, and 90 percent of consolidated taxes by 1938.¹¹ Unlike the Manchukuo government, which could levy income taxes to fund the Japanese war machinery in China,¹² the Nationalist government relied mostly on borrowing from banks and printing money to fund its operations throughout the war.¹³ Without an adequate internal tax base, the Nationalists turned to foreign governments for assistance. While the Soviet Union was forthcoming in providing military supplies and equipment to the Chinese in the early years of the war, the American and British governments were reluctant to aid the Chinese until Japan bombed Pearl Harbor in

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¹⁰ See Lindsay Ride, “The Test of War (Part 1),” in *Dispersal and Renewal: Hong Kong University During the War Years*, ed. Clifford N Matthews, and Oswald Cheung (Hong Kong: Hong Kong University Press, 1998). 9-24.

¹¹ Lary, *China*, 36.


The early years of the War of Resistance saw little substantive aid from Western governments, leaving China to fend for itself, especially on the medical front.

As a result, Robert Lim reached out to other Red Cross organizations around the world for assistance in the first six months of the formation of the CRCMRC. Red Cross organizations in America, Britain, Canada, Czechoslovakia, Germany, India, South Africa, and Sweden donated generously to the CRCMRC. To sustain Red Cross operations, however, Lim had to reach out to the Chinese diaspora and sympathetic foreigners. In 1940, he appealed in the British press for Overseas Chinese and sympathetic British to provide medical assistance to China. Besides money, blankets, sundries, and vaccines, Lim also urged readers in Britain to send trucks to transport these materials. In addition, he urged the British public to lobby their representatives for a change of law to permit essential spare parts, tires, and fuel to be sent to China.

Besides Lim’s direct appeals through the media, reports from sympathetic journalists and editors on CRCMRC’s work proved crucial in fund-raising. For example, Ms. Freda Utley (1898–1978), a prominent American journalist, reported favorably on Lim’s work in China in her popular book, *China at War* (1939). Readers in America noted Utley praised Dr. Lim for “gathering around him in the Chinese Red Cross Medical Commission a group of surgeons qualified abroad or in the excellent medical schools of Beijing and Canton, and [he] has started to try to create, in the midst of war, a real medical service.” More than eight thousand miles away, the editor of the Singapore

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15 2nd Report of the Chinese Red Cross Medical Relief Corps, Lim Papers, 2302001, 23.
Straits Times reviewed the same book favorably, emphasizing Lim’s role at the CRCMRC:

In Miss Utley’s description of her investigation into the ambulance and Red Cross services in China, there is a flattering account of the work, which a Straits-Chinese, Dr. Robert Lim, is doing for China. Dr. Robert Lim, the son of Dr. Lim Boon Keng, has “set his hands to cleaning out the Augean stables of the Chinese Army Medical Service.” …..Dr. Lim has been able to put the task of caring for the wounded on a new basis. Whereas the Chinese army medical service has hardly any trained nurses, is short of properly equipped hospitals and medical personnel, Dr. Lim has been able to secure the services of many brilliant men and has also enlisted a new type of educated Chinese to work as nurses and dressers.18

A reporter for The Scotsman raised funds for the CRMCRC by emphasizing the depravity of the wartime situation. His report is worth quoting extensively:

[The Chinese are] under-nourished beyond power of words to depict. There is not a temple without masses of refugees sleeping on the stone floors, or on boards, benches, tables, or altars wherever there is an inch of space. Everywhere sick men, women, and children lying in bundles of rags. To my utterable misery mothers with diseased babies in their arms fell on their knees before me crying, and asking for medical care…And

18 “China at War,” The Straits Times, August 13, 1939, 16. The article also stated the ambulance she traveled in was donated by a Singaporean millionaire.
there are at least thirty million refugees? Won’t you help? 5 pounds will keep 2 for a month.\textsuperscript{19}

The article appealed to United Kingdom donors to give to the British Fund for the Relief of Distress in China. A similar letter of appeal appeared in the \textit{Manchester Guardian} on July 11, 1939 to support the “hard pressed red cross,” citing Agnes Smedley, a wartime American journalist who worked with Lim extensively on medical distribution during her time in China.\textsuperscript{20} Smedley praised Lim’s bravery, recounting an incident where Lim persisted in saving soldiers on the warfront despite Japanese aerial bombing.\textsuperscript{21} Utley and Smedley spoke highly of Lim, despite their skepticism towards the Nationalists.

Besides sympathetic newspaper coverage, Overseas Chinese also organized activities to raise funds for the CRCMRC. A dinner and grand mannequin parade was advertised in the \textit{Singapore Free Press and Mercantile Advertiser} on June 4, 1938 to solicit donations for the Chinese Red Cross Society as well as the local St Andrew’s Hospital Sanatorium. Dinner was priced in Straits Dollars at $3.50 per person, and $2.50 for non-diners. In addition, in September 1938, local ballroom dancers taught a session of ballroom dancing at the local New World Cabaret to raise funds for the CRCMRC.\textsuperscript{22} In another case, an ethnic Chinese swimmer from Hong Kong, Yang Shau King, who went by the moniker “the Chinese Venus,” gave swimming demonstrations in Batavia (present day Jakarta) to raise funds for the organization.\textsuperscript{23} Similar to efforts in China, local ethnic

\textsuperscript{19} “China’s Agony,” \textit{The Scotsman}, July 12 1930, 13.
\textsuperscript{22} “Advertisement,” \textit{Straits Times}, September 18, 1937, 4.
Chinese elites in Singapore and Indonesia held dancing, dining, and swimming activities to raise funds for the Chinese Red Cross Medical Relief Corps.\(^{24}\)

In the United States, American social activities dominated such fund raising events – reflecting again the amalgamation of everyday activities with fund-raising. In San Francisco, Chinese-American women pawned their jewelry, young boys shined shoes, and young ladies sold flowers to raise funds for the San Francisco-based China War Relief Association, which donated its proceeds to the CRCMRC. In addition, San Francisco and Los Angeles Chinese faced off in the quintessential American game of football to raise funds for the China War Relief Association.\(^{25}\)

Chinese Americans also worked with civic organizations in the United States such as the New York-based American Bureau for Medical Aid to China (ABMAC Meiguoyiyouzhuhui 美國醫藥助華會). AMBAC sought to provide ambulances and medicine for wounded soldiers, rehabilitation aid for disabled veterans, and vaccines for ordinary Chinese to fight war-born epidemics.\(^{26}\) One of its directors was Dr. Frank Co Tui (1897-1983), a Chinese American who grew up in the Philippines and supported local campaigns to raise funds for the CRCMRC. High school and college students affiliated with ABMAC collected US$8,000 to buy and ship emergency drugs and bandages to China. In addition, ABMAC fundraisers held dinners, bridge and mahjong

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\(^{24}\) Janet Chen described similar efforts in Shanghai where elites would raise funds for Subei refugees right after the war by organizing beauty pageants and dance parties. Critics claimed that such efforts reflected the hedonistic life-style of the Shanghai elites, even though they appear extraordinarily successful in raising funds for relief efforts. See Janet Chen, Guilty of Indigence: The Urban Poor in China, 1900-1953 (Princeton, NJ: Princeton University Press, 2012), 189-190.


\(^{26}\) White Americans who lived and worked in China as well as ethnic Chinese in the United States made up the directors and members of the ABMAC. Hu Shi (胡適 1891-1962), then ambassador to America, was its patron. The president of ABMAC was Dr. Donald Van Slyke (1883-1971), a Dutch-American biochemist who taught at Peking Union Medical College in 1924. Dr. Frank Co Tui was its vice-president and in charge of the everyday operations in America. Lin Yutang was also actively involved as a publicist and director of ABMAC.
parties, sold Christmas and New Year’s cards, and staged piano recitals. In sum, fundraising for the CRCMRC was varied and international. Sympathetic American journalists invoked first-hand accounts of the war to raise funds from transnational audiences. Lim appealed to the British public through regional newspapers, and local elites integrated everyday activities in America, Britain, Indonesia, and Singapore into their fundraising efforts. The circulation of wartime knowledge and money through dense networks in and outside of China enabled the CRCMRC to operate without relying on local Chinese revenues.

**Sustaining the CRCMRC**

How effective were these fundraising efforts? The results were impressive—Overseas Chinese and American Aid Organizations funded 98 percent of the operating budget of the CRCMRC, or around 3.35 million Chinese dollars from 1938 to 1940. As Chart 2.1 shows, Overseas Chinese and Americans each donated around 1.2 million Chinese dollars, making up almost seventy percent of the CRCMRC funding.

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28 All the statistics for the chapter were collated from the seven reports of the CRCMRC located in Robert Lim’s personal paper at the Institute of Modern History archives at Academic Sinica. See Various reports of the CRCMRC, Lim’s Papers.
These figures for the Overseas Chinese do not include the Chinese-Americans who donated through American Aid Organizations. Around 80 percent of donations to ABMAC came from Chinese Americans.\(^{29}\) Including their contributions in the overall category of Overseas Chinese donors, that latter category will make up 45 percent of all donations. This excludes the unspecified large sums Overseas Chinese donated to the United China Relief, another New York-based umbrella relief organization.\(^{30}\) Even if

\(^{29}\) In folder “ABMAC minutes bulletin, 1939,” American Bureau for Medical Aid to China Records, Rare Book & Manuscript Library, Columbia University in the City of New York (hereafter ABMAC archives). Take for example the sponsors of items sent to China for the month of September 1939. The Chinese Cultural Theatre Group raised US$502 for 375,000 Sulfanilamia pills; the Chinese Embassy, the Chinese Student Christian Association in Boston, and the Seattle Chinese Patriotic League sponsored 50 microscopes costing US$6,750; The Chinese Embassy, the Chinese Christian Association in New York, the Indianapolis China Committee, Chinese Student Club at the University of Michigan; and four other non-Chinese individuals and organizations sponsored 200 sphygmomanometers to the amount of US$ 2,900. In sum, all of the sponsors are Chinese-Americans.

only half of the donations to the UCR were from Chinese-Americans, the total support for the CRCMRC would then comprise more than 60 percent of the CRCMRC’s donations. In contrast, only around two percent of the funding for CRCMRC came from local sources, including the Department of Health (Weishengshu 衛生署), the Shanghai-based Red Cross or the International Red Cross in China.\textsuperscript{31}

**GRAPH 2.1**
*Treatment and Immunization of Chinese by the CRCMRC*

These transnational foundations of the CRCMRC allowed the organization to undertake an unprecedented expansion of medical treatment in wartime China. As shown in Table 2.3, the results were impressive compared to the pre-war period. From 1938-1940 the CRCMRC treated, immunized, deloused, and fed far more people than any other China-based organization in any other two-year period. For example, the CRCMRC immunized more people from 1938-40 than the Shanghai-based National Quarantine Bureau from 1931-32, the zenith of the latter organizations’ operations. More significant,

\textsuperscript{31} The latter two operated in occupied China and were reluctant to be seen supporting Lim’s CRCMRC.
the CRCMRC funded new preventive medical programs such as delousing and state-nutrition programs. Moreover, as I will show in the following chapters, Robert Lim introduced modern medical training (1938-45) as well as blood banking (1944-45) to China during the war.

**TABLE 2.3**

*Various Health Care Organizations in China (1929-1940)*

<table>
<thead>
<tr>
<th>National-level Health Care Organizations</th>
<th>Director</th>
<th>Number of Patients Treated</th>
<th>Number of Patients Immunized</th>
<th>Number of People and Clothes Deloused</th>
<th>Number of People on Nutrition Program</th>
<th>Budget (Chinese Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese Red Cross Medical Relief Corps</td>
<td>Robert Lim</td>
<td>&gt;4 million (1938-40)</td>
<td>1,965,468 (1938-40)</td>
<td>&gt;2.2 million (1938-40)</td>
<td>&gt;300,000 (1938-40)</td>
<td>3.3 million (1938-40)</td>
</tr>
<tr>
<td>National Quarantine Service</td>
<td>Wu Lien-teh</td>
<td>&lt;1,000 (1930-32/Incomplete Data)^32</td>
<td>1,760,000 (1931-33)^33</td>
<td>None</td>
<td>None</td>
<td>600,000 (1931-33)^34</td>
</tr>
<tr>
<td>National Health Administration School Health Program</td>
<td>Liu Rui-heng</td>
<td>200,000 treated and immunized^35 (1929-37)</td>
<td>None</td>
<td>None</td>
<td>Unknown percentage of 1.2 million dollars of overall National Health Administration Budget (1931-33)^36</td>
<td></td>
</tr>
<tr>
<td>Central Field Health Station</td>
<td>Liu Rui-heng</td>
<td>&gt;10,000 (1931-1933)^37</td>
<td>Unknown</td>
<td>None</td>
<td>None</td>
<td>1.5 million (1931-33)^38</td>
</tr>
</tbody>
</table>

**PART II – Universalizing Health Care versus Providing Quality Health Care**

The contributions of Overseas Chinese in creating a new health care system in wartime China, as measured by the increase in the number of people treated from 1938-1940, appeared to be a resounding success. These figures, however, do not tell us how

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^33 Borowy, “Thinking Big,” 205-228.
^34 Wu and Wu, *NQS Series 1*, 190.
^35 Yip, Ka-che, *Health*, 127
^36 Wu and Wu, *NQS Series 1*, 190.
^37 Yip, *Health*, 82.
^38 Wu and Wu, *NQS Series 1*, 189.
well CRCMRC patients were treated, that is the quality of care they received, and they do not tell us whether the provision of care actually met the needs of the sick and wounded. In the next section, I explore how Lim’s personal medical experiences and biases rather than needs on the ground influenced decisions on the kinds of medical care CRCMRC provided soldiers. Even as the soldiers might have demanded a more extensive medical system based on curing diseases as they appear, Lim focused more on preventing incidences of diseases. He created a preventive health care system that was more than a simple and natural outgrowth of medical conditions on the ground.
When Robert Lim began enacting new health care system policies for soldiers and civilians, he saw that scabies was the disease with the highest incidence (30%) among Chinese soldiers. He observed that malaria was the next most prevalent disease (11%). Bronchitis and other respiratory diseases (7%), gastro-intestinal diseases (5%) and then nutrition-related diseases (3%) followed.

Having surveyed the disease landscape, Lim poured resources into delousing soldiers to treat scabies. Yet, instead of going down the list to tackle malaria or bronchitis, he spent most of his resources on nutrition programs, even though few
Chinese soldiers had nutritional-related diseases. Lim believed that a nutrition program addressed not only specific cases of malnutrition but also malaria, bronchitis, and dysentery. Lim argued that poor nutrition and privation were largely responsible for respiratory diseases. Similarly, he asserted that a good diet and careful nursing were far more important in treating dysentery than giving pills. In addition, Lim claimed that apart from administrating anti-malarial drugs, “dietary treatments have been essential, since the majority of the patients suffered from chronic malaria and debility.”

Lim’s interest in a wartime nutrition program followed from his longstanding research in this field at the PUMC. In chapter one I showed that as head of the physiology department, Lim extensively researched the nature of gastric secretions. He worked closely with the head of the biochemistry department, Dr. Wu Hsien, who wrote and spoke extensively on nutrition in China. However, Wu Hsien himself was ambivalent about enforcing nutrition as a state project. In a 1928 article, Wu Hsien emphasized that “to think of dietary deficiency only in terms of these diseases is to miss the real significance of the recent advances of our knowledge of nutrition.” Even though Wu agreed with Lim that better nutrition enables an individual to fight diseases more successfully, he cited contemporaneous research to show that better nutrition only helps to raise “general resistance” to diseases and is less effective in treating specific ailments.

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39 Lim had an ambitious plan in 1938 to institute a program to eradicate mosquitos to prevent malaria outbreaks, but by 1939, he settled on only providing quinine to assist Chinese soldiers with malaria. By 1940, Lim candidly admitted, “No attempt has been made to control the breeding of mosquitos.” Only in late 1940 were there attempts to buy mosquito nets. See 5th Report of the Chinese Red Cross Medical Relief Corps, Lim Papers, 36-38. Lim’s stance appears problematic given that his colleagues at the Peking Union Medical College (PUMC) had conducted one of the world’s first integrated and comprehensive programs in 1935 in North China to combat the outbreak of malaria.

40 4th Report of the Chinese Red Cross Medical Corps, Lims Papers, IMH archives, 2304001, 72; 3rd Report of the Chinese Red Cross Medical Corps, Lim Papers, 42. In the third report, Lim argued that administrating medicine was ineffective without “the aid of proper diet and nursing care.”

41 4th Report, 71.

Lim clearly did not share Wu Hsien’s reluctance, as he embarked on a program to improve levels of nutrition among soldiers and civilians.

Lim’s efforts could also be understood in the longstanding context of food as medicine in traditional Chinese medicine. From Li Gao’s (李杲 1180-1251) *Treatise on the Stomach and Spleen (Piwei lun 脾胃論)* to Li Shizhen’s (李時珍 1518-1593) *Compendium of Materia Medica (Bencao gangmu 本草綱目)* to contemporary notions of food as “cooling” or “warming” in Chinese medicine, food has been an important remedy for illnesses and ailments in Chinese medicine, which has been eclectic in its use of pharmutical drugs, acupuncturc, and even dream diagnosis and treatment. Unlike the Ming and Qing governments, which were restrained in providing medical aid for the public, Lim transformed the belief in food as medicine with international resources and political clout into actual health care policy, resulting in far-reaching results for ordinary Chinese soldiers and civilians.

Finally, Lim’s preferences for nutrition and preventive care as the basis for wartime health care can be partly attributed to the difficulties of obtaining the medicine that would have facilitated a drug-based system. China was literally changing in shape and size during the war, and it was difficult to ship medical products from abroad. Prior to the October 1938 fall of Guangdong, donated supplies were easily funneled through.

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44 During the Ming and Qing dynasties (1368-1911), local elites, not the government, provided limited health care for the people of China. See Angela Leung, “Organized Medicine in Ming-Qing China: State and Private Medical Institutions in the Lower Yangzi Region,” *Late Imperial China* 8, no. 1 (June 1987): 134-166.
Wu Chang-yao in Hong Kong. As major cities in South China fell one by one from October 1938 to May 1939, shipping options for the CRCMRC Supply Services became even more restricted. The Supply Services struggled to transport medical supplies, which they sent in small lots by circuitous routes over rail, road, and river. By the middle of 1939, however, Japanese incursion into Guangxi Province meant that supplies could no longer go through Hong Kong. Allied airlifts began to reach Chongqing across “the hump,” even as the Burma Road was constructed as a supply route to link Rangoon in Burma to Kunming in China.

From February 1939-August 1939, nine batches of 3,000 Overseas Chinese volunteers from present-day Malaysia and Singapore transported supplies and maintained vehicles along the Burma Road. Many were motivated by fellow Chinese in Southeast Asia who actively opposed the Japanese, even though most of them have never set foot in the China. A seventeen-year old ethnic Chinese volunteer in Singapore recounted his voyage to China,

During the voyage, we were not nervous. It was like an adventure…because we were going to help our country, and because so many of us had never been to China before. Even though we lived all our lives in the Nanyang region, China was in our blood…You might think it was foolhardy. We definitively knew it was dangerous, but most of us were young men and so we were quite positive about getting through the war alive.45

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One third of them died from diseases and aerial bombings, another third never returned to Singapore or Malaya because of extremely slow rates of repatriation to the colonies, while a more fortunate third managed to make their way home after the war.\textsuperscript{46} The difficulties in shipping supplies were exacerbated despite all the diasporic manpower by the closure of the Burma Road from July 1940-October 1940 and the reluctance, until the Japanese invasion of British Hong Kong in 1941, of the British government to allow fuel transportation for CRCMRC vehicles.\textsuperscript{47}

British politicians and businessmen friendly to China used a letter from Robert Lim to appeal to the prime minister and parliamentary leaders to lift the Burma Road blockade. In the letter, Lim complained the “medical supply situation has become extremely serious,” and “all difficulties [are] due to previous delays in obtaining trucks, spare parts, and fuel from Indo-China and now complete restrictions of shipments from Burma.” He urged the British and Overseas Chinese readers to “to use every channel [to] enable Red Cross and associated relief organisations to import vehicles, spare parts and fuel via Burma, without which all relief work must soon cease.”\textsuperscript{48}

Medical supplies, even when they reached China, could not contribute to the formation of a comprehensive curative pharmaceutical regime. Ninety-three percent of supplies from June-December 1939 were simple medicines and vaccines of which almost forty percent were cholera vaccines and quinine for malaria. There was very little imported medicine for non-malaria or gastrointestinal diseases. Less than seven percent

\textsuperscript{46} See Ong, \textit{Nanqiao}.
\textsuperscript{47} The British did not want to offend the Japanese who considered fuel a military supply rather than essential for CRCMRC vehicles and ambulances. In Political Far Eastern China Files, Folder 43, 1940, FO 371/24668, The National Archives at Kew, United Kingdom.
\textsuperscript{48} Letter from Robert Lim, Director of the Chinese Red Cross Medical Relief Commission, August 15, 1940, in Political Far Eastern China Files, Folder 43, 1940, FO 371/24668, The National Archives at Kew, United Kingdom.
were first aid dressings or more complex diagnostic equipment such as microscopes. A preventive health care system would therefore be easier to implement because the food for the nutrition program could be procured locally and bought with diasporic money rather than imported from overseas.

The crux of the wartime nutrition program was the Special Diet Service, inaugurated at Zhiyang sometime between August and December 1938. The CRCMRC instituted it “in view of the inadequancy of the normal hospital diet for the prevailing types of medical cases, and the need for special diet for the prevailing types of medical cases.” Each military unit was offered a diet of 5 meals a day: soft rice cooked with spinach soup, hot cowmilk or soymilk with 4 biscuits, thin noodles (gua mian 転麵) with liver and meat soup, thin noodles cooked with blood and meat soup, and soft rice cooked with meat and spinach soup. Beri-beri patients received rice noodles, which when cooked preserved nutrients better than rice. The aim was to raise daily caloric intake for soldiers from an average of 2,500 to 3,000. By the third week of the program, more than one thousand soldiers (1,287) were given the Special Diet.

Lim expanded the program in 1939 to include Special Diet kitchens in every military hospital. In the hospital, patients had a choice of a liquid, soft, or supplementary diet, depending on their medical conditions. The Special Diet kitchen also disbursed cod liver oil and powdered milk to soldiers suffering from malnutrition. The Red Cross units

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49 5th Report of the Chinese Red Cross Medical Relief Corps, Lim Papers, 2305001, 181.
50 3rd Report of the Chinese Red Cross Medical Relief Corps, Lim Papers, 2303001, 50.
also taught soldiers how to reduce cooking time to preserve vitamins in food. The CRCMRC worked with local academics, such as Shen Tong (沈同), a professor of physiology at Qinghua University, who conducted nutritional surveys among soldiers to improve their diets. The 1939 intervention helped a total of 321,493 soldiers by the end of 1940, a dramatic increase from the first six months of the program, which treated only 6,184 soldiers.

This nutritional program had its limitations. The erratic supply of unpolished rice and green vegetables on the warfront meant that the vitamin B1 needed to prevent cases of beri-beri did not reach all soldiers. Beri-beri cases remained high, even as its incidence rate fell over time. To compensate for the lack of Vitamin B1, Lim proposed the distribution of milk powder and cod liver oil, as well as shorter cooking time to retain nutrients in vegetables. Shen Tong’s report also indicated that soldiers received at least some vitamin A from plant roots in the absence of vegetables. Lim also introduced direct drips of vitamins into patients suffering from serious cases of malnutrition and beri-beri. In addition, to compensate for the lack of meat at the warfront, which led to nutritional edema, Lim advocated the use of beans and soybeans, which were a readily available alternative source of protein.

To inform all soldiers of these alternatives, Lim distributed nutritional calendars to soldiers (shibing yiyang rili 士兵營養日曆). The CRCMRC encouraged soldiers to

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52 4th Report, 49.
54 4th Report, 72-73.
55 4th Report, 72-73.
57 Ibid.
58 “The Emergency Medical Services Training School,” Lim Papers, 2310001, 70.
consume more beans (huadou yingduochi 黃豆應多吃), not to overcook vegetables (qingcai mojiuzhu 青菜莫久煮), to use more oil-related products in cooking (youlei changyong 油類常用), and to drink up rice soup (mitang hewan 米湯喝完). It promoted alternatives to white rice, which was preferred by most Chinese, including brown rice (caomi 糙米), corn (yususu ⽟蜀黍), millet (xiaomi 小米), and sorghum (gaoliang 高粱).

Couched in the language of saving the nation through adopting scientific nutrition (yingyang jiuguo 營養救國), the CRCMRC sought to change the diet of Chinese soldiers.

The Special Diet Services’ intervention ultimately had mixed results. Soldiers suffering from nutritional-related diseases as a percentage of soldiers suffering from all diseases increased from 3 to 4.8 percent from January 1939 to December 1940, but there was an intervening drop to 0.8 percent during the period of January-June 1940. What was more remarkable about the program was the ability for the CRCMRC to institute the Special Diet for more than 300,000 soldiers in the short period of two years. Soldiers ate better after the Special Diet intervention. Eating better might not have helped them avoid malaria, dysentary, and bronchitis, but it helped fight these diseases better.\(^\text{59}\) Even though Lim saw food as medicine from a Western medical perspective, his beliefs were influenced by traditional Chinese medical beliefs that considered a proper diet as a way to prevent and treat illnesses. In sum, the nutrition program was ambitious and highly adaptive to wartime circumstances even though it did not live up to all its aims and targets.

**Delousing the Nation**

\(^{59}\) Robert Lim claimed when protein was introduced into Chinese soldiers’ diets it helped dysentery patients recover much more rapidly than they would have otherwise. See 6th Report, 29.
Besides intervening in the diet of soldiers, Robert Lim also sought to delouse soldiers to kill off mites and lice on their bodies. Mites spread scabies, which was the disease that most afflicted Chinese soldiers. Lice spread typhus fever and relapsing fever, and both diseases, if left untreated, could lead to premature death. Lacking access to bathing water or soap Chinese soldiers rarely bathed, and skin infections often worsened into more serious ailments such as impetigo.

To combat these problems, Lim began the delousing program in 1938 and poured resources into its expansion in the following years. He sent mobile units of trained sanitary engineers and doctors across unoccupied China to delouse soldiers and their clothes. By mid-1939, mobile delousing units reached as far east as Jinhua in Zhejiang, as far west as Chongqing in Sichuan, as far north as Ganguyi in Shanxi, and as far south as Liuzhou in Guangxi. By mid-1940, mobile units extended as far south as Nanning in Guangxi and as far west as Xiaguan in Yunnan. The reach of delousing units represented an attempt to extend medical relief to soldiers in unoccupied China.

In each delousing station, trained engineers would set up portable steam delousers from strips of curved wood. They slotted together the wood to make a cylinder type delouser, roughly one and a half meters in height and diameter. Because of their shape these delousers were dubbed “Army Rice Cookers.” Sanitary engineers and workers poured sulfur and lime in the “rice cookers” (fanguo 饭鍋), which contained soldiers’ clothes. Additional hot air delousers were constructed, with portable stoves creating

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60 5th Report, 35.
61 Ibid., 135.
62 7th Report of the Chinese Red Cross Medical Relief Corps, Lim Papers, 2307001, 194.
steam to dry off deloused clothes. Finally, the engineers set up large shower stations to delouse soldiers.

In reality, the lack of resources limited the efficacy of delousing. Not only was there a limited amount of wood to construct these cylinders, sulfur was similarly in short supply on the warfront. The lack of wood also meant that shower stations were rarely constructed. Moreover, portable stoves and a reliable water supply were also in short supply, meaning that hot air delousers to dry clothes were often not constructed alongside the sulfur units. By 1939, the delousing units set up eleven stations in army camps and eighteen others in hospitals.

The lack of resources on the ground limited the efficacy of delousing. When wooden cylinders could not be constructed Robert Lim resorted to using alternative materials, in particular, wine vats, which were plentiful in Chinese inns in rural market towns. In 1940, Lim used bamboo tubes to make shower-baths instead of the scarce wooden poles, enabling more shower delousers to be constructed. Sanitary engineers and officers also taught commanders in each unit how to set up these delousing and shower units. By January 1940, soldiers could set up these units on their own under the supervision of sanitary engineers, allowing the limited numbers of engineers to reach out to more units and soldiers.

The advent of mobile delousing units meant that smaller scale delousers were deployed in regiments and battalions on the battlefields. Some were constructed so close to the warfront that “the booming of guns can be heard.”

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63 6th Report, 34.
64 Ibid., 34.
65 7th Report, 31.
66 Ibid., 31.
reportedly instructed all armies to build a “Guo” delouser for every regiment.\(^{67}\) As a result, a report claimed that the incidences of scabies among soldiers in Shanxi and Hunan were reduced from 90 to 15 percent after vigorous treatment and disinfection of clothing and bedding.\(^{68}\) Civilians who suffered from scabies and lived close to army units were also deloused and treated in these camps and hospitals.

How effective was delousing? Delousing appears to have brought down incidences of relapsing fever, even though it could not prevent a July 1939 to June 1940 spike in typhus fever. By 1940, the incidence of scabies and associated diseases decreased to 1938 levels, suggesting that delousing could effectively control the rates of lice- and mite-transmitted diseases even though it did not completely eliminate them from wartime China.

**TABLE 2.4**
*Rates of Scabies, Typhus Fever, and Relapsing Fever, 1939–1940*

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Relapsing Fever</td>
<td>537</td>
<td>117</td>
<td>207</td>
<td>402</td>
</tr>
<tr>
<td>Scabies</td>
<td>20,414</td>
<td>23,816</td>
<td>68,991</td>
<td>28,422</td>
</tr>
<tr>
<td>Typhus Fever</td>
<td>38</td>
<td>39</td>
<td>1,495</td>
<td>241</td>
</tr>
</tbody>
</table>

**TABLE 2.5**
*Percentage of People Suffering from Various Lice-and Mite-Transmitted Diseases Relative to Numbers Deloused*

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Relapsing Fever</td>
<td>3%</td>
<td>0.3%</td>
<td>0.6%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Scabies</td>
<td>116%</td>
<td>53.5%</td>
<td>193.7%</td>
<td>7.6%</td>
</tr>
<tr>
<td>Typhus Fever</td>
<td>0.03%</td>
<td>0.02%</td>
<td>2.12%</td>
<td>0.01%</td>
</tr>
</tbody>
</table>

\(^{67}\) 7th Report, 47.

\(^{68}\) Ibid., 31 and 34.
The official explanation for the spike was that efforts at delousing detected more incidences of lice- and mite-transmitted diseases in its initial phase and, consequently, sustained delousing cured many soldiers, bringing overall rates of diseases down to 1938 levels.\textsuperscript{69} Indeed, sanitary units deloused approximately 380,000 people as well as 800,000 articles of clothing by the end of December 1940, an exponential increase from the January–June 1939 period where around 17,000 persons and 145,000 articles of clothing were deloused. Such an expansion represented a extension of the safety net that was non-existent prior to the war, and can be attributed to high levels of adaptation and the advent of mobile delousing units.

Besides looking at trends of absolute figures, comparing the percentage of people suffering from these diseases (disease rates) relative to the number of people deloused (sample size) also gives us a clue of the effectiveness of delousing. As shown in table 4, the percentage of people suffering from these three diseases relative to the number of people deloused went down in the same period, with the exception of an exceptionally sharp increase from January–June 1940.\textsuperscript{70} In sum, the delousing efforts were somewhat effective in preventing an increase in the rates of lice- and mite-transmitted diseases but were less effective in eliminating them. This effectiveness derived largely from Lim’s adaptation of limited resources to local circumstances, but it also suggests that finite resources might lead to less than optimal health care outcomes.

\textbf{Preventive Care even in Curative Operations}

\textsuperscript{69} Ibid, 31.
\textsuperscript{70} Such a comparison is only a rough indicator of the relative rates of diseases in relation to the rates of detection, because it assumes that the number of people deloused is equal to the number of people sampled for the disease.
The principles of preventive care can be seen, too, in CRCMRC’s surgical and evacuation units. Surgeons at CRCRMC performed a wide range of operations on 50,000 soldiers from 1938 to 1940—from simple incisions and drainage to complex reconstructive plastic surgery for soldiers. They kept amputations to a minimum because surgeons were able to remove the source of irritant for most soldiers. In addition to surgical operations, medics on the warfront dressed 2.95 million soldiers as well as stabilized and alleviated 20,000 fractures. Antiseptics were also applied liberally on soldiers’ wounds. In sum, the evacuation and surgical units treated a total of 4.1 million people.

Robert Lim compensated for the lack of resources on the warfront by incorporating wooden splints into plaster of paris for fracture stabilization. Plaster of paris casts were too costly to import and too heavy for stretchers to travel through areas without roads. The CRCMRC medics created a plaster of paris with lighter wooden splints, which were readily available in Southwest China. This achieved the dual aim of immobilizing the soldiers’ limbs without enduring the heavy weight of the cast. These measures appear to have been so successful that Lim sought to rein in biomedical interventions in 1939 in favor of preventive care strategies. Lim began admonishing doctors who applied too much antiseptic to soldiers’ wounds. He warned that such “overtreatment” irritated the wounds and delayed their healing. Instead, Lim argued that

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doctors should focus more on providing better food to improve wounded soldiers’ diet so that they would have the strength to recover from their injuries.\footnote{4th Report, 45.}

**Comparing Chinese Health Care to Other Health Care Systems**

I have argued that the wartime preventive health system was effective in reaching out to more Chinese during the War and mitigating the rise in the incidence of diseases. As a result of nutrition and delousing programs, soldiers ate better and were better protected from lice- and mite-transmitted diseases. Predicated on preventive medicine the system also had its share of problems: an inability to eliminate diseases completely; the impossibility of reaching out to more soldiers and civilians due to limited resources; and limited biomedical interventions due to Lim’s strong preference for preventive medical care.

How did the Chinese health system compare to other systems during the same time? Chinese health care shared with wartime America a similar institutional evolution, although it had a greater emphasis on nutrition and delousing. Like China, the United States’s wartime government combined military and civilian medicine under the framework of preventive care. The director of the U.S. Preventive Medicine Division wrote in 1943, “A civil population that is not healthy cannot be prosperous and will lag behind in the economic competition between nations. This is even more true of a military population, for any army that has its strength sapped by disease is in no condition to withstand the attack of a virile force that has conserved its strength and is enjoying the vigour and exhilaration of health.”\footnote{James Stevens Simmons, “The Preventive Medical Program of the United States Army,” *American Journal of Public Health* 33 (August 1943): 931-940. What was significant was that the United States only properly formed a preventive medical unit in 1941 after it entered the war against Japan, two years after the
committed to expanding health care during the war. After the Pearl Harbor bombing, the U.S. Congress passed the 1941 Community Facilities Act, which provided US$300 million for public works, including health and sanitation facilities, in communities with rapidly expanding populations from military camps and war industries. In addition, the U.S. government sponsored health insurance reforms for veterans and agricultural workers as well as medical care for women and children (such efforts were reversed after the war). In sum, the Sino-American preventive care model was underpinned by a significant expansion of government resources for universalizing health care, which was far more extensive than other nations during this period.

The major difference between China and the West was the relative lack of attention to shell shock in Chinese military medicine. Shell shock was equated with military medicine in the West, and in North America and Britain medical corps poured many resources into combating shellshock. Discourse on shell shock, or post-traumatic stress disorders (PSTD), as it is more commonly known today, only emerged as a peripheral “disease” in the Republic of China on Taiwan in the National Defense Medical Center led again by Robert Lim. Even then, attention paid to it was relatively minor and only on an experimental scale. Allied European and US armies during the Second World War and the Americans during the Korean and Vietnam wars made serious, sustained, 

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77 In contrast, the wartime Sino-American model differed from models in a country like Canada, which emphasized ad-hoc responsive medical control and biomedical interventions as opposed to preventive care. Canada shifted to a more preventive care system in the 1970s. See Jay Cassel, “Public Health in Canada,” The History of Public Health and the Modern State, ed. Dorothy Porter (Amsterdam: Editions Rodopi, 1994), 276-312.
and all-consuming efforts to tackle it. Analysis of Chinese wartime trauma has slowly begun, as shown in a literary historian’s recent work on the vivid anguish, suffering, and pain of military families divided across the Taiwan Straits by the Chinese civil war. Shell shock was equated with European military medicine during the war, but in China nutrition and delousing were much more significant issues.

Besides shell shock, another key difference was the significantly lower rates of venereal diseases among Chinese soldiers compared to their counterparts on the European front. Sexual and mental health concerned European medical authorities more than the CRCMRC’s priority of internal medicine, especially the digestive tract and skin conditions.

**Conclusion: The Legacy of Preventive Care in Wartime China**

Wartime medical care represented an epistemic break from the pre-war period. Philanthropic and government-led public health and scientific medicine came to an abrupt end as military medicine became central to the medical relief efforts in the country. Medicine in the laboratory gave way to medicine in the field when Robert Lim and his colleagues used local materials in lieu of imported ones for delousing, fracture

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78 Most of the academic research on military medicine examined the phenomena of shell shock and its later incarnation, PTSD. See for example Dean, *Shook Over Hell; Shephard, A War of Nerves;* and Reid, *Broken Men.* The National Defense Medical Center in Taiwan took tentative steps in the 1960s to conduct experiments on Chinese soldiers related to shell shock, but it appears to have gone nowhere. See folder entitled “Protein Metabolism and Shock Study,” in Box 25, ABMAC archives.

79 Mahlon Meyer, *Remembering China from Taiwan: Divided Families and Bittersweet Reunions After the Chinese Civil War* (Hong Kong: Hong Kong University Press, 2012).

80 The pre-modern understanding of the levels of mucus as a determinant for madness in Chinese medicine was forgotten in the twentieth century. For the study of madness in the Ming and Qing dynasty, see Fabien Simonis, “Mad Acts, Mad Speech, and Mad People in Late Imperial Chinese Law and Medicine,” PhD diss., Princeton University, 2010.

81 There was an alleged infection rate of almost 90 percent among American soldiers in the early 1940s, which fell to 10 percent by the end of war. See Barbara Tomblin, *G.I. Nightingales: The Army Nurse Corps in World War II* (Lexington, KY: University Press of Kentucky, 1996), 169. CRCMRC figures suggest a far lower rate, but the lack of attention paid to venereal diseases might have masked higher rates of diseases. See Appendix.
stabilizing, and providing special diets. Preventive medicine became more important than scientific research or surgical precision. Furthermore, more Overseas Chinese took part in medical relief; no longer were they simply medical elites, but they were also donors, truck drivers, and intermediaries for the CRCMRC.

Preventive care, which emerged under the globally-minded CRCMRC in 1938, was gradually to change in 1940 as the war situation stabilized. As I will show in the following chapter, Lim began experiments on developing new curative treatments for dysentary, typhus fever, and salmonella at the affiliated EMSTS. Even as he began research on new curative treatments, Lim still held on to many preventive health care practices. In 1941, Lim remarked that “greater emphasis [of Chinese health services] is laid on preventive medicine and service training, which covers not only military medicine training, but all of public health.”82 In addition, by 1943, the Special Diet and Delousing Units remained important at the EMSTS.83 A new department of preventive service was set up, and it expanded services to include maternity and children medical care for soldiers’ families, as well as pre-enlistment screenings for soldiers heading to the Indian borders to fight the Japanese.84 A shift to more laboratory-based curative medicine only occurred after the war, even as new forms of preventive care such as dental care emerged.85

The CRCMRC’s efforts at universalizing health care reflected Lim’s 1937 calls for the establishment of Chinese “state medicine,” a program in which the government

82 “Emergency Medical Service Training School Announcement, January 1941,” Lim Papers, 23011015, 15.
85 “Guofang yixueyuan yakexi fazhan jihua shuomingshu” 国防医学院牙科系发展计划说明書 [A scheme in building up the dental school of the National Defense Medical Center], May 1948, 003000007759A, Academia Historica, Taipei, Taiwan.
“must be responsible for all medical work.” He asserted that curative and preventive medical care must be “provided without charge to the people” through reasonable taxation.\textsuperscript{86} Ultimately, this health care system was neither financed by Nationalist tax receipts nor sponsored by foreign governments. Instead, the cash, equipment, ambulances, and personnel that Overseas Chinese and American NGOs provided made possible the realization of such a medical system. While fundraising strategies were carried out in American and Southeast Asian contexts, the proceeds went to China.

The CRCMRC treated, deloused, and immunized Chinese soldiers more than sixteen million times from 1938 to 1940. In terms of numbers of soldiers treated, in 1940, surgical and evacuation units treated two million people, delousing units disinfected three hundred and eighty thousand soldiers, and medical units immunized around nine hundred thousand soldiers. Adding these figures together would show that CRCMRC provided medical intervention for three million, two hundred and eighty thousand soldiers in 1940. CRCMRC units operate independently, and soldiers were thus not given different types of treatment at the same time. A soldier visited by a delousing unit would not be immunized. However, soldiers might have different types of treatment within the year. For example, a soldier could have underwent surgery a few months after he was deloused. A more accurate figure for the numbers of soldiers treated by CRCMRC that year would be two and a half million soldiers, assuming that half of the soldiers who were deloused and immunized also received surgical and evacuation services in 1940. By adding half of the immunization figures from 1938 to 1939 (half a million soldiers out of a million) to that number and counting the figures of the other treatments as repeated treatments by the

same soldiers, an estimated figure for the total numbers of soldiers treated by the CRCMRC from 1938 to 1940 would be three million soldiers.\textsuperscript{87} This was in the context of a Chinese army that never saw more than three million soldiers at any one time from 1937 to 1945.\textsuperscript{88} In terms of geographical reach, the delousing units treated soldiers as far as the borders of unoccupied China, reflecting its expansive nature. In sum, military medical care, which included preventive and curative treatment, was almost universal for soldiers from 1938-1940.

The Overseas Chinese were central in creating new Chinese institutions of science and medicine, which, with various levels of success, adapted global trends of medical research and practices to local conditions. In the case of CRCMRC, Overseas Chinese translated money and expertise into implementing a new health care system. Besides extending preventive medical care, I will show how during the war these Overseas Chinese doctors developed mass medical training (chapter 3), as well as practices new to China of blood banking (chapter 4). The Overseas Chinese community was unique historically in that very few health care systems were almost wholly dependent on the resources from nationalistic ties from abroad, although future research may suggest that

\textsuperscript{87} There is no indication in the CRCMRC reports that the same soldiers were immunized with the same vaccines over the years.

diasporic communities played similarly important medical roles elsewhere.\textsuperscript{89} In the next chapter, I explore how Lim trained and recruited medical personnel for the CRCMRC through the EMSTS, and examine how Lim dealt with the inherent tensions of wartime medicine. Was it better to allocate resources for immediate medical relief or more prudent to support long-term training of competent medical personnel to sustain China in a war against Japan?

\textsuperscript{89} The resultant dislocation of medical personnel by the Axis powers and their allies’ occupation of Europe meant that Robert Lim also recruited many anti-fascist doctors for his organizations. These doctors consequently traveled thousands of miles to aid the CRCMRC and EMSTS in China. Twenty-six doctors and international brigade volunteers from the anti-Franco Spanish Republican army arrived in China via the United Kingdom at the end of the 1939. The contingent was made up of seven Poles, seven Germans, three Romanians, and one doctor each from Czechoslovakia, Bulgaria, Hungary, and the Soviet Union. In addition, a German Jew, Wilhelmm Mann, joined the war effort of the CRCMRC at Guangxi after arriving in Shanghai as a refugee from Nazi Germany. In 1940, six left-leaning British doctors left Britain to help the CRCMRC at Kweiyang. Besides Europeans, six Indian doctors, dispatched from Bombay by the Indian National Congress sailed to China via Singapore and Hong Kong bringing with them X-ray machines and ambulances to aid the CRCMRC. See Ong, \textit{Nanyang jigong}. 
Chapter 3

The Politics of Wartime Medical Education, 1938–1945

Chiang Kai Shek summoned Robert Lim in late 1943, and told Lim to justify the six-year medical program he proposed to strengthen medical education in wartime China. Many critics have complained to Chiang that Lim’s proposal was impractical, given that China needed trained medical personnel quickly in its fight against Japan. These critics wanted Lim to continue with the three-month medical training program he began at the EMSTS. Lim valiantly defended his proposed program, arguing that a long-term medical training was the only way to truly train Chinese students in western medicine, as most students only had a high school education and no foundation in the basic sciences. Chiang remained unconvinced, and contemplated removing Lim from his positions. Would Lim have to leave? What was the nature of medical education in Wartime China? Who were these critics who were so adamant at bringing down Lim?

This chapter shows the more contentious elements of international interactions in the institutionalization of Western medicine in China through the history of medical training in wartime China. In particular, the international conflict between aid organizations in America impeded medical education and expansion in China. The Chinese War of Resistance, also known as the Pacific War in America, had expected unity among different groups in America and China. However, such unity forced premature alliances between disparate medical organizations during the war. Much of the dispute centered on the programs of the Emergency Medical Service Training School (EMSTS Zhanshiweisheng xunlianzhongxin 戰時衛生訓練中心). The school was created in 1938 by Robert Lim Ko-Sheng to train medical personnel for the Chinese war
effort, especially for the Chinese Red Cross Medical Relief Corps. The EMSTS initially funded by the Overseas Chinese and American Bureau for Medical Aid for China (ABMAC), and later sponsored by the United China Relief.

The early cooperation between the Overseas Chinese, American aid officials, and indigenous Chinese officials funded Lim’s expansion of medical education, rehabilitation, publishing, and vaccine production in China. As the war progressed, such cooperation faltered, ironically because of the premature consolidation of disparate aid organizations in 1941 into one organization, the United China Relief. The largest organization to join the organization was ABMAC whose New York members fully backed Lim’s endeavors in China. ABMAC personnel, who thought that United China Relief was merely a weak fundraising organization, struggled in the fight against the organization when the latter grew exponentially due to its phenomenal and unprecedented fundraising powers. United China Relief leaders eyed ABMAC’s program in China, and their conflict soon centered on a controversial six-year medical program proposed by Robert Lim. Both sides marshaled domestic and international allies to support their efforts, and in the end, the pro-United China Relief camp persuaded the Chinese authorities to sack Robert Lim. This case on the rise and fall of Robert Lim shows the unstated importance of international contingent political events shaping the trajectory of medical training in wartime China.

To the broader themes of the dissertation, this chapter also seeks to revise the narrative of the marginality of the Overseas Chinese in China, as well as challenge the narrative of a Wartime China mired in chaos, suffering, and defeat. As I will show, the case of the Emergency Medical Services Training School reveals the importance of the
Overseas Chinese: Robert Lim, a Singapore-born Edinburgh-trained Chinese headed the EMSTS; and the Overseas Chinese in America and Southeast Asia funded the organization. As a result, the EMSTS could pay its faculty well, and developed auxiliary research, orthopedic, vaccine programs. Such an institution was previously unheard of in accounts of War of Resistance – much of anything, if at all on medical history during this period revolved around the historical accounts of Canadian-born Norman Bethune (白求恩 1890-1939) aiding Mao Zedong (毛泽东 1893-1976), the alleged Japanese dropping of plague bombs in China, and the inhumane human experimentation by the Japanese.¹ What was forgotten was the fifteen hundred medical personnel trained by the EMSTS, as well as the diasporic Chinese who instituted such training. These medical officers, technicians, nurses, and sanitary officers aided greatly in the Chinese war relief efforts, and were instrumental in treating some three million Chinese lives during the war. Without them, the war would have been much worse for the Chinese, and for the American non-governmental personnel who were eager to show they were helping China.

The first section of the chapter will delineate the early history of EMSTS, arguing that the Overseas Chinese and other sympathetic Americans and British were pivotal to its origins and early development. ABMAC took over the funding of the EMSTS after its debut, and such steady funding provided for Robert Lim’s expansion of medical education for soldiers, doctors, and orderlies. Besides training soldiers, I will show how Lim created the first orthopedic center to treat and rehabilitate wounded soldiers. In addition, the institution’s focus on practicalization meant that the EMSTS created branch

¹ For Norman Bethune’s medical contributions in the War, see Lary, Chinese, 57 and 190. For the alleged bubonic bombs dropped by the Japanese, see Schoppa, Bitterness, 285-301. For a comprehensive take on the infamous Japanese Unit 731 which experimented on human subjects, see Nie, Japan’s Wartime Medical Atrocities.
schools to treat soldiers on the warfront, conducted medical experiments in search for western medical solutions for wounded and sick soldiers, constructed a vaccine plant to fund operations of the EMSTS, and also sought to unify disparate western medical knowledge by publishing a series of manuals. Unity of different organizations behind Robert Lim in providing medical relief and training for soldiers was fairly successful in training and rehabilitating Chinese soldiers during the war.

The second section explores a puzzle. If the EMSTS was doing well, why was Robert Lim sacked? Historians have sought to explain Robert Lim’s eventual dismissal because of his alleged pro-communist positions that clashed with conservative Nationalists supporters within the government. This was, however, a rhetorical device. Rather, the outcome of the wider international politicking, that is, the clashes between American Bureau for Medical Aid to China and United China Relief was the primary factor leading to the dismissal of Robert Lim. In addition, it was precisely because the institution was doing well that Robert Lim proposed a six-year war medical training program to enhance the medical capability of the institution, and to set the foundation for post-war medical training. However, United China Relief officials deeply opposed this plan, and the ensuring debate became a larger debate on the trade-off between accountability and efficiency in medical administration. The organization dispatched its field directors, enlisted the support of anti-Lim Chinese generals, and played ABMAC’s own representative in Chongqing against Robert Lim. The unwavering support of ABMAC New York for Lim was not enough, in the end; the leader of a powerful medical organization left his position in late 1943.

Global United Front (1938–1942)
In the previous chapter, I show how Robert Lim had developed a comprehensive medical service for wounded and sick soldiers through the Chinese Red Cross Medical Relief Corps. Almost all of the organization’s funding came from the Overseas Chinese in America and Southeast Asia. The Overseas Chinese doctors, nurses, and drivers, as well as non-Chinese foreign doctors worked for the Chinese Red Cross Medical Relief Corps. The Red Cross needed professionals for its projects and relief efforts, and Robert Lim sought to provide for the organization’s personnel need through trained personnel at the EMSTS. Lim felt the existing Army Medical College could not provide for the EMSTS because it was staffed with Japanese and German trained doctors who were involved in small-scale education of medical doctors, rather than training large number of auxiliary medical personnel needed for the war effort. Therefore, Lim argued for a new training center “to diffuse the technical knowledge of this small group of men [in the Chinese Red Cross] as widely as possible.”

Robert Lim reached out to Soong Mei Ling (宋美齡 1898–2003), the wife of Chiang Kai Shek, for funding. Soong donated 80,000 Chinese dollars to the cause in 1938. Her husband’s confident, General He Jian (何鍵 1887–1956), appointed Robert Lim on March 8, 1939 as the head of the Zhanshi weisheng xunlian zhongxin 战士卫生训练中心 for the training of medical doctors, nurses, and medics. His official appointment coincided with the move of the institute from Changsha to a more

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3 “Memorandum on the Emergency Medical Service Training Schools and the Orthopedic Center,” March 3rd 1941, Lim Papers, 2310001.
4 See “Neizhengbuling” 内政部令 [Ministry of Interior’s orders], Lim Papers, and “EMSTS announcement,” Lim Papers, 2300819. The school operated on an experimental scale in Changsha and Zhiyang, Hunan before moving to Tuyunkuan, Guiyang in Feb 1939.
permanent and secure base in Guiyang. The direct translation of the institution, “Wartime Hygiene Training Center,” was rendered into the EMSTS to reflect Lim’s borrowing of the name from the British Emergency Medical Services set up a year earlier.

Soong Mei-ling was not the only individual who aided the early development of the EMSTS. The Overseas Chinese and other sympathetic Americans and British were also pivotal to the early years of the institute. Tan Kah Kee, the Singapore-based businessman and founder of Xiamen University, gave an unspecified amount to the EMSTS through his fund-relief organization, the Malayan China Relief Committee for Funds. Hu Shih (胡适 1891–1962), Quo Tai-chi (郭泰祺 1888–1952), and Wellington
Koo (顧維鈞 1887–1985), representatives of China in the USA and UK respectively, also donated to the EMSTS. The Overseas Chinese also supported the EMSTS indirectly by donating to the ABMAC, which in turned supported the EMSTS and the Chinese Red Cross Medical Relief Corps. The money ABMAC gave went into the construction materials for the vaccine plant, laboratory equipment, workshop tools, trucks, medical books, and journals for the EMSTS library. Indeed, after the initial fund-raising campaign, the ABMAC soon took over as the main sponsor of the institute after 1940. Furthermore, Overseas Chinese organizations also supplied vehicles to the EMSTS. Most of these organizations were based in America such as the Chinese Patriotic Association of New England, the Scottish Rite Masons of Virginia, the Chinese Embassy Fund, and the China Emergency Relief Committee in Los Angeles. Individual Chinese abroad also donated from Java and Hong Kong. Finally, the Emergency Medical Relief Committee for Honolulu paid for the construction of the EMSTS Training Hospital.

Besides the Overseas Chinese, the US Ambassador to China Clarence Gauss (1887–1960), UK Ambassador to China Sir Archibald Clark Kerr (1882–1951) and Sir Horace Seymour (1885–1978) also donated small amounts to ABMAC. The Boxer Indemnity Fund provided for the ABMAC’s printing plants, and sympathetic British public donated surgical equipment to the organization. The united effort of the indigenous Chinese elites (Soong Mei-ling), the Chinese based abroad (Hu Shi), the Overseas Chinese (Hawaiian and Singaporean Chinese), and sympathetic Americans and British (Clarence Gauss etc) generously funded the expansion of the EMSTS.

**Part I: Global Diasporas and the Expansion of Medical Training in China**

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5 “First Report of EMSTS,” in folder “Army Medical Administration (Directorate of Medical Service – Lim),” ABMAC archives.
Expanding Practical Medical Training in China

The EMSTS developed a comprehensive plan of medical training that emphasized mass education and practical learning. Unlike pre-war medical institutions that emphasized multiple years of training and research, Robert Lim designed a thirteen-week medical training program for soldiers. The classes for soldiers were divided into four categories: medical officers, assistant medical officers, medical subordinates, and medical orderlies, depending on their aptitude and the amount of medical training they received prior to the courses. For example, 67 percent of medical officers had received some prior medical training, while only 15 percent to 23 percent of other classes had any training.6 The EMSTS curriculum taught students biophysics, biochemistry, laboratory medicine, surgery, sanitary engineering, preventive medicine, and medical tactics. Because of their low levels of prior training, as well as the short period of training, Lim turned to practical drills, away from the lecture and research-based teaching prominent in pre-war medical institutions. Part of these practical drills was held in a training hospital on the premises, which provided hands-on training in surgery and autopsies.7 From 1938-1943, more than 7,000 students were trained in this fashion at the EMSTS.8

Besides emphasizing practical drills, the EMSTS was eager to send its students out to the field, in preparation for the eventual work at the Chinese Red Cross Medical Relief Corps. EMSTS students trained in the Department of Preventive Medicine left with their professors to Xi’an to construct delousing and bathing facilities for soldiers.9

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8 Ibid.
9 EMSTS First Report, 51.
Similarly, students and their instructors at the Department of Sanitary Engineering initiated a water chlorination program at the ninth war area near the Yangtze River.\footnote{Ibid., 49.}

Finally, professors and students from the Department of Pathology at the EMSTS left for Hunan in December 1941 to investigate the alleged case of Japanese planes dropping sacks of rice with plague-infested fleas. The team confirmed the existence of the plague after undertaking bacteriological study in the area, even though it could not prove beyond doubt they were spread by the fleas sent by the Japanese.\footnote{Ibid., 31.}

The EMSTS’s emphasis on fieldwork and practical drills meant a high level of regulation of the everyday life of a trainee. A trainee at the EMSTS would wake up at dawn.\footnote{EMSTS First Report, 27.} They would attend reveille after washing up, and then listen to a lecture given by the Director of the School. After the speech, they would begin military drills, which lasted an hour and a half. Classes of fifty minutes would begin at eight thirty in the morning, ending at forty twenty in the afternoon. Students ate dinners at 4.30 p.m, and then attended a final class on political science or military music till 5.30 p.m. They then had forty minutes starting at six in the evening for recreation, and then studied from 6.50-8.30 p.m. Roll call was at 8.30 p.m. and bed-time for trainees was at 9 p.m.

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\footnote{Ibid., 49.}{\ref{fn:10} Chinese politicians, Soviet investigators and later historians would later use this case to indicate the brutality of the Japanese forces. There were hundreds of accounts of this alleged incident in contemporary recollections or writings of the War of Resistance in the People’s Republic of China. See for example, The CCP account of this incident can be seen in “Zhonggong Hangzhoushi Xiaoshanqu dangshi yanjiushi” 中共杭州市萧山区委党史研究室 [Committee on the official history of Chinese Communist Party at Xiao mountain district of Hangzhou], in Kangri zhanzheng zai Xiaoshan: kangri zhanzheng shengli liushi zhounian [The War of Resistance at Xiao Mountains: remembering the sixtieth year of the War of Resistance] (Beijing shi: Zhonggong dangshi chubanshe, 2005), 124-125. Professional historians in the West are slightly more circumspect. See Keith Schoppa, “Bubonic Bombs,” in In a Sea of Bitterness: Refugees During the Sino-Japanese War (Cambridge, MA: Harvard University Press, 2011), 281-305.}{\ref{fn:12}}
The lives of these trainees differed greatly from their student counterparts in the previous and contemporaneous era. As Wen Hsin Yeh suggest, pre-war students generally enjoy a high degree of autonomy in the 1920s and began withdrawing from politics and current affairs in the 1930s at the same time the Nationalists sought to “partify” (danghua 党化) the everyday life of students on campus. In the 1940s in wartime China, students on the National Southwestern Associated University (西南联合大学 Xinan lianhe daxue or Lianda) campus were willing to sacrifice for the war effort, but were prevented from leaving the campus to fight on the frontlines by the Chinese authorities. Though their lives were marked with distinct poverty, they were never subjected to the same degree of discipline as their EMSTS counterparts. The degree of control and militarization on the latter campus was significantly higher than pre-war and contemporaneous wartime sites of higher education. The EMSTS’s controls over its trainees may have been foolproof within the central school, but as I delineate in the following sections, students on work attachments and at branch schools showed their unhappiness through demonstrations and strike actions. In sum, medical training at the EMSTS was marked by its relative short stint, its focus on discipline and practical drills, and its emphasis on fieldwork.

**Diversifying the EMSTS**

With the sixteen weeks program firmly established, Robert Lim began diversifying the functions of the EMSTS. The institution began medical experiments at

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its laboratory, constructed a vaccine plant, created the first orthopedic plant in China, and published six military medicine manuals.

Recall in Chapter two how Lim focused more of its resources on developing preventive medical care in the early years of wartime China. By 1940 as the situation on the warfront stabilized, Lim began focusing on researching curative treatment for bacillary dysentery, typhus fever, and Salmonella infections that afflicted Chinese soldiers. In the case of dysentery, Lim was interested in seeing if sulfaguandine and sulfapyridine,\(^{16}\) two drugs invented in the 1930s, were effective in treating dysentery. Dysentery was a disease long thought to be treated by water and bed-rest, and pharmaceutical interventions prior to 1930s were ineffective in the West.\(^{17}\) All twelve patients that Lim treated with these drugs allegedly showed remarkable recovery, even thought it was unclear whether he obtained permission for this trial.\(^{18}\) Lim’s longstanding medical training in Britain and America allowed him to access the latest medical research on dysentery, and he was ready to apply such research on live Chinese patients. This use of live patients was a shift from his earlier days of experimenting with animals at the

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\(^{17}\) The National Quarantine Bureau, led by Wu Lien-teh, treated Shanghai patients stricken with dysentery with saline solutions and bed-rest. See Wu Lien-teh, Cholera, a Manual for the Medical Profession in China (Shanghai: National Quarantine Service, 1934), 118-134.

\(^{18}\) “EMSTS First Report,” 37.
PUMC. Even though this experiment was ultimately successful, ethical questions remained on Robert Lim’s interaction with patients at the EMSTS.  

More controversial was Lim’s experimental injection of blood plasma into patients suffering from nutritional edema. As the previous chapter showed, Robert Lim was very interested in the nutritional status of soldiers and civilians, even proclaiming that deficits in diets was the root of many diseases. As the next chapter will show, Robert Lim led and operated the first Chinese blood bank in China in 1944. Marrying interests in blood and nutrition, Robert Lim injected blood plasma into three patients suffering from nutritional edema. Unlike the former case of dysentery where Lim was building on the research already done in America, he was basing this investigation on his own interests. An improved diet rich with protein was widely thought to be key to treating nutritional edema. There appeared to be no research in America that justified injecting blood plasma, a highly controversial idea, into patients suffering from nutritional edema. Fortunately, all three patients injected saw their blood pressure rising, conditions improving, and edema disappearing.

First Orthopedic Plant in China

19 As I have sought to show in my dissertation, medical experimentation was conducted in China throughout the twentieth century. Many papers published by Robert Lim during his time at the PUMC (1924-36) were based on his experiments with dogs and rabbits. He articulated his ethical belief in the humane experimentation of animals then, showing that he was clearly in full knowledge of the ethical issues that underpinned experimentation. Lim shifted to using live human subjects during the war, often directly patients, was problematic because he did not articulate the ethical reasoning behind the shift in experimentation. The limitations of the wartime environment and high tolls of casualties and diseases during the war appeared to underpin Robert Lim’s efforts to innovate medical treatment through experimenting with human subjects. Moreover, he was also interested in conducting medical trials of the latest medical drugs from America on the Chinese.


22 There were only experiments the other way round – whether improved diet for patients suffering from nutritional edema helped to improve the protein levels in blood plasma. See Russell L. Holman, Earle Mahoney, and George Whipple, “Blood Plasma Protein Regeneration Controlled by Diet I. Liver and Case in as potent diet factors,” Journal of Experimental Medicine 59, no. 3 (March 1934): 251-267.
Lim envisioned the EMSTS not only as a place for medical training and research, but also a place for recuperation and rehabilitation for wounded soldiers. In July 1939, Lim called for funding for a comprehensive orthopedic center to provide medical aid, vocational training, and social services for 300 disabled veterans. Lim wanted to save the thousands of disabled and crippled veterans who have resorted to begging or charity to survive. He wanted the orthopedic center to treat their disabled veterans better than the way European nations treated their wounded war heroes after the First World War.

Besides providing artificial limb substitutes for disabled soldiers, Lim called for the long-term goal of providing veterans with professional skill sets, to enable them to regain independence. A major component of the latter endeavor was the proposal for an “Army Crippled Home” (canfei yuan 殘廢院) or a disabled soldiers’ hostel to host soldiers who have recovered from their immediate problems, so that they do not take up bed-space in the hospital meant for wounded soldiers. The proposed construction of such a home was unprecedented in size and ambition, as there appeared to be only a few recorded constructions of similar but smaller homes prior to 1939. To fund the ambitious plan, Lim sought non-governmental international funding beyond the money offered by the government.

ABMAC agreed to fund the construction of such an institute, and its early support was crucial to the opening of the orthopedic center in July 1939. At the orthopedic center, Robert Lim conducted physiotherapy, as well as provided hydrotherapy for soldiers. The

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23 Robert Lim, “Proposed Plan for a Restoration and Rehabilitation Programme for Disabled and Crippled Soldiers and Air-raid Victims,” Lim Papers, 2310001. Also see “Memorandum,” Lim Papers.

24 The only other canfei yuan operating in the 1930s that I could find in newspapers and local government’s publications was a modest one set up by the Hangzhou government in 1935. See “Hangzhou shilicanfei yuan quanti canmin sheying: [zhaopian]” [Photograph of disabled residents of the crippled home in Hangzhou district], Hangzhou shizheng jikan 杭州市政季刊 [Quarterly publication of the Hangzhou city government] (1935): unknown page number.
latter was given in locally made wooden tubs, and various types of wooden apparatus for the exercise of stiff joints were produced. Lim also used more advanced technology such as infra-red radiation, as well as short-wave diathermy on wounded soldiers when such equipment was available.\textsuperscript{25} Patients who were recovering also worked in the orthopedic workshop, and by December 1941, produced 100 artificial limbs for their fellow soldiers. By the end of 1941, the orthopedic center treated more than 500 patients. A total of 736 patients were admitted to the orthopedic center from July 1939 to December 1941, with a 71\% discharge rate, and a 4\% mortality rate.\textsuperscript{26} The center was on average 2/3 full (200 out of 300).

Besides the immediate treatment of soldiers, Robert Lim was passionate about veteran rehabilitation, and sought to provide them with skills that will allow them to re-integrate into Chinese society. However, it was not simply the production of plaster of Paris, which was done very well by the trainees and soldiers at the EMSTS. Lim hired instructors in knitting, shoe making, shoe repairing, tailoring, soap-making, plaster of Paris refining, bamboo-work, umbrella-making and carpentry.

Hiring instructors was easy, but ensuring that the graduates stay at their newly assigned occupations was much more difficult. Lim had asked the local branch of the Chinese Industrial Co-operatives (CICO \textit{gongye hezuoshe} 工業合作社) to organize and supervise the trained men in small co-operatives. These soldiers were very unhappy with the CICO, and demonstrated against the co-operatives.\textsuperscript{27} Consequently, the co-operatives fired them and sent them back to the EMSTS hostels. In addition, because of inadequate facilities at EMSTS, 24.5\% of the trainees (53 out of 216) quit the program and left

\textsuperscript{25} “EMSTS First Report,” 59-62.  
\textsuperscript{26} “EMSTS First Report,” 57-61.  
\textsuperscript{27} Ibid.
EMSTS. The lack of housing for trainees meant that many trainees opted to live at the hospital, which meant their vocational training time was disrupted by the hospital’s treatment hours and meal times. Furthermore, the lack of dining halls and kitchens made it impossible for many to be fully independent of the hospital systems even when living in the students’ hostels. Lim’s ambitious plan was limited by the amount of financial resources available as well as the incompatibility between trained disabled veterans and the CICO.

**Branch Medical Schools and Vaccine Plants**

Like the orthopedic center, Lim also had mixed success with the creation of the EMSTS’s branch schools. The concept of branch schools (fenxiao 分校) was a historically rare phenomena, and none of the universities in China had any prior to the war. Robert Lim justified the creation of EMSTS branch schools by arguing that these schools would be close at the front, and able to provide training for the personnel of the medical services in forward zone. Branch schools will be able to inspect the medical services in action on the front, and to conduct on-site practical courses such as anti-epidemic work. Each branch school were organized on the pattern of the Central School with similar departments in Medical Tactics, Surgery, Preventive Medicine, Sanitary Engineering, and so on. By 1942, Lim had created five branch schools to serve different war areas. A 1942 inspection by Alfred Kohlberg to the fifth EMSTS branch school was positive. Kohlberg thought well of the latrines and refuse areas that were constructed to prevent communicable diseases, and lauded the clean hospital beds near the war front.

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29 “Travelogue of Trip taken by Alfred Kohlberg to 9th War Area in China August 6th to 16th 1943,” In folder “Reports by Alfred Kohlberg,” ABMAC archives.
However, the contingencies of war made it difficult for the branch schools to operate. By 1944, the branch schools were either merged or forced to close.\textsuperscript{30} EMSTS trainees revolted against their faculty in Paocheng, and that first branch schools was merged with the third branch school to keep students in line. The second branch school fell under Japanese hands, and the fourth and fifth branch schools were evacuated to Guizhou after fresh Japanese assault that year. The unpredictability of the front made it impossible for many of the branch schools to operate well after 1944, but nonetheless, more than one thousand trainees were trained in the branch and central school that year.

A more unambiguous success was the vaccine plant constructed in January 1941 at the EMSTS.\textsuperscript{31} A Chinese American donor paid for the construction of the plant to be located at the Department of Laboratory Medicine, and ABMAC provided for the equipment. These include a large incubator, a centrifuge, a mechanical shaker, a vacuum pump, two hot-air sterilizers, two water baths, one charcoal-burning autoclave, and one kerosene-burning refrigerator. When the plant opened in January 1941, it operated under challenging circumstances. Wartime conditions made it difficult for reliable electricity to be supplied to the school. Therefore, charcoal was used instead as fuel for the autoclave, and kerosene instead of natural gas was burned to operate the refrigerator. Instead of using electricity from the grid to heat the incubator the entire day, the plant operated on alcohol stoves for half the day. Overcoming such different circumstances allowed the plant to produce 6 million doses of smallpox vaccine as well as 6.2 million doses of cholera vaccine, combined cholera and typhoid vaccine, combined alum-precipitated


\textsuperscript{31} “EMSTS First Report,” 23-24.
tetanus toxoid and typhoid vaccine and concentrated plague vaccine from March 1941 to June 1942.

The vaccines were sold for a profit to sustain the operations of the school. Almost 29% of the vaccines were either sold at a slight loss to the Chinese Red Cross Medical Relief Corps or given free to the Army Medical Administration. 21% of the vaccines were kept within the institution, while almost half of these vaccines produced were sold to the Army Medical Administration and the Chinese Red Cross Medical Relief Corps. In other words, part of the funding crunch faced by EMSTS was alleviated by an income transfer from the government funded Army Medical Administration, and the Overseas Chinese funded Chinese Red Cross Medical Relief Corps for the vaccines produced by the EMSTS.

Publications of Medical Manuals

Robert Lim and his colleagues from the various departments at the EMSTS distilled their experiences into six publications for the medical community. The manuals are entitled Medical Support Services (wei sheng qin wu 衛生勤務), First Aid and Surgical Services (wai ke 外科), Internal Medicine (nei ke 內科), Nursing (hu bing 護病), Prevention of Communicable Diseases (fang yi 防疫), and Public Hygiene (huan jing 環境衛生). As shown in Chart 3.1, the manuals covered comprehensively various medical topics.

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32 Five of these titles are Robert Lim, ed. 林可勝, Zhan shi wei sheng gong zuo gui cheng. di yi bian, wei sheng qin wu 戰時衛生工作規程,第1編, 衛生勤務 [Regulations governing the work of wartime medical care, first manual, general health services] (Guiyang: EMSTS Press, 1941); Zhang Xian lin ed. 張先林编著, Zhan shi wei sheng gong zuo gui cheng. di er bian, wai ke 戰時衛生工作規程,第2編, 外科 [Regulations governing the work of wartime medical care, second manual, first aid and surgical services] (Guiyang: Chinese Red Cross Medical Relief Corps Press, 1940); Zhou Shou kai ed., 周寿恺編著, Zhan shi wei sheng gong zuo gui cheng. di san pian, nei ke 戰時衛生工作規程,第3編, 內科 [Regulations governing the work of wartime medical care, third manual, internal medicine] (Guiyang: Chinese Red Cross Medical Relief Corps Press, 1940).
### Chart 3.1
**EMSTS Manuals**

<table>
<thead>
<tr>
<th>Title of Manual</th>
<th>Topics Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Support Services</td>
<td>Military Tactics, Evacuation Strategies, Chain of Command, First-Aid and Evacuation Teams, Hospitals (Front-line and Rear), Anti-Poison Bureau</td>
</tr>
<tr>
<td>First Aid and Surgical Services</td>
<td>Treatment of Burns, Wounds, and Fractures; Treatment of Internal and Brain Injuries, Surgical Operations of Various Parts of the Bodies</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>Communicable Diseases, Diagnostic Testing of Blood, Stools, and Phlegm, Cultivation of Germs for Laboratory Use, Blood Transfusion</td>
</tr>
<tr>
<td>Nursing</td>
<td>Hospital Quarantine Methods, Disinfection, Pre-Surgical Assistance, Injection, Pharmaceutical Preparation, Hospital Laundry, Patients’ Dietary Needs</td>
</tr>
<tr>
<td>Prevention of Communicable Diseases</td>
<td>General Quarantine Principles, Prevention of Dysentery, Plague, Tetanus, etc; Diagnosis of Communicable Diseases, Inoculations</td>
</tr>
</tbody>
</table>

In the preface of each manual, Robert Lim wrote that the purpose of these manuals was to overcome the problems associated with the relative newness of western medicine (which he calls new medicine *xinyi* 新醫). The lack of trained personnel and adequate machinery resulted in the “lackluster” (*buzheng* 不振) quality of doctors and nurses in China. Lim urged medical personnel not only to become “one in spirit,” but also to be one with the same training. Therefore these manuals proposed to unify ideas and

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33 The adoption of western medicine as “new” had its precedence in Chinese history. In the Ming Dynasty, the Jesuits presented Kangxi Emperor with a calendar that purported to be more accurate, and could predict the eclipses. The calendar, which was promulgated in 1645 as the official calendar, was called the *Xiyang lifa xinshu* 西洋曆法新書 [Calendar compendium following the new Western method]. See Joseph Dauben, “Foreword,” in *Mr. Science and Chairman Mao’s Cultural Revolution: Science and Technology in Modern China*, ed. Nancy Wei Chunjuan, and Darryl E. Brock (Lanham, MD: Lexington Books, 2013), xi-xxviii.
concepts in western medicine thorough its “simplicity” (jianyao 簡要), “economy” (jingji 經濟), “wide-range” (tongyong 通用), and “accessibility” (yixing 易行) nature.

According to Lim, the manual was accessible because they eschewed medical theories, as well as excluded procedures that required expensive equipment. Lim and his colleagues included many graphs, statistics, and drawings in the manual; and the left to right Western-style writing with a point-by-point, matter-of-fact arrangement suggests a deliberate “get-to-the-point” format. The manual used case study approaches towards discussing treatment of various ailments, and draws amply on western visual representations of the body. In addition, the contents and structure of the manuals reveals Lim’s agenda of “sinifying” western medicine in tandem with global trends in medical representations. Such efforts were not alien to the Chinese context – practicalization and case study approaches in medical texts were common in pre-modern China.34 The financial support of the Overseas Chinese, the expertise of Lim and his colleagues, and the fortuitous growth of a wartime medical training institute made the publishing of the manuals possible.

**Birth of Mass Medical Training**

The expansion of medical training, experimentation, and publications as well as the construction of the branch schools, a vaccine plant, and an orthopedic center at the EMSTS was premised on the support of the ABMAC, sympathetic foreigners, and the Overseas Chinese. Two changes stood out in this period: the birth of a short-term intensive mass medical education, and the construction of the first Chinese orthopedic

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center. Both signify changes in the underlying medical philosophy from the pre-war to the wartime period – the shift from the emphasis on long-term specialized theoretical education in elite institutions to the mass training of soldiers and civilians in basic medical training. The other transformation was the belief that not only could well-funded and expansive premises like the Peking Union Medical College train students. A well-established medical training complex that included a network of central and branch schools could take on the role of training medical personnel in a wartime situation. This transformation portended the later emphasis by Mao on democratizing health-care in the early years of the People’s Republic of China (1949-present), but the origins, as I have suggested, had its roots in wartime China, under the leadership of Robert Lim and the assistance of the Overseas Chinese and Americans.

**PART II: United China Relief, ABMAC, and the Battle for Medical Training in China**

**The Six-Year Program and the Beginnings of Disunity**

The changes in medical philosophy did not exclude pre-war beliefs and ideas of medical education. Even though Robert Lim accepted mass medical training as crucial for the War, he held on to the ideal of a long-term training for medical officers and Chinese soldiers. Short-term education was successful in producing personnel for the Chinese Red Cross Medical Relief Corps, but to Lim, this revolving door arrangement saw trainees coming and leaving without adequate accountability and assessment of their education. Lim also felt a short program did not train enough competent doctors and nurses for the longer term development of medicine in China, given that so few of the trainees had any prior western medical training. What was needed was to extend this early success in short-term medical training to a full-fledged six-year medical education.

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35 “EMSTS Training Program Stage Medical Education,” Lim Papers, 23011001, 6.
program. However, this program became the focus of the United China Relief and ABMAC dispute. In the following section, the individuals who oppose Lim and six-year program will be termed as the pro-United China Relief camp, which included an ABMAC representative who differed from his colleagues at the ABMAC. Those who supported Lim will be termed as pro-ABMAC or pro-Lim. These two organizations’ disagreements led to the mobilization of international stakeholders that infused transnational complexities in an already complex configuration of domestic disputes.

Lim’s proposed six-year program was not a replication of pre-war medical education as practiced by the Peking Union Medical College. According to Mary Bullock, prolonged residency and restricted enrolment of students were two key features of the Peking model.\(36\) Lim thought that this model, which required full-time students to finish a five to six years program at a medical training school under the close mentorship of professors, was impractical. Therefore, Lim proposed a new concept, a stage education model, or more specifically, three “stages” of education. Each stage of medical education would last two years. The benefit of the stage education, according to Lim, was that students would eventually be able to complete their education even if they dropped out along the way, as long as they have completed a stage-worth of classes.\(37\)

Four key features outline this program: First, it would hold true to the existing wartime model of training as many students as possible by educating as many students “as large as teaching facilities permit.”\(38\) Second, the new program would focus on field service and technical training rather than academic research and lecturing. Third, Lim’s

\(36\) Bullock, Transplant, 92.
\(37\) Robert Lim, “EMSTS Stage Training Program, Stage Medical Education,” Robert Lim Papers, 23011001.
\(38\) “EMSTS Training,” 7.
six-year program provided for education in the basic sciences to compensate for the low level of medical training among existing trainees. In the first two years, students would be taught the basics of physics, chemistry, and biology, as well as in the interdisciplinary sciences of biophysics (physiology), biomorphics (anatomy), and biochemistry. Fourth, the emphasis of the advanced years of the program would be on clinical and social medicine, rather than developing specialized research in a particular medical topic of interest. In the last two years of the program, students would focus on clinical medicine and surgery (therapeutics), as well as prophylaxis (social medicine). The former incorporated existing EMSTS specialties in nutritional diseases, orthopedic, tuberculosis, and laboratory diagnosis with new subjects in dermatology, pediatrics, communicable illnesses, and venereal diseases. The latter had students focus on the organization and implementation of preventive care. Students would learn about creating a health care system on the national, provincial, and rural levels. They would learn about organizing industrial and school hygiene programs, as well as disseminating and implementing sanitary measures under different contexts in China. In sum, Lim hoped that the six-year program would provide an alternative to the existing model of short-term mass training, and the overly academic focus of pre-war education.

**Global Conflicts, Local Medical Outcomes**

Lim pressed for his case through publications and speeches, and in his confidential dialogue with key Nationalist leaders. It was clear that the ABMAC leadership in New York fully endorsed him, and that he received approval for the

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39 “EMSTS Stage Training Program.”
program from the Nationalist government. Yet, this six-year program became the focus of criticism of Robert Lim’s leadership, particularly by the pro-United China Relief camp. The United China Relief preferred a program that stressed accountability, and met immediate wartime concerns. In contrast, Lim preferred efficiency and adaptability on the ground, without sacrificing the long-term vision of post-war reconstruction. The meeting of two historical contingencies – the promotion of a six-year medical program, and the rise of United China Relief vis-à-vis AMBAC revealed the clash between the local medical interests and global non-governmental organizations’ politicking.

The expansion of the United China Relief’s powers was highly fortuitous, and had its roots from the organization’s institutional design. Formed in March 2, 1941, the United China Relief consolidated the fund-raising efforts of eight separate organizations. ABMAC joined United China Relief as the largest component organization in terms of number of personnel, funds, and programs. However, because each organization had equal representation on the board, ABMAC’s power to influence the United China Relief was diluted. Moreover, the director of United China Relief was not appointed or elected among the board members, but was appointed by Henry Luce

40 Alfred Kohlberg to Dwight Edwards, August 24, 1943, in folder “Alfred Kohlberg Original Memos and Files,” ABMAC archives.
41 Some historians have argued that Nationalist generals were jealous of Robert Lim’s fame, and saw him as a threat. They used the excuse of Robert Lim’s alleged pro-communist sympathies to sack him. Barbara Tuchman, *Stilwell and the American Experience in China, 1911-45* (New York, NY: Macmillan, 1970), 265; Bullock, *Transplant*, 201-202.
42 “$5,000,000 sought for China Relief; Seven Agencies Merged Into New Group to Coordinate All Appeals for Aid China Relief Drive for $5,000,000 Started By Seven Agencies Merged Into New Group,” *New York Times*, March 3, 1941. The eight organizations were ABMAC, China Emergency Relief Committee, the China Aid Council, the American Committee for Chinese War Orphans, the Church Committee for China Relief, the American Committee for Chinese Industrial Cooperatives (Indusco, Inc.), and the Associated Boards for Christian Colleges in China.
(1898 – 1967) and other board members.\textsuperscript{43} ABMAC was willing to join the organization despite the erosion to its autonomy because ABMAC saw United China Relief as primarily a fund-raising organization that will meet infrequently. Such a weak organization will not enroach then on the independence of any component organization.\textsuperscript{44} For example, in March 1942, the ABMAC board clearly stated in a joint agreement between both parties that United China Relief would only take over ABMAC’s fundraising and fund-allocation functions, and everything else would be determined by ABMAC’s board in New York.\textsuperscript{45} The United China Relief could not cancel ABMAC’s program unilaterally, and if the former did so, ABMAC could resort to its own separate fundraising activities. In addition, United China Relief could not hold on to gifts of more than ten dollars explicitly directed towards ABMAC. Finally, their representatives could not commit to any plans within China without the permission of ABMAC. In sum, ABMAC expected a high degree of independence in exchange for its participation in the United China Relief.

ABMAC’s position was undermined by United China Relief’s unexpected success in fund-raising, which strengthen its position vis-à-vis its component organizations. By the end of 1942, the organization had aised more than US$5 million. It

\textsuperscript{43} Other board members included Pearl Buck, William Bullitt, Henry Luce, Robert Sproul, Wendell Willkie, John D. Rockefeller III, Theodore Roosevelt Jr., David O. Selznick, and Thomas Lamont. Henry Luce, the founder of \textit{Times Magazine}, was one of the more active members in the board.

\textsuperscript{44} The Robert Lim incident suggested that ABMAC was willing to join United China Relief despite the obvious compromise to ABMAC’s autonomy because (1) United China Relief was deemed to be a temporary organization that will be dissolved after achieving its fund-raising aims, and (2) Henry Luce would be a fair arbitrator of any differences between the organizations. On both counts, ABMAC would be disappointed.

\textsuperscript{45} “Accepted Modus Operanti between United China Relief and the American Bureau for Medical Aid to China,” March 25, 1942, in folder “January-May 1942 ABMAC Minutes,” ABMAC archives.
did even better in 1943, raising more than US$8.5 million, more than fifteen times the amount ABMAC raised in 1940. ABMAC’s own budget increased from roughly US$200,000 in 1940 to US$1,000,000 in 1941 after joining the United China Relief (United China Relief now funded ABMAC), with a slight dip in 1942, before reaching a total of US$1.4 million in 1943. A total of US$41 million was raised by United China Relief from 1941-1946. On January 1942, B.A. Garside (1894-1989), one of the founding directors of United China Relief, praised United China Relief as an “economical and effective fundraiser” and argued that in effect, United China Relief has moved from a “confederation” to a “strong federation, in which some of the Participating agencies could or should,” no longer be autonomous. A strong federation would clash with ABMAC’s insistence on “complete autonomy,” and ABMAC’s interpretation that United China Relief was comparable to a Community Chest, created by Participating Agencies as a fund-raising device. A few days before Garside’s letter, another United China Relief director allegedly told ABMAC “to play ball,” and it would be no “big deal” if the organization leaves the United China Relief.

A cursory look at the wider context of funding might suggest that United China Relief was destined to have the upper hand in any conflict with ABMAC, given its ability to raise funds more effectively. But the reality was that United China Relief was

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47 In 1939, ABMAC raised around $200,000. In 1940, ABMAC disbursed a total of $160,000 to China. See “ABMAC minutes 1938-1939,” ABMAC archives and “History of ABMAC (1),” ABMAC archives.
48 “History of ABMAC (1),” ABMAC archives.
dependent on its component organizations, especially ABMAC, for their programs in China. United China Relief had no programs of its own before coming into existence. The presence of ABMAC’s medical relief programs in China justified United China Relief’s outreach to the American public. Without ABMAC, United China Relief would be exhorting their requests in a vacuum.

The United China Relief was thus determined to have a say in how ABMAC programs were run in China. It wanted oversight over ABMAC programs in China. United China Relief created the Coordinating Committee of United China Relief (hereafter the Coordinating Committee) in Chongqing to directly disburse funds to component organizations’ activities within China. Each organization would send a representative to sit on this new organization. Unfortunately for Robert Lim and his ABMAC allies in New York, ABMAC’s representative to the Coordinating Committee, George Bachman, was much more sympathetic to the United China Relief than to his directors in New York and Guiyang. Besides forming the Coordinating Committee, the United China Relief also created the position of field directors. Field directors were supposedly impartial observers who would report to the Coordinating Committee on the activities of its component organizations in China, in particular on whether their programs justified future funding. In reality, United China Relief field directors were hostile to Lim and his organizations, and were instrumental in writing negative reports about ABMAC’s programs in China.

The Coordinating Committee began criticizing the six-year program in the middle of 1942 for its impracticality. By October 1942, Robert Lim was sufficiently worried

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52 Ironically in August 1942, United China Relief claimed that it was the organization that came up with the EMSTS. Clearly the United China Relief wanted credit for the organization. It appeared that part of the
about this onslaught by ABMAC, and urged Bachman to downplay the program at meetings lest funding for other EMSTS programs were cut.\footnote{Lim to Bachman (ABMAC Chungking Office), Oct 19, 1942, in file “ABMAC Correspondence Loo Chih Teh, Lim, Bachman, Edwards,” ABMAC archives.} Bachman ignored Lim’s request and remarked to Lim a few days later that the Coordinating Committee had discussed the viability of the program, and urged Lim to “drop the six years course” and “concentrate upon the present program and the needs for its subsistence.”\footnote{Bachman to Lim, October 28, 1942, in folder “ABMAC Correspondence Loo Chih Teh, Lim, Bachman, Edwards,” ABMAC archives.} Lim replied to Bachman arguing that he could not do away with long-term training even if he was ordered to do so by the Chinese government.\footnote{Lim to Bachman, November 7, 1942, in folder “Correspondence,” ABMAC archives.}

Alfred Kohlberg, the Chairman of ABMAC, learned of the incident and was furious. He accused Bachman of siding with United China Relief rather than with ABMAC on the issue.\footnote{Later in February 27, 1943, Alfred Kohlberg would accuse Bachman of being co-opted by the CCUCR, saying that instead of taking the side of ABMAC, Bachman took the side of ABMAC.} The tit-for-tat saw the Coordinating Committee approving only half of ABMAC’s proposed budget for 1943, which meant the percentage increase in ABMAC’s budget for the year 1943-1944 was significantly lower than the percentage increase in the overall United China Relief’s budget. Even so, Garside claimed that United China Relief had already sought to appease ABMAC on many fronts, and the more they do so, the more “obstreperous” the organization seemed to become.\footnote{Garside to Edwards, January 11, 1943, “Dispute,” Henry Luce Papers.}

**Battle for Control and Lim’s Ouster**

The battle for control over the EMSTS emerged from this background of competition for resources and programs in China and New York in 1942. In 1943, the debate intensified with pro-United China Relief camp switching to a more negative effort to undermine Robert Lim and his six-year program was to seize control of the organization. See “ABMAC, July-Sept 1942,” Box 27, USC records.
campaign – from exhorting the superiority of United China Relief’s financial and administrative capabilities over ABMAC and mild criticism of impracticality of the six-year program, to full fledged criticism of Lim, EMSTS, and ABMAC for being unaccountable, undemocratic, over-funded, and ineffective. The pro-Lim and pro-ABMAC camp took a blow when Bachman decided to fully back the United China Relief by March 1943. In a March 22, 1943 letter to the United China Relief, Bachman wrote to the United China Relief to decry Lim’s unnecessary focus on long-term training projects in the “present emergency” as well as the impractical investments in extensive buildings. He argued that funds should be used for urgent requirements and short-term courses that will meet the immediate needs of the Chinese army.58 As a result, Bachman recommended the approval of only half of the proposed budget for EMSTS’s branch schools, completing undermining Lim’s positions in China.59

United China Relief acknowledged the complete defection of Bachman, and decided to call for tougher budgetary measures against the ABMAC. In March 1943, officials called for the board to suspend funding to EMSTS. The institution should instead, receive funding from the government-funded Army Medical Administration.60

According to United China Relief Director Dwight Edwards (1905–1982), the EMSTS

58 This was similar to the conflict between Joseph Stillwell and Chiang Kai Shek on the perceived long-term needs of the Second World War. Stillwell wanted to commit American resources and Chinese troops to the immediate war effort by sending Chinese troops to Burma to fight the Japanese. Chiang was far more reluctant to do so, but eventually acquiesced under the pressures of President Roosevelt. See Maochun Yu, “An Army of One: Stillwell’s Chinese Vinegar,” in The Dragon’s War: Allied Operations and the Fate of China, 1937-1947 (Annapolis, MD: Naval Institute Press, 2006), 164-176.
59 Bachman to United China Relief, March 22, 1943, in folder, “ABMAC January -April 1943,” USC records. The cutting of funds was confirmed later by Henry Luce’s confident who reported to him on Feb 28, 1944 that Dwight Edwards had tightened the purse-strings of ABMAC because he was “not satisfied with either the administration or the reports he got concerning the way Dr. Robert Lim, one time head of the Chinese Army Medical Corps and ABMAC crony, was spending United China Relief money.” See Wes Bailey to Henry Luce, February 28, 1944, in “Dispute,” Henry Luce Papers.
was an elitist institution that trained only a few hundred soldiers even though it received so much money from abroad.\textsuperscript{61}

When the ABMAC directors rebutted Edward’s allegation and suggestion,\textsuperscript{62} he intensified its campaign by publishing a wide-ranging critical report in May 1943 focusing on Lim and ABMAC’s alleged lack of accountability, cooperation, and relevance.\textsuperscript{63} Edwards opened the report by emphasizing that the EMSTS was Lim’s personal show. The lack of accountability was evident when American Red Cross, ABMAC, and the Overseas Chinese sent funds to Lim for his indiscriminate use. Moreover, Lim did not make clear the ownership of the medical supplies that were sent to him from America. High salaries were paid to EMSTS’s personnel without any oversight on their performance. A proper audit was never conducted of EMSTS’s receipts and expenditures. As a result, the EMSTS was unaccountable, and deemed unreasonable in seeking total independence. The EMSTS was allegedly under the control of Red Cross during its inception, and was made independent later to prevent any checks and balances from the latter organization. It also refused to work with the Army Medical College, which he claimed was an exemplary training institution.\textsuperscript{64}

Edwards also criticized the overly long-term focus of the six-year program. Dwight Edwards argued that the six-year plan was a reflection of Lim’s bias “to the

\textsuperscript{61} See Dwight Edwards to ABMAC, April 7, 1943, in folder, “ABMAC January-April 1943,” USC records.
\textsuperscript{62} Contrary to the alleged few hundred students trained, ABMAC argued that they had trained more than 7,000 students. See Donald Van Slyke and Alfred Kohlberg to Dwight Edwards, April 7 1943, in folder “ABMAC January-April 1943,” UCS records.
\textsuperscript{63} Dwight Edwards Report, in folder, “ABMAC, May-September 1943,” USC records. Although this report was not dated, the location of its placement in the folder, as well as the rebuttal by Donald Van Slyke on May 31, 1943, and Alfred Kohlberg on August 1943 suggest that this report was written sometime in May 1943.
\textsuperscript{64} Ibid.
larger scheme of medical education rather than to the present immediate projects.” He argued that that plan was not approved by the Chinese Ministers of War and Education, and was rejected by the Medical Committee of United China Relief. Edwards then recommended that grants not be given to Lim directly, and that any subsequent grants to EMSTS should be based on more careful studies to stop the existing “grandiose medical set-up centering around a personality.” The six-year program was no longer simply impractical. To Lim’s critics, it represented the larger problems of lack of accountability and medical relevance of Robert Lim and the EMSTS.

Donald Van Slyke (1883–1971), then President of ABMAC, wrote an eighteen-point rebuttal to Edwards shortly. Rejecting the United China Relief’s overemphasis on accountability, Van Slyke focused detailing ABMAC’s efficiency and history. He also revealed that C.T. Wang (王正廷 1882–1961), the head of the Chinese Red Cross in Hong Kong, wanted ABMAC money and supplies to be channeled first through his organization and then to Lim in the mid 1942. It was less of an accountability issue than a personal vendetta by C.T. Wang, now taken on by the pro-United China Relief camp, against ABMAC and Lim. Therefore, Van Slyke defended the direct transfer of funds to Robert Lim, because this will prevent the money from falling into hands of other interested parties. It was also the most direct route, and the most efficient way to supply

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65 Ibid.
66 Ibid.
68 The Chinese Red Cross in Hong Kong grew in strength during the war because it was where medical resources from the West will ship to, before heading into Mainland China. C.Y. Wu was Robert Lim’s aide in the Chinese Red Cross in Hong Kong, and his departure from Hong Kong meant a growing tension between Lim and the administrators in Hong Kong.
requests from the front.\textsuperscript{69} In addition, the EMSTS was a military medical institution from its origins, and had no reason to be part of the Wang’s Chinese Red Cross in the first place. Van Slyke reiterated the importance of the support of the Overseas Chinese for the EMSTS. He argued that “the confidence of the overseas Chinese in the organizations headed by Lim afforded ABMAC part of its reason for its support” of the Chinese Red Cross Medical Relief Corps and other Lim’s endeavor.\textsuperscript{70}

Van Slyke also revealed the reasons for the lack of cooperation between EMSTS and the Army Medical College (AMC). Van Slyke claimed that the Japanese and German-trained doctors at the AMC refused to cooperate with the American-trained physicians at EMSTS. The quality of education was low at the AMC, and textbooks were in German. He argued that rather than forcing the schools to combine, competition has resulted in AMC adopting some EMSTS methods, and that it is hopeful that these schools would cooperate organically in the future. He concluded by arguing that it would be impossible for the AMC to replicate EMSTS’s success in training 7,000 medical officers and technicians. Rather than accuse Lim and EMSTS of being uncooperative, it was more important to investigate whether cooperation has value in the first place, and whether competition would actually be better off for military medicine in China.

Turning to the six-year program, Van Slyke argued that medical experts have examined the program, and argued it to be very practical for China. He argued that the ABMAC and United China Relief medical committee in New York and Chongqing had approved the program. He also argued that because the war was likely to be over before six years, it was likely that this course for all-purposes, would be a two-year one, rather

\textsuperscript{69} Van Slyke emphasized that Lim had no role to play in deciding how the money got to China – it was solely the ABMAC board’s discretion.

\textsuperscript{70} Notes by Donald Van Slyke, May 31 1943, in folder “EMSTS 1942-1946,” ABMAC archives.
than a six-year program. The post-war Chinese government could then decide whether to continue with the rest of the four-year program. Also, all equipment for the course could be provided by China Land Lease funds, and should be of no concern of either ABMAC or United China Relief. In sum, Van Slyke attributed the values of independence, efficiency, and boldness in Lim and ABMAC’s endeavors, which was distinct from the unaccountable and impractical image favored by the pro-United China Relief camp.

Alfred Kohlberg, the Chairman of ABMAC, took a step further and left for New York for China after hearing Edward’s allegation to understand exactly what was happening on the ground. After his visit to China, Kohlberg wrote a long letter rebutting Edwards, adding on crucial details to Van Slyke’s letter.71 He now claimed that Lim and EMSTS were accountable, thrifty, and practical, directly rebutting Edward’s criticisms. Kohlberg clarified that funds were never sent to Lim directly as Van Slyke asserted but to an EMSTS account, and that EMSTS was never under the Chinese Red Cross from its inception. In addition, he saw that the medicines were clearly divided between the Red Cross and EMSTS in September 1942. He also provided charts to show that the remuneration of EMSTS personnel was comparable to the Guiyang and Xiangya Medical School.72 In addition, Kohlberg found documents that stated the United China Relief board had approved the program in November 1942, and that Chiang Kai Shek had supported the program through the Military Council on January 17, 1943. In sum,

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71 Alfred Kohlberg to Dwight Edwards, August 24, 1943, in folder “Alfred Kohlberg Original Memos and Files,” ABMAC archives.
72 Yale-in-China helped established the Xiangya Medical School in Changsha in 1914. During the Second World War, the college moved to Guiyang in 1938 after Changsha fell to the Japanese. In the same year, the Ministry of Education founded Guiyang Medical College.
Kohlberg argued the programs at the EMSTS were as accountable and properly approved any other medical colleges in China.\textsuperscript{73}

Clearly the two parties had different visions on the trajectory of military education. The pro-United China Relief camp wanted an accountable and cheaply financed EMSTS that focused on short-term training for immediate concerns. In contrast, the pro-Lim camp wanted a long-term training program that emphasized veteran rehabilitation and would lay a foundation for post-war medical training. The United China Relief was very much involved in the contemporaneous present (of the War) for its own desires; the EMSTS had its eyes on the post-war development of military medicine in China.

**Triangulating Robert Lim’s Own Account**

Robert Lim’s voice emerges in the archives so far as auxiliary, but we do get a glimpse of his full thoughts on this issue in his letter to Van Slyke on Feb 23, 1943.\textsuperscript{74} In the letter, Lim wrote that C.T. Wang and C. Pan, the Surgeon General, had allegedly launched a series of charges alleging that Lim’s accounts were unclear, that Lim mishandled incoming supplies, and that Lim was actively aiding the communists.\textsuperscript{75} Bachman, Edwards, and Greene came to believe such criticism, and added an additional charge of Lim expropriating US$90,000 from United China Relief/ABMAC funds for his own investments, setting the stage for the later intervention of Bachman, Edwards, and

\textsuperscript{73} Dwight Edwards to Alfred Kohlberg, September 1, 1943, in folder “Alfred Kohlberg Original Memos and Files,” ABMAC archives. Edwards surprisingly agreed with Kohlberg that United China Relief and the Chinese government did properly approve the six-year program. In his letter, he now took an opposition angle of the EMSTS doing too much, arguing that the six-year program reflected the “omnibus scheme of army medical training both elementary and advanced, and mainly post-war.”

\textsuperscript{74} Robert Lim to Donald Van Slyke, February 23, 1943, in folder “Army Medical Administration,” ABMAC archives.

\textsuperscript{75} Ibid.
Greene into Lim’s affairs. In the letter, Lim knew that he was on his way out, and urged Slyke to secure his legacy by maintaining the integrity of the EMSTS and its program. The early interventions by Wang and others might have been crucial to Lim’s own interpretation of his eventual dismissal, but it was clear that conflict between the two camps, as well as the relatively easy target of a supposedly impractical six-year program in the midst of an emergency were the factors that led to Lim’s ouster. If Robert Lim only had to contend with his supporters at ABMAC, it was unlikely that C.T Wang and other allegations would have gained any traction.

**Marshaling Transnational Support**

Besides direct criticism through the exchange of letters, both camps also marshaled their allies. The pro-United China Relief camp, comprising of Dwight Edwards, George Bachman, and Phillips Greene (1892–1967) of the American Red Cross in China, visited General Ho Ying Chin (何應欽 1890–1987) on November 5, 1942 to turn his support away from Lim and the six-year medical program to the pro-United China Relief camp. The delegation told Ho that any future American support for medical relief was not contingent of supporting Lim and his programs, and that the United China Relief and American Red Cross were eager to be the new backers any new initiative by Ho. Ho was very relieved after hearing about this, and he turned to complaining about how Lim’s organization was “giving rise to a new group of men within the army medical program but having a political color of their own and proving rather unwilling to cooperate and quite outside the army discipline.” Ho concluded this meeting by pledging to withdraw his support for the six-year program. About a week

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76 Philip Greene to Richard Allen, Vice Chairman of American Red Cross, February 3, 1943, in folder “Alfred Kohlberg (Original Memo and Files),” ABMAC archives.
77 Ibid.
later, Ho and Chiang Kai Shek summoned Robert Lim and Loo Chih-teh (盧致德 1901–1979) to his office, telling them to justify the program.\textsuperscript{78} After valiantly defending the program, Lim and Loo sought the support of TV. Soong (宋子文 1891–1971), their close ally, to persuade Ho and Chiang on the merits of the six-year program.\textsuperscript{79} Soong’s reply was ambivalent, and said that he did not favor supporting the program in front of Chiang and Ho.

It was unclear whether General Ho and Chiang took concrete steps to discipline Robert Lim. This event however, was an important moment in the history of medical education in China. Kohlberg later claimed that the meeting between the pro-United China Relief camp and the Chinese officials were crucial to Robert Lim’s dismissal. The pro-United China Relief camp’s provision of an alternative provided the ammunition for General Ho to remove Robert Lim.\textsuperscript{80}

**Rehabilitation of Lim and ABMAC**

The controversies surround Robert Lim’s six-year training and the politicking by United China Relief and their allies in the Chinese government brought down Robert Lim on August 12, 1943 when he was forced out as the head of the EMSTS. This act neither represented the end of his career, nor the end of the EMSTS. His allies continue to lobby Chinese officials to reinstate him, and to urge keeping the United China Relief from intervening in the affairs of ABMAC and China. A key ally of Lim and ABMAC, Lin

\begin{itemize}
\item \textsuperscript{78} Ibid. Loo was a student of Lim and graduated from PUMC in 1929. He worked closely with Robert Lim in his endeavors in instituting military medicine from 1937 to 1952. Loo was the deputy director of the EMSTS from 1939-1943, and took over the running of the institute after Lim left in 1943. He was also the director-general of the Army Medical Administration from 1939-1945.
\item \textsuperscript{79} Ibid.
\item \textsuperscript{80} Alfred Kohlberg to Donald Van Slyke, November 5, 1943, in “Dispute,” Henry Luce Files.
\end{itemize}
Yutang (林語堂 1896–1975), wrote an open letter attacking the pro-United China Relief camp. Lin began the letter by suggesting he would bring the issue of reinstating Robert Lim before the Generalissimo. He told United China Relief not to merge EMSTS and its programs with other organizations or else EMSTS and its programs will be “strangled.” He urged ABMAC to withdraw participation from United China Relief unless the organization quits politicking and avoid another incident of “Edwards destroying Lim.” He urged United China Relief to restrain its powers like that of the British and Russian war relief organizations in China; to recall the field agents that led to the downfall of Lim; and to change the composition of the Coordinating Committee to make it less of a rubber stamp for the pro-United China Relief interests in New York.

Lin Yutang’s letter did not have an immediate impact, but it became an important weapon in the pro-ABMAC’s camp counter-attack. Personnel associated with the camp exchanged five rounds of letters with various United China Relief officials and Henry Luce from December 1943 to May 1944 on this issue, and several included Lin Yutang’s letters in them. These letters revolved around the similar issues of financial and medical

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81 Lin Yutang was an intellectual, writer, and teacher in Republican China who wrote in both Mandarin and English. He taught at Qinghua, Beijing, Xiamen, and Hong Kong University. Lin Yutang was an old friend of Robert Lim, and supported Lim strongly in the war. In 1926, Lin hid in Lim’s house when the local warlord sought to arrest and imprison intellectuals from Peking University. Lin, Yutang, Zhixue Liu, and Yanjie Bian, Lin Yutang zi zhuan 林語堂自傳 [Autobiography of Lin Yutang] (Shijiazhuang shi: Hebei ren min chubanshe, 1991), 98.
82 Lin Yutang to Alfred Kohlberg, January 23, 1944, in folder “Alfred Kohlberg (2),” ABMAC archives.
83 Ibid.
84 Ibid.
accountability, the perceived over-intervention by United China Relief officials into ABMAC affairs, and the illegitimate meeting between United China Relief leaders with Chinese officers. As a result of these interventions, some changes were made in favor of ABMAC. First, the United China Relief was concerned enough to convene a special committee to investigate Kohlberg’s charges, even though the committee eventually dismissed all charges against Edward Carter and the pro-United China Relief members.86 Second, George Bachman, ABMAC representative to the Coordinating Committee, was recalled to New York on October 6, 1942 and replaced with a more pro-Kohlberg/Van Slyke candidate, P.Z. King (Jin Baoshan 金寶善 1893–1984).87 Third, on December 14, 1943, United China Relief board promised not to interfere with the administration of ABMAC projects, even as the board defended the continual use of field directors to calibrate programs on the ground.88

Another relief for ABMAC was that EMSTS was not merged with other organizations after Lim’s departure, even though it never regained the same vitality when Lim led it. Under Loo Chih Teh’s leadership, the EMSTS continued to provide short-term courses for medical officers and other military personnel.89 There were attempts in 1944 to revive the six-year program in the form of a longer eight-year medical training program, but that program was not supported by United China Relief, and never went beyond the planning stage. The vaccine plant and orthopedic center ceased to exist after

86 Draft of Report of Special Committee (to investigate Alfred Kohlberg’s charges against United China Relief), March 22, 1944, in folder, “Alfred Kohlberg (2),” ABMAC archives.
87 Van Slyke to Eugene Bartnett, October 6, 1943, in folder, “United China Relief to ABMAC October-December 1943,” USC records.
88 Chairman of Board to United China Relief, December 14, 1943, in folder, “United China Relief to ABMAC October-December 1943,” USC records.
Lim’s tenure. More successful, however, was the propagation of a three-year nursing program. According to the head of nursing services at EMSTS, General Zhou Meiyu (周美玉 1910—2006), General George Armstrong of the United States Army funded the nursing program, and the National Professional Women’s Club in the United States provided professional nursing assistance to EMSTS.90 Towards the end of the war in 1945, the EMSTS was re-organized into the Army Medical Field Service School, partly reflecting its move away from its British origins to a more American orientation.91 Because Lim was appointed as the Surgeon General of the Chinese Army (junzhengbu junyishu shuzhang 軍政部軍醫署署長) in 1945,92 he was given some control over this new AMFSS.93 In sum, the departure of Lim meant the closing down of wartime initiatives such as the orthopedic and vaccine plant, and the continuation of a policy that emphasized speed over quality in medical education. Ironically, nurses had a longer training program than doctors at the reformed EMSTS, which reflected the fraught state of the institution without Lim’s leadership.

Robert Lim’s own career did not end after stepping down as the head of the Chinese Red Cross Medical Relief Corps in 1941, and also as the head of EMSTS in 1943. Towards the end of his tenure at EMSTS, he helped set-up the Joseph Stillwell-led

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91 The British named their military medical institution as EMSTS, and the Americans U.S. Army Medical Field Service School.


93 Dr. Robert Lim’s Report #12, March 12, 1945, in folder “Army Medical Administration, Reports 11-25,” ABMAC archives.
Chinese Expeditionary Forces in India. In Burma, Lim surveyed and treated the wounds and sicknesses of Allied troops, established evacuation units, constructed small-scale hospitals, and conferred with Joseph Stillwell and other generals on the front on establishing medical relief in jungle-like conditions. Lim’s endeavors earned the admiration of Joseph Stillwell, who was happy to pin the Order of Merit on Lim. In addition to his work in Burma, Lim took on the role of liaison with international organizations and with T.V. Soong in America for the importation of medical supplies into China as Chief of the Supervisory and Planning Commission of the Chinese Army Medical Service. He continued to be the ABMAC representative to China, and launched the first Chinese blood bank in China in July 1944. The blood bank, which changed the perception of blood donation in China, will be the focus of the next chapter.

In March 1944, signs of the icy relations between the Chinese government and Lim were thawing as Chiang Kai Shek appointed Lim as the Deputy Surgeon General of the Chinese Army. In order to bolster his own position in the bureaucracy, Lim decided to embark on a working visit to America in May 1944. In Washington D.C., he had lunch with Eleanor Roosevelt, and visited various military installations such as the Army Medical Center at Washington. He lectured on the Chinese war relief efforts at the New York Academy of Medicine, the University of Chicago Medical School, and the University of Illinois Medical School. In addition, he was a guest on a radio program,

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94 Robert Lim to General Joe Stillwell, “Medical Situation in Burma and Assam Between April 26 and June 13,” Lim Papers, 1610003.
97 See T. V. Soong, “Correspondence with J Heng Liu,” T. V. Soong Papers, Box 6, File 16, Hoover Archives, Stanford University, and “General Lim Visits America,” ABMAC bulletin 6 no. 5-6 (1944): 1.
98 “General Lim Visits America,” ABMAC bulletin 6, no. 5-6 (1944): 1.
“Report to the Nation,” and addressed a group of radio commentators and writers at a luncheon given by Lin Yutang. Finally, he gave a speech updating the ABMAC committee in New York on the programs in China, and thanking them for supporting his endeavors. The strong support given to Robert Lim by the U.S. government officials and the Overseas Chinese in America brought him back into the limelight. He would repeat this visit to America again in 1947. This time, two American newspapers covered his trip.

A year after his 1944 visit, Chiang appointed Lim as the Surgeon-General of the Chinese Army, which marked his full rehabilitation from the Chinese authorities.

**Conclusion: Significance of Transnational Medical Politics**

Claims at providing universal health care for soldiers and civilians needed doctors and nurses, which the EMSTS ably produced. The EMSTS trained 15,131 military personnel in various short-term training classes from 1938-1946, among them 6,374 were trained as medical officers. In contrast, the PUMC only graduated 313 students from 1923 to 1943. Even though EMSTS graduates were not as fully trained as western medical doctors and nurses in pre-war China, these personnel represented a doubling of medical personnel in China in eight years – from 12,000 in 1938 to around 37,000 in 1946. Besides training medical personnel, the EMSTS doctors also conducted medical experiments, set up a vaccine plant, constructed the first Chinese orthopedic center, and published six manuals for the wider public. This comprehensive medical center was

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102 Bullock, *Oil*, 122.
103 “Memorandum of the EMSTS and the Orthopedic Center,” March 3, 1941, Lim Papers, 2310001.
dedicated to immediate wartime needs, as well as post-war reconstruction, even as it kept faith with its vision of unifying western medical thoughts in China.

Transnational politics was deeply embedded in Lim’s organization, and interrupted its growth. The united front between the Overseas Chinese, American Bureau for Medical Aid to China, and Chinese officials made the early growth possible. International financial, professional, and material support was crucial to Robert Lim’s ambitious plans, which came into fuller fruition than many pre-war Republican institutions. Yet, the rock-solid foundation was a mirage, as it was susceptible to deep disunities over time. United China Relief’s disdain for ABMAC focused on Lim’s proposed six-year medical training program, and grew into a wider debate on accountability and medical relevance of the EMSTS. Chinese officials who gave strong support for the EMSTS in 1939 withdrew support in 1943 when United China Relief presented itself as an alternative partner to work with. They decided to dispense with Robert Lim and the EMSTS in 1943, despite the loud protests from ABMAC. Lim’s rehabilitation in 1944-1945 came about partly because of his outreach to international allies in America.

The transnational politicking over the fate of medical education in China also reflected the changes from the pre-war to the post-war period. The strong support of the Rockefellers, the various local governments, and Overseas Chinese philanthropy for the sciences and medicine allowed medical personnel to pursue their medical goals without interruption from 1911 to 1937. In contrast, Robert Lim had to be accountable to multiple actors within China, as well as deal with a wide range of international aid officials. The high stakes involved however, also reflected the growing importance of medicine during
the War, and that many political actors found expending political and financial resources fighting over an institution important.

So far, the history of western medicine has largely been told from the perspective of the medical personnel, and the statistics and data they generated from their fieldwork, speeches, letters, and reports. In addition, medical technology has been marginal to the narrative, as the lack of resources during the war made it impossible for Lim and his compatriots to undertake more complex medical endeavors. In the next chapter, I will show how ordinary Chinese soldiers and civilians reacted to Lim’s introduction of the first Chinese blood bank to wartime China, and how the manipulation of advanced technology by a wider variety of medical technicians and personnel was essential to the institutionalization of Western medicine in China.
Chapter 4

The First Chinese Blood Bank, 1944–1945

A senior Chinese official, Dai Jitao (戴季陶 1891-1949), felt increasingly ill after flying into Kunming, a city in Southwest China, in October 1944. He was with Generalissimo Chiang Kai Shek and other Chinese Nationalist Party leaders. Dai attributed his fainting spells in Kunming to his longstanding anemia. Over dinner, his friends told him about the possibility that a fresh infusion of blood into his body would revitalize him, and that new blood bank in Kunming could prove to be the answer to his problems. Dai visited the blood bank the following day, and was welcomed warmly by its director, Doctor Yi Chien-lung (易見龍 1904-2003). The good doctor tested Dai’s blood, and pronounced that a transfusion of fresh red blood cells would indeed increase Dai’s low blood count, and consequently improve Dai’s condition. Over a meal later, Dai confided in his fellow comrades that he was ready to sign up for the transfusion the following day, but his comrades warned Dai that patients had become sicker and died after undergoing blood transfusions at the blood bank. To make things worse, Adet Lin Fengru (林鳳如 1921-1971), a senior blood bank personnel and the daughter of prominent Chinese intellectual Lin Yutang, warned Dai that there was an infection rate of fourteen percent with the bank’s blood transfusion.

Dai struggled to sleep that entire night. He weighed his options between feeling sick or going for a risky but potentially curative medical procedure. The next morning, he

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2 These two comrades were Du Yuming and He Yingqin respectively. General Du was the head of the Nationalist fifth army from 1942-45. General He was sent by Chiang Kai Shek to Yunnan to train the Chinese Expeditionary Forces in 1944, after heading the Military Affairs Commission (junzhengbu 军政部) for ten years.
3 Yi to Stevens, April 10, 1945, in folder entitled “Blood Bank 1945,” ABMAC archives. Injecting liver
decided that he would go for the transfusion, because he believed Adet Lin would do her best to make sure nothing would go wrong. At the blood bank, Lin inserted a tube into Dai’s veins, and allowed the plasma solution contained in an inverted bottle to slowly drip into Dai’s body. After the transfusion, Dai waited anxiously for any negative results. When Lin pronounced that a million red blood cells had been infused, increasing Dai’s hemoglobin levels from 80% to 90%, Dai was exceedingly happy, and told all his friends “he never had this striking effect by receiving many injections of liver extract.”

Dai’s encounter with the blood bank reveals an understudied aspect of the history of medicine in China – how did the Chinese people react to new medical technology and concepts of Western medicine? Scholars of Republican Chinese medicine have tended to focus on medicine from the perspective of the medical personnel, government officials, pharmaceutical companies, and Chinese intellectuals, and such a focus was partly due to the difficulties in finding sources on the ordinary Chinese people’s reaction towards Western medicine. In filling this gap, I show the impact of Western medicine on the lives of soldiers and civilians in China. I show how many ordinary Chinese soldiers and civilians shared similar concerns with Dai, even as they did not have the privilege of

3 Yi to Stevens, April 10, 1945, in folder entitled “Blood Bank 1945,” ABMAC archives. Injecting liver extract was thought to increase the number of red blood cells in the body in the first half of the twentieth century. Today, it is considered more of a treatment in the realm of alternative medicine, as liver extracts might contain germs harmful to the body. See George R Minot, Edwin J. Cohn, William P. Murphy, and Herman A. Lawson, “Treatment of Pernicious Anemia with Liver Extract: Effects Upon the Production of Immature and Mature Red Blood Cells,” The American Journal of the Medical Sciences 175, no. 5 (1928): 599-621.

4 See Bridie Andrews, Larissa Heinrich, and Hugh Shapiro, “The Republic of China,” in Chinese Medicine and Healing: an Illustrated History, ed. T. J. Hinrichs, and Linda L. Barnes (Cambridge, MA: Belknap Press of Harvard University Press, 2013), 209-232. Historians of Republican Chinese medicine detailed five themes in that volume which were largely representative of the state of the field: the Rockefeller Foundation’s support for the formation of medical union colleges such as the Peking Union Medical College in Beijing, the history of neurasthenia in China, the efforts by the Nationalist government to support doctors of Western Medicine at the expense of advocates of Chinese Medicine, Dr. Wu Lien-teh’s efforts at fighting the plague in Manchuria, and the advertisement of products associated with “hygienic modernity” (weisheng/eisei 衛生) in the newspapers. There was however very little discussion on the reception of ordinary Chinese to the introduction of Western medicine in China.
being treated as distinguished guests by the blood bank personnel. Unlike Dai, the blood personnel did not adequately address the concerns of Chinese soldiers and civilians because they knew that the soldiers had to donate as commanded by their superiors. Yet, these soldiers were anxious about the effects of blood transfusion on their bodies, and were confused why their drawn blood had to be taken away instead of being stored with them. Predictably, they revolted against such efforts to draw blood against their will. The blood bank personnel turned their attention away from bleeding soldiers to persuading civilians, who seemed more receptive to the new message of blood donations.

Besides their efforts to reach out to Chinese soldiers and civilians about the virtues of blood banking, the blood bank personnel struggled to adapt imported medical technology from the United States to China. The lack of reliable electricity and clean water, as well as the periodic outbreaks of blood contamination sapped the will of these ethnic Chinese doctors, nurses and technicians, who had left their comfortable positions in universities and hospitals in the United States to work under extremely challenging conditions in wartime Kunming. To deal with these problems, they drew on international sources of funding, imported more supplies, converted automated equipment to manual ones, and fetched clean water from sources several miles away. Yet, these efforts were not enough to persuade Chinese soldiers and civilians that it was safe to donate blood. Fortuitously for the bank, the specter of a new technology that promised to aid the war effort and the promises of food and drink in exchange for blood attracted the support of some academics, students, and laborers in Southwest China. They joined the blood bank personnel in propagating the virtues of blood transfusion and blood banking, and were key to the relative success of the bank in wartime China. In sum, the adaption of
important technology was necessary, but an insufficient condition for the relative success of the blood bank in China. It took the fortuitous support of teachers, laborers, and students in Kunming to ensure that the bank would work in Wartime China.

**Diasporic Origins of the First Chinese Blood Bank**

Towards the end of his tenure at the EMSTS, Robert Lim was eager to start a blood bank in China to boost medical relief efforts, and wrote to ABMAC to see if the organization would support such an endeavor. The ABMAC board fully backed Lim’s plan and agreed to train personnel needed for the blood bank. The board chose Dr. Helena Wong and Dr. Yi Chien-lung, two ethnic Chinese doctors based in America, to study in New York with Dr. John Scudder (1900-1976), a Professor of Surgery at Columbia University and board member of the Blood Transfusion Betterment Association. Scudder, a strong advocate of blood plasma banks, would instruct Yi and Wong on the production of blood plasma from whole blood. After his stint at Columbia, Yi, who received his post doctorate training in pharmacology and therapeutics in Canada,

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6 Douglas P Starr, *Blood: An Epic History of Medicine and Commerce* (New York, NY: Alfred A. Knopf, 1998), 95. Blood is comprised of red blood cells, and the yellow liquid known as plasma in which they are suspended. Plasma is prepared by spinning a tube of fresh blood containing an anti-coagulant in a centrifuge until the blood cells fall to the bottom of the tube. The blood plasma is then filtered away. There were several purported benefits of using plasma: first, plasma was vital in abating sudden loss of blood of soldiers shot in the battlefield. Post World War I research showed that most soldiers died not of excessive blood loss when shot, but from the rapid loss of fluids from the body that dramatically lowered blood pressure. Thus, what was needed was a liquid that could quickly replenish this loss, and plasma was found to be the most ideal. Second, plasma was highly portable and could survive for months in a frozen condition, unlike whole blood that only lasted for a few days. Third, there was no need to type for plasma, because it usually did not cause incompatible reactions in recipients. When a donor gave incompatible whole blood to a patient (for example a blood type A donor to a blood type B recipient), the agglutinins in the recipient’s plasma attacked the incoming red cells, causing them to clump, resulting in deadly consequences for the recipient. When incompatible plasma was given, no obvious reaction happened because it contained such small agglutinins in relation to all the recipient’s red cells that it had little effect. Because of Scudder’s influence on Yi and Wong, the Chinese blood bank operated as a plasma bank.

7 In folder entitled “History of AMBAC (1) Chronology”, 20, ABMAC archives, and in folder entitled “ABMAC Report Jan-Feb 1943,” 7, ABMAC archives.

7 In folder entitled “History of AMBAC (1) Chronology”, 20, ABMAC archives, and in folder entitled “ABMAC Report Jan-Feb 1943,” 7, ABMAC archives.
was sponsored by ABMAC for more advanced studies on how to operate a blood bank at the Bryn Mawr hospital.

Besides Yi and Wong, Robert Lim had recruited other Chinese Americans for the project. Dr. C.F. Fan, the bank’s bacteriologist, completed his M.D. and PhD at the University of Wisconsin-Madison, and China-born technician Louis De Fott spent more of his life in America. The nurses – Jean Liu, Lueatta Chen, Ruth Derr, Adet Lin, and Betty Eng – were either born in the United States or educated there. Of particular note was Adet Lin, the German-born and American-educated daughter of Lin Yutang, who became the head of publicity of the blood bank in China.

**Changing Racial Norms in the United States**

Before the bank moved to China, the ABMAC began a trial for the Chinese blood bank (*huaren xueku* 华人血库) in June 7, 1943 in New York City. The trial was meant to allow the Chinese American doctors and nurses to gain experience in blood banking with blood collected from Americans to be shipped in plasma form to wartime China. They had an ambitious target of 1000 donors, and thus reached out to groups that were neglected by the mainstream blood banks. In July 22, 1943, Helen Stevens, the executive director of ABMAC, wrote to Mr. Walter White (1893-1955), then secretary of the National Association for the Advancement of Colored People (NAACP). Stevens wrote:

Knowing deeply you and your people are interested in breaking down all racial barriers, we are hoping that you will cooperate with us in securing
blood donors for our blood banks. Needless to say, no distinction is made at the blood bank as to race and color.\(^8\)

The ABMAC’s appeal was a significant contrast to the stand taken by the American Red Cross. The Red Cross segregated the blood of African American and other racial minorities from other races, because it believed most Americans had fears about unsegregated blood. The NAACP worked towards reversing such discrimination, writing frequently to the ARC as well as to sympathetic editors, scientists, and politicians throughout the 1940s.\(^9\) However, the American Red Cross ignored NAACP’s calls for desegregated blood. In August 3, 1943, White wrote to all its New York branches, urging them to go in groups to “show the contrast between Chinese Blood Bank and the American Red Cross.”\(^10\) On the very same day, this call to arms was placed in the NAACP’s newsletter.\(^11\) Walter personally brought an unspecified number of his staff to the Chinese blood bank on August 13, 1943.\(^12\) On October 16, 1943, the citizens committee affiliated with the National Association of Colored Graduate Nurses voted unanimously to support the Chinese blood bank.\(^13\) A photographer captured the image of an African American woman donating blood alongside her White counterpart, conveying a massage of racial equality in blood donation that was absent in mainstream American blood banks (see photograph 4.1). The Chinese blood bank in New York, posited as a

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trial for eventual transplantation to China, provided an opportunity for its donors to advance their causes for racial equality.

![Photograph 4.1: Different Races Donating to the Blood Bank](http://indiamond6.ulib.iupui.edu/cdm/singleitem/collection/WMIC/id/239/rec/4)

The Japanese in America also donated their blood to the Chinese war effort. 25 Japanese-Americans proclaimed their opposition to the Japanese occupation of China, and donated blood at the bank on September 19, 1943. By donating blood to assist the Chinese, they were asserting their opposition to the Japanese government as well as to their Americans leaders who interned 7,000 fellow Japanese-Americans.

Besides the Japanese and African Americans, the Chinese Americans also actively supported the blood bank. Dr. Donald Van Slyke (1883-1971), the President of ABMAC, appealed directly to the Chinese overseas,

I urge all overseas Chinese to contribute to the blood bank for supply of plasma to Chinese Army. This is an important service to the cause. Every

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life saved by this means keeps one more soldier in action. It is a grand opportunity to help in a positive and personal way.\(^\text{15}\)

The appeal to the Overseas Chinese was also evident in the name of the blood bank. Instead of calling the blood bank “China’s blood bank” (Zhongguo xueku 中國血庫), the ABMAC called it the “Chinese people’s blood bank” (Huaren xueku 華人血庫), a inclusive moniker appealing to all ethnic Chinese in the United States, whether or not they or their parents were born in China. This inclusiveness helped encouraged eighty-four people to donate in the first week of the bank, most of whom were the Overseas Chinese. The first month saw 271 people donating to the blood bank.\(^\text{16}\) By November 1943, a total of 1,157 donors gave their blood to the bank. As a result, the bank reached its target of 1,000 donors.\(^\text{17}\) The blood collected was then filtered into blood plasma before being shipped to China.

The Chinese blood bank was therefore influential not only in its later iteration in China, but provided the opportunity for ethnic minorities to stake their claims in an overwhelmingly white-dominated society. African Americans donated to the Chinese blood bank in protest of the American Red Cross’s segregationist policies; Japanese-Americans donated in opposition to the Japanese and American governments’ attempts to dictate their attitudes towards the war; White Americans saw the blood bank as a way to modernize China’s military complex; and the Chinese Overseas saw it as an opportunity to give part of their bodies to the war effort in China. Individual communities found it within their own interests to donate to the blood bank, professing diversity even in unity.

Facing the Realities of Wartime China

The active participation of Americans in the blood bank, as well as the smooth operations in New York, was not matched by similar enthusiasm when the blood bank moved to China. Unlike their united efforts in New York, the following section demonstrated how the Overseas Chinese became divided in the face of challenging wartime realities. It will also convey how Robert Lim sought to mitigate these challenges, achieving mixed results.

When the blood bank first moved to China, it was located at the Kun Hwa Hospital (Kunhua yiyuan 昆華醫院) in Kunming, China. Robert Lim praised the conditions of this hospital in a letter to his daughter:

We have nice clean rooms, wooden floors, and bathrooms with flush toilets! Quite a luxurious place for Kunming, but the feature we enjoyed most is the ease in which the place can be kept clean.  

The bank occupied sixteen rooms in the hospital, featuring a registration room, and two donors’ rooms with two beds each, a donor’s clinic, the bacteriological lab, pooling lab, and the drying laboratory. The donor’s clinic was responsible for the preparation and care of the sterile sets used in bleeding the donors, the collection of blood, and the storage and care of drawn blood. The bacteriological department did the blood typing, the kilne test (a rapid precipitation test for the diagnosis of syphilis), and made blood cultures at each step of the pooling process to ensure contamination-free plasma for distribution. The department, led by Dr. Fan, also distilled water, sterilized equipment, and conducted

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18 Robert Lim to Effie Lim, January 28, 1945, Lim Papers, 19040791.
19 Yi to Helen Stevens, July 13, 1944, in folder entitled “Blood Bank (Correspondence to and from the Blood Bank in China 1944) (hereafter 1944),” ABMAC archives.
toxicity tests. The pooling and drying labs spun the whole blood to allow for the plasma to settle for extraction. The plasma was then dried to a powder form for portability, and placed in specially constructed chambers and exposed to bacteriocidal lamp. Sterilized plasma was then typically kept in refrigerators, but in the case of the Kunming bank, plasma was often kept in iceboxes instead. Louis De Fott was in charge of the mechanical department that maintained the bank’s equipment.21

Despite the clear division of labor, in reality, the conditions of wartime China took its toll on the blood bank personnel. They saw their work as arduous, alienating, and overtly political. Dr. Yi complained to Dr. Scudder that many politicians and generals were sabotaging their work because they were jealous of the success of the bank. One of these politicians was Chinese Nationalist General, Cheng Chi-jen, who had distributed cards bearing himself as the head of the Chinese blood bank in Calcutta and China, with the tacit approval of Dr. John Grant, Robert Lim’s former colleague at PUMC.22 Lim and Yi had sought to shut Cheng down, and as a result, Cheng had become a bitter opponent of the blood bank. It was no wonder in his letter that Yi proclaimed that he wanted “to get away from politicians as much as possible.”23

Jean Liu, the head nurse of the blood, claimed she worked late nights everyday preparing up to 350 bleeding bottles, more than seven times the amount she had to prepare in New York.24 Her colleague, Dr. Lueatta Chen, complained several times about her work to ABMAC officials in New York. Nobody appreciated her late-night pooling and processing of blood, she said, and some even blamed her for working too slowly on

21 Ibid.
23 Yi to Helen Stevens, November 9, 1944, in folder entitled “1944,” ABMAC archives.
her holidays.\textsuperscript{25} She finally tendered her resignation on July 2, 1945, months before the war ended. Like the rest of the personnel, Dr. Fan, the bank’s bacteriologist, sought to return to academics at Nanjing University on several occasions because he was dissatisfied with his work at the bank.\textsuperscript{26} His longer than expected stay at the bank prompted an American critic, Dr. Marshall Balfour of the Rockefeller Foundation, to ask the Dean of the Nanjing University if “ABMAC was fulfilling their obligations” to let Dr. Fan return to the Nanjing university, as Fan was only supposed to be on loan to the blood bank for a few months. Balfour doubted ABMAC’s sincerity in finding an alternative for Fan, and he thought that an agricultural bacteriologist could easily do the same job as Fan given a few days of training.\textsuperscript{27}

Not only did resignations hinder the operation of the bank, the incompetency of key personnel also negatively affected the bank. On June 19, 1945, Yi complained to Lim that Louis De Fott, the blood bank technician, damaged twenty-four bottles of plasma by not keeping the drying apparatus on for twenty-four hours.\textsuperscript{28} By the second week of July, Yi fired De Fott, and wrote two other letters to ABMAC detailing his reasons, and even claiming that De Fott was too much in love to “fulfill his duties in the blood bank.”\textsuperscript{29} As a response to these complains, Lim sought to make steady the financial contributions

\textsuperscript{25} Luetta Chen to John Scudder, June 2, 1945, in folder entitled “Blood Bank 1945,” ABMAC archives.
\textsuperscript{26} C.S. Fan to Donald Van Skye and Co Tui, October 4, 1944, in folder entitled “1944,” ABMAC archives. Besides his work at the blood bank, Fan worked part-time with Dr. Tang of the Central Epidemic Control Bureau to manufacture penicillin for wounded soldiers.
\textsuperscript{27} Mc Balfour to Dean Chang of University of Nanking, August 1945, in folder entitled “Blood Bank 1945,” ABMAC archives. Dr. C.S. Fan stayed for the entire two years of the blood bank, and finally resigned in August 21 1945, of which Robert Lim accepted. See C.S. Fan to Robert Lim, August 21, 1945, in folder entitled “Blood Bank 1945,” ABMAC archives; and Yi to Scudder and Co Tui, September 10, in folder entitled “Blood Bank 1945,” ABMAC archives.
\textsuperscript{28} Yi to Dr. Robert Lim, June 19, 1945, in folder entitled “Blood Bank 1945,” ABMAC archives.
\textsuperscript{29} Yi to Helen Stevens, July 17, 1945, in folder entitled “Blood Bank 1945,” ABMAC archives; Yi to Scudder, November 9, 1944, in folder entitled “1944,” ABMAC archives. Yi told Scudder as early as November 9, 1944 that Louis fell in love with a college student at Yunnan University.
from ABMAC to the blood bank. Lim also constructed a mess hall in the bank to create a sense of community. In addition, he endorsed the eventual sacking of De Fott, and hired more local assistants.

Lim took a more active role in the blood bank after October 1944 after leaving his official position as the head of the Emergency Medical Services School. He began to disagree with Yi over the former’s support for the Army Donors’ program. Yi argued that the soldiers were unable to give blood because their average level of hemoglobin was only seventy percent, far lower than an average healthy person. Most people in China, according to Yi, opposed taking blood from soldiers. Therefore, Yi felt that a voluntary civilian program would be more effective. The disagreement became increasingly heated, and Adet Lin urged Helen Stevens in New York to mediate their differences. In the end, Lim agreed to drop the Army Donors’ Program.

Another source of disagreement emerged during a blood scandal that broke out in late October 1944. General Cheng, the politician that troubled the blood bank in its early days, withdrew ten units of liquid plasma from the bank on the pretext of bringing that blood to soldiers to Baoshan, Yunnan. Instead, Cheng’s subordinates administered blood transfusion to General Du Yuming in Kunming after he dislocated his hip joint. Du became extremely sick, and almost died. Cheng thought that Du’s sickness was due to the unclean blood used in the transfusion, and send the rest of the plasma he withdrew from the bank to Southwestern University and the Central Epidemic Control Bureau for

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30 “Blood bank Administration, November 2, 1944,” in folder entitled “1944,” ABMAC archives; Letter to Dr. Scudder and Dr. Co Tui, October, 16, 1944, in folder entitled “1944,” ABMAC archives.
31 Letter to Dr. Scudder and Dr. Co Tui, October 16, 1944, in folder entitled “1944,” ABMAC archives; See Yi to Scudder, November 8, 1944, in folder entitled “1944,” ABMAC archives.
32 Yi to Scudder and Co Tui, November 30, 1944, in folder entitled “1944,” ABMAC archives.
33 Adet Lin to Helen Stevens, December 1, 1944, in folder entitled “1944,” ABMAC archives.
34 Lim to Yi, December 5, 1944, in folder entitled “1944,” ABMAC archives.
35 Yi to Lim, November 12, 1944, in folder entitled “1944,” ABMAC archives.
testing. Both institutions found four separate kinds of bacterial contamination. The news of the bacterial infection spread rapidly throughout Kunming, and donors’ rates collapsed from 600 per week to 20 in the last two weeks of October. There were 311 fewer donors in November 1944 than in October 1944. Dr. Yi admitted candidly:

The incident of plasma transfusion to General Tu as mentioned in my special reports to General Lim has to a certain extent interrupted our donor’s campaign. It took several months for us to build it up, but it was almost knocked out within one week by unfavorable propaganda...We feel of course very sad about this incident.36

Robert Lim was alarmed at the outbreak, and was unsympathetic to Yi’s complaint that the outbreak of blood poisoning was due to Cheng’s vendetta against the bank.37 Yi claimed that Cheng should have contacted the blood bank at the first instance when the infection broke out, rather than sending a sample to Lianda or the Central Epidemic Control Bureau. Robert Lim disagreed with this cover-up approach and urged Yi to see it as a lesson. Even as Lim disagreed with Yi, he addressed Yi’s complaint by reaching out to General Cheng, who struck a deal with Lim not to aggravate the situation. Cheng also agreed to reassure the public in Kunming that it was an accident. In effect, Lim managed to obtain a political ceasefire from General Cheng. Turning to Yi, Lim was deeply unhappy at the outbreak and ordered extensive tests to figure out the sources for contamination. Yi thought that the source of contamination could be the autoclave, a high pressure machine that produced steam that sterilize medical equipment. Yi proceeded to test for possible contamination in the autoclave, the autoclaved donor’s bottles and

36 Yi to John Scudder and Co Tui, December 11, 1944, in folder entitled “1944,” ABMAC archives.
37 Lim to Yi, December 5, 1944, from Chungking, in folder entitled “1944,” ABMAC archives.
plasma bottles, and the rubber stoppers.\textsuperscript{38} None of these three apparatus turned out to be the sources of contamination. The source was instead the humble rubber stopper. Yi found that the rubber stoppers from America had punctures holes that allowed outside air to be drawn into the high-vacuum plasma bottles. This outside air consequently contaminated the plasma within.

As a result of this discovery, Yi quickly adopted a new way of minimizing infection. He switched from the existing high volume plasma bottles that trapped a high level of vacuum to that of a lesser volume dumb-bell shaped bottle where a sleeve-type rubber stoppers could be used to create proper vacuum.\textsuperscript{39} Yi sent every batch of plasma samples to the Central Epidemic Control Bureau for screening. All blood had to be cleaned by a Seitz filter, an asbestos bacterial filter. In addition, Robert Lim sent Colonel Tripp from the U.S. army to monitor this cleaning-up process.\textsuperscript{40} In December 1944, Yi received the new rubber stoppers he had ordered, and he told all personnel to apply alcohol sponge and iodine paint on the rubber stopper when they withdrew the transfusion needle from donors’ bottles.\textsuperscript{41} In addition, Yi used ultra violet rays to detect the smallest amount of dirt at the blood bank. He also suggested additional ventilation for the building, to prevent concentration of germs at the workplace. The reforms worked, as cases of contamination fell perceptibly after April 1945.

\textbf{Making Imported Technology Work for Wartime China}

Yi’s tinkering with imported blood bank technology was done in the wider

\textsuperscript{38} Lueatta Chen and Yi Chien-lung, “Special Report from the Laboratory, November 30, 1944,” in folder entitled “1944,” ABMAC archives. An autoclave is a high-pressure machine that produces steam that sterilizes medical equipment and supplies.

\textsuperscript{39} Yi to Scudder, December 11, 1944, in folder entitled “1944,” ABMAC archives.

\textsuperscript{40} Robert Lim to Yi Chien-lung, December 5, 1944, in folder entitled “1944,” ABMAC archives.

\textsuperscript{41} January 8 1945, Special No. 2, in folder entitled “Blood Bank 1945,” ABMAC archives.
context of the importation of a wide variety of new equipment from New York to China. The arrival of diesel electric generators, autoclaves, electrical incubators, plasma processing equipment, and glassware from New York to Kunming heralded the arrival of new blood bank technology in China.\textsuperscript{42} This equipment made its way around the world over land and sea via Bombay, which took five months. Remarkably only twelve out of three hundred and twenty eight pieces of equipment were lost.\textsuperscript{43} Even though some of the technology was seen to be deficit, leading to cases of contamination, the very presence of this equipment made possible the advent of blood banking in Kunming.

The benefits of these technologies however, had to come to terms with the realities of wartime Kunming. Kunming’s pre-war economy operated on tourism, extraction of resources, and trade in basic commodities, rather than on resource-intensive financial services, international trade, or administrative bureaucracies.\textsuperscript{44} The sudden influx of migrants with their academic, industrial, and administrative institutions amidst the Japanese bombing of the city made it impossible for the Kunming’s authorities to increase electrical output dramatically within a short period of time.\textsuperscript{45} Wartime Kunming’s electricity was so unreliable that a 100-watt bulb typically burned at 30-watt level.\textsuperscript{46} The unreliable electricity meant that it was impossible to run all the blood bank machinery at all times. The bank owned diesel generators, but these were rendered

\begin{itemize}
\item[] \textsuperscript{42} Yi to Dr. Scudder and Dr. Co Tui, Feb 6, 1945, in folder entitled “Blood Bank 1945,” ABMAC archives
\item[] \textsuperscript{43} Yi to Helen Stevens, July 13, 1944, in folder entitled “1944,” ABMAC archives. The shipment left New York in January 1944, and arrived in May 1944.
\item[] \textsuperscript{44} For more exposition on Kunming’s economy and society before the war, see Elizabeth Remick, “Police-Run Brothels in Republican Kunming,” \textit{Modern China} 33, no. 4 (October 2007): 423-461 and Graham Hutchings, “Yunnan Province,” in \textit{Modern China: a Guide to a Century of Change} (Cambridge, MA: Harvard University Press, 2001), 482-485.
\item[] \textsuperscript{45} For a description of the physical nature of wartime Kunming and the Japanese bombing of the city, see Israel, \textit{Lianda}, 13, 21, and 235.
\item[] \textsuperscript{46} Ibid., 321.
\end{itemize}
useless by the extremely high prices of fuel, the damage sustained during the shipping to
the generators, and the lackluster work performance by technician Louis De Fott.

As a result, the blood bank personnel gave first priority of its electricity to the
freezing and storage cabinet, as well as to the electric incubator that housed the plasma.
Moreover, the erratic electricity meant that the water could not be pumped up from the
well into the forty-foot water tower for storage. As a result, there was no running water to
feed the drying machine’s water-cooling meters for dehydrating plasma.

Perhaps the most unfathomable product received by the bank from New York was
the twelve coffee boilers meant for distillation, instead of proper gasoline-operated water
distillers. These coffee boilers were good for having a clean cup of coffee, but not so
good for making distilled water for medical purposes. Distilled water was needed to
prepare the citrate solution for the re-transfusion of red blood cells sans plasma into
patients as well as to rinse laboratory and transfusion bottles. Perhaps as a way to
compensate for the absence of real distillers, the person who packed the coffee boilers
included pyrogen retention filters that could be used with the coffee filters to make
pyrogen-free water. Such water is almost as good as distilled water. Evidently, he or she
forgot to pack the filter sheets that went with the filter, rendering the coffee boilers
unable.

The importance of water distillation was due to the extremely poor quality of
water in wartime Kunming for medical operations. The situation had yet to improve eight
months into the blood bank operation. The water remained very hard, and left excessive
residues and scales on the cylinder wall of the cooling system of the plasma. These scales
acted as an insulation that trapped the heat in the cylinder and pistons. This heat could
break up the lubrication oil within the cooling engine, with resultant damage to the compressor. Moreover, because of impurities, the water could not be cooled effectively enough to carry away the heat from the condenser of the dehydrators, causing the engine to overheat. Moreover, the dirty water heated and evaporated, leaving a deposit of dirt in the water passages, which eventually clogged some of them completely.  

As a result of problems with electricity, fuel, and water, the blood bank could only process 300 donation units per week. In addition, the poor conditions of the ambulances for the mobile unit on the poorly maintained roads meant that they were often late when visiting different sites for blood transfusion. It is no wonder that Yi told Helen Stevens in April 1945 that the bank had “more donors than we can handle.”

To resolve these problems, the blood bank personnel sought to modify the existing blood processing machines to fit local conditions. They transformed automated equipment into mechanized ones operated by human beings. At Dr. Lim’s suggestion, De Fott constructed a hand pump to move water from the well to the water tower, so that running water could be used to cool the various blood processing equipment. Similarly, De Fott created a mechanical hand pump to crank the plasma-pooling unit instead of

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47 March 15 Report by the Mechanical Department, in folder entitled “Blood Bank 1945,” ABMAC archives; also see Ruth Derr to Helen Stevens, May 15, 1945, in folder entitled “Blood Bank 1945,” ABMAC archives. Ruth wrote, “Our greatest difficulty has been the lack of an adequate water supply. It still is the worst of our trouble and probably will continue to be for all time. The water here is impossible, being full of mineral deposits, in other words being so hard. It is also as Dr. Scudder can tell you the problem of having running water is impossible without the expenditure of tremendous sums of money and the results would be questionable.”

48 Betty Eng, December 1944 Report from Donor’s Clinic, in folder entitled “1944,” ABMAC archives. Eng said, “As usual there were nothing new during our trips except that we had to deal with the old worn out ambulances, such as flat tires and motors failed to start, etc. As a result, we were always late in our appointment. We could not help to feel low during some of these happenings.”


depending on an automatic pump operated by electricity.\footnote{Report on Mechanical Department, Feb 12, 1945, in folder entitled “Blood Bank 1945,” ABMAC archives; Adet Lin to Helen Stevens, August 28, 1944, in folder entitled “1944,” ABMAC archives.}

To get better quality water that did not leave residue everywhere in the machines, Robert Lim paid two Chinese dollars per day to coolies to haul water from a cotton factory at an unknown distance away to the blood bank. This water was then added to the converted coffee boilers. An average of five gallons of water could be filtered daily by May 1945. In addition, De Fott converted the gasoline-operated autoclave and coffee boilers to charcoal power. Charcoal was cheaper and more abundant than gasoline fuel in Kunming.\footnote{Adet Lin to Helen Stevens, August 28, 1944, in folder entitled, “1944.”} Finally, the blood bank settled for liquid plasma on several occasions because of the lack of electricity and water to run the dehydrator.

On the one hand, the efforts at adapting imported technology to local conditions were impressive, which required the marshaling of one’s technical expertise as well as the mobilization of natural resources from near and far to feed the machineries of the blood bank. On the other hand, the emphasis on maintaining a flexible medical bureaucracy exacted a toll on the medical personnel. Recall how Yi accused De Fott of not ensuring the drying apparatus for blood plasma remained on for twenty-four hours, and for having a relationship that allegedly affected his work performance. Yet in this case, the latter could simply be seen as resisting these harsh perfectionist conditions by going slow. It was not simply in James Scott’s words, “weapons of the weak,” but literally weapons by weak personnel overwhelmed by fatigue.\footnote{See James Scott, Weapons of the Weak: Everyday Forms of Peasant Resistance (New Haven, CT: Yale University Press, 1985). James Scott describes the everyday forms of resistance by peasants in Malaysia in the 1970s. These acts included foot dragging, theft of chickens of elitist households, burning of mechanized tractors that threatened their livelihood as manual workers, implicit collective bargaining for better working hours and pay by taking long lunches, and the ostracization of individuals who do not follow the social norms and values of resistance. These acts are covert and not seen readily by the government. Such acts are not simply acts of resistance but are also weapons of the weak.} Not keeping constant...
tabs on the plasma-drying machine for twenty-four hours, and having a personal life outside of the bank were grounds for dismissal only under a wartime environment, when there was an unwritten expectation of sacrificing one’s interests for the war effort.

**Opposition by Soldiers towards Blood Banking and Blood Transfusion**

Besides challenges in the workplace, the blood bank personnel also faced difficulties in soliciting willing blood donors in China. Most ordinary Chinese would have heard little about blood transfusion and blood banking prior to 1943, even though some literate Chinese might have seen articles in 1930s and 1940s journals explaining the nature of blood transfusion. For example, the Peking Union Medical College (PUMC) claimed in a Chinese medical journal that the institute drew blood from 1,473 individuals, and used this blood on 932 patients from 1921 to 1931. More research needs to be done to determine whether PUMC’s claims represented a general understanding of blood transfusion among the Chinese in the pre-war period.

In addition, the idea of blood banking was largely limited to more literate audiences. Two authors discussed blood banking in the 1940s in China in a popular magazine, the *Western Wind Supplement (Xifeng Fukan 四風副刊)*. One author showed how the Madison Blood Donors’ club was formed in New York in response to cumbersome bedside donations. A blood bank (*ningxue yinghang 貯血銀行*) was formed, and members had to pay to use the pooled blood (50 US dollars for 500 cc of everyday forms of resistance occur in repressive states where institutional politics are neither accessible nor desirable in fulfilling ordinary people’s needs.

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54 Peking Union Medical College, “Shuxueshu jianshuo [A Brief Description of Blood Transfusion], *Yixue zhoukanji* 醫學周刊集 4 (1931): 244-250.
55 The magazine was founded by Lin Yutang, Huang Jiaoyin (黃嘉音 1913－1961) and Huang Jiade 黃嘉德 in 1938 to promote knowledge of American and British scientific trends to Chinese audiences.
56 Milton Mackaye, December 1940, in *This Week Magazine*, translated by Hu Bei 胡悲, “Jigong haoyi de juanxuehui [Selfless courage in doing good for society], Xifeng fukan 四風副刊 [Western wind supplement], May 6, 1941.
blood). The bank would, however, provide free blood for patients who could not pay. This kind of “public-spirited” (jigong haoyi 急公好義) blood bank, according to the author, could be replicated in any city in the world with enthusiastic leadership and sacrificial spirit. The second author translated an article on blood banking in the American Medical Association Magazine, *Hygenia*. The article stated that eight thousand American troops and civilians donated blood to their British counterparts. In this transnational transfer, blood plasma was preferred because of its portability, its resistance to infection compared to whole blood, and its usefulness in treating wounded soldiers suffering from shock. Roberts argued that this type of blood transfusion could be promoted to other places in the world. It is in the context of some knowledge of what an ideal blood bank ought to be – an appreciation of plasma, a blood bank that operated on both premises of public spiritedness and a market economy, and the exportability of such experiences – that the doctors and nurses began its process of soliciting donors for the first Chinese blood bank.

Even though educated subscribers of medical journals and the *Western Wind Supplement* might be aware of some aspects of blood transfusion and blood banking, most ordinary Chinese, especially military conscripts, was likely to be unaware of blood transfusion or blood banking. In a 1944 speech, Robert Lim pointed out that Chinese soldiers, who were farm boys in their earlier lives, thought the loss of blood represented a loss of one’s vitality. Taking blood from these soldiers, they claimed, would weaken

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57 Edith Roberts, “Juanxue kangzhan” 抗血抗戰 [Donating blood to fight the War of Resistance], December 1940 *Hygenia*, translated by Ye Han 葉憨, in *Xifeng fukan* 西風副刊 [Western wind supplement], March 19, 1941.
them considerably. According to Lim, only soldiers who have seen first-hand the efficacy of blood infusion, like that of veteran soldiers on the Burma campaign would be convinced of the utility of blood donation. To Lim, in the absence of compelling visual proof, it was almost impossible to garner volunteers among the soldiers to donate blood in wartime China.

What was significant though in Lim’s speech was that he set his sights initially on bleeding soldiers – that underlying this discourse was still the belief that soldiers would provide the bulk of donations for the blood bank. This was taken up by the blood bank personnel, who were convinced of the possibility of persuading Chinese soldiers to understand the need to donate blood for their own kind, in hope it will also benefit them when they need it. General Du Yuming endorsed such a vision, and promised twenty thousand donors from the army. Dr. Yi Chien-lung was ecstatic and wrote to the ABMAC authorities confidently, “Even if we accept only a few thousands, that will keep us busy for a few months.” The wartime blood machinery would be made up of soldiers: soldiers as donors, and soldiers as recipients.

General Du never provided these soldiers. Even when the soldiers materialized from other units, the blood bank personnel did not treat them well. The photographs 4.2 and 4.3 clearly showed soldiers standing in the hot sun, presumably commanded by their officers to do so, as they awaited inspection of their suitability for blood donations by blood bank doctors:

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58 Robert Lim, “General Lim’s Speech at C.T. Loo’s Dinner Meeting for ABMAC Directors, May 16, 1944,” in folder “Army Medical Administration; Directorate of Medical Service – Lim,” ABMAC archives.

59 Yi to Stevens, July 13, 1944, in folder entitled “1944,” ABMAC archives.
Photograph 4.2: Physical examination of Chinese soldiers, 1944
(Source: “Physical examination for Chinese soldiers,” Western Medicine, Website: http://indiamond6.ulib.iupui.edu/cdm/singleitem/collection/WMIC/id/351/rec/18)

Photograph 4.3: Dr. Helena Wong inspecting prospective donors
(Source: “Dr. Helena Wong examines Chinese soldiers,” Western Medicine, Website: http://indiamond6.ulib.iupui.edu/cdm/singleitem/collection/WMIC/id/316/rec/6)
As they waited patiently to be bled, many soldiers were shocked that they would be rejected. Blood bank personnel rejected half of the soldiers at the Fifth Infantry officer’ military camp, claiming that most of the cadets had malaria and fever. As a result of their rejection, no trainees bothered to show up on the following day for blood donation. In another trip to the Chinese army headquarters in September 1944, blood bank personnel only drew the blood of 33 soldiers out of the 400 who assembled to be inspected. This phenomenon was repeated in the following camp they visited, where most of the 150 who showed up to be inspected were rejected because their veins could not be found due to their malnourishment. Therefore it was clear that the high rejection rates of potential donors resulted in many soldiers not donating to the bank.

Some Chinese officers got wind of such rejection, and advocated open resistance to the bank. In a September 1944 visit to an army camp, an officer-in-charge had incited his soldiers to shout down the doctors and nurses of the bank. A few soldiers thereafter spoke out loudly and angrily against giving blood. Adet Lin and the rest of the blood bank tried convincing the commanding officer of the “harmlessness of hemoglobin and blood pressures tests,” but he would not budged. Several soldiers insisted on donating blood, but the officer kept saying “enough enough” at every moment. As a result, the blood bank personnel could only draw 100cc of blood, instead of the usual 200cc, from the few willing donors. The blood bank personnel came back “pretty disgusted.” They blamed group psychology and the general ignorance of the officers for the resistance

60 Lin to Stevens, August 22, 1944, in folder entitled “1944,” ABMAC archives.
61 Lin to Stevens, September 16, 1944, in folder entitled “1944,” ABMAC archives. The officer in charge had initially promised 1000 soldiers in this camp, but only 400 showed up. This suggested that even the officers could not or did not care enough to command their troops to show up to be inspected by the blood bank personnel.
62 Ibid.
63 Ibid.
found in this group of soldiers. 64

In October, the team again ventured out, but could not find suitably clean places to draw blood from the soldiers. Flies abounded in the little villages in which these soldiers were based, and the blood drawn turned out to be contaminated. Dr. Helena Wong concluded that “from the experience of this month's work, we learned that the general response of the army to blood donation was not very favorable.” 65

The resistance of the soldiers was diagnosed by medical elites narrowly in terms of the hostile group psychology. However, the evidence suggested that the medical elites were the ones who adopted groupthink, and reached out little to soldiers on the virtue and nature of blood donations. They saw soldiers-as-donors as given, even as they rejected so many of them. No compensations were offered, and there were hardly any interactions between the elite medical personnel and ordinary soldiers.

Moreover, even though it was true that most soldiers in the Nationalist army were peasant conscripts with very low levels of nutrition and correspondingly low levels of hemoglobin, not all of them were in such terrible conditions to justify high rates of rejection. 66 The photographs of soldiers as taken by the blood bank suggest that potential donors appeared to be just as healthy as the blood bank personnel (See photographs 4.2 and 4.3). Moreover, many of the donors were officers’ trainees, recruited from families who were wealthier and better fed than most Chinese. Dr. Helena Wong’s report revealed

64 Ibid.
65 Helena Wong, “Report from the Donor's Clinic (September 1944),” November 14, 1944, in folder entitled “1944,” ABMAC archives.
66 Ibid., and Lary, Chinese, 160-162. Diana Lary shows that the demand for recruits for the GMD armies far outstripped the supply of volunteers; in the later years of the war, there were no more volunteers. Conscription became the norm, but in practice, only poor peasants were conscripted, 14 million of them during the course of the war. It is exactly this time period when the blood bank arrived in China. Most of the soldiers that the blood bank personnel encountered were most likely poor peasant conscripts who were malnourished.
the dichotomy between the medical elites and their donors:

It takes a certain amount of blind insensitive stubbornness to take blood from these soldiers. It is a sad business; however, I feel we are justified and right, because the plasma goes back to them, and the ones that give can afford the amount we take from them. What hurts is that these soldiers are expecting to go the front soon. [An] answer [from] soldiers [who] snapped at us yesterday was, "Why keep it in a bottle, why not just leave it here".67

Wong reflected her self-righteousness in her juxtaposition of her noble mission with the ignorant Chinese Nationalist soldier, even as she sought to explain their actions by their fears of going to the front. The elites’ gaze toward the pitiful soldiers was repeated in an earlier August 1944 report from Adet Lin:

If donors don't increase in numbers, to answer the demand for plasma at the front, we must get the army to supply donors. Irrespective of right and wrong, to give blood under orders is psychologically bad and we are bound to have more cases of reaction.68

These medical personnel clearly knew about the ethical boundaries of blood donations, but they felt that any opposition to blood donation from soldiers were not justifiable in view of the medical elites’ own superior knowledge of the benefits of blood donation. The soldiers’ fears of being forgotten were cast aside. To these elites, soldiers should internalize the concept of a greater good – that donating blood today might not save you in the future, but it would help save one of the men fighting beside you. The intractability

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67 Lin to Stevens, September 16, 1944, in folder entitled “1944,” ABMAC archives.
of soldiers – in the eyes of these elites – meant that the blood bank personnel had to reach out to civilians to donate. As we will see, the blood bank had to cajole, persuade, co-opt, and even pay civilians to donate. The idea that a blood bank would need to publicize its purpose was not a given, but motivated by the impossibility of extracting even more from soldiers, and the consequent turn towards civilians as donors.

From Soldiers to Civilians – Local Elites and the Dilemma of Blood Economy

To reach out to the civilians, Adet Lin advertised widely in the most modern media available to wartime China – movie theaters, newspapers, radios, comic strips, and mimeographed sheets. Her campaign was aimed at the “readers and the educated class” because “the ideas of the blood bank and blood donations [was] still strange and slightly frightening to most people, even though there's a great deal of curiosity.” A newspaper campaign was the first stop for Adet Lin. The blood bank invited the representatives of the Central News Agency (Zhongyang Tongxunshe 中央通訊社), the Chaobao 朝報, Yunnan 雲南, Zhongyang 中央, Minguoribao 民國日報, Saodangbao 掃蕩報, and Zhengyibao 正義報 to visit the blood bank on July 11 and July 12, 1944. Adet Lin had urged them to support the blood bank through their writings. In addition, Adet Lin sent out six stories to these news media on the progress of the blood bank, shipments of liquid plasma, and the rules of blood donation between July 12 and July 31, 1944.

Besides reaching out to the newspapers, Lin mailed in July mimeographed appeal sheets with simple rules for making donations at the blood bank to sixty organizations, banks, and schools. 107 letters were sent out in August to urge organizations to give their

69 Adet Lin to ABMAC, August 1 1944, in folder entitled “1944,” ABMAC archives.
employees a day off to donate blood. In addition, four movie theaters agreed to run the bank’s advertisements on blood donation for two weeks. Yi, Wong, and Lin also lectured to visitors at the blood bank, the local bureau of public health, doctors’ association, the Young Men Christian Association, the Expeditionary Forces Headquarters, Biology Society, and Chinese Medical Society. The bank personnel also went on local radios to spread the message of the bank. Finally, the blood bank rewarded the top three institutional donors with special flags.

Adet Lin also created comic strips (Lianhuantu 连环图) to boost publicity. Five thousand mimeographed strips in red were printed towards the end of the war as seen in the following page:

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71 “Monthly Report of Blood Bank - December 1944,” in folder entitled “1944,” ABMAC archives. The yellow flag was awarded to the Burma Road Transportation Bureau with 654 donors. The blue flag was rewarded to the runner-up Southwestern Lianda with 527 donors, and red flags to the Central Machinery Factory with 229 donors.
72 Chang Tai Hung argues that the Communists first used comic strips to gain support for their causes during the Sino-Japanese war. Similarly, in this case, the blood bank personnel also employed comic strips to reach out to Chinese civilians. See Tai Hung Chang, War and Popular Culture: Resistance in Modern China, 1937-1945 (Berkeley, CA: University of California Press, 1996), 244.
The comic strip sought to achieve multiple aims. One was to persuade reluctant bankers and businessmen to donate: “Who says businessmen do not love their country; I am willing to donate blood to the warfront” (Shuishuo shangren buaiguo, wo yuanyi juanxue weiqianfang 誰說商人不愛國，我願捐⾀為前⽅). The strip then linked the civilians’ donation of blood to actual participation at the warfront: “Donating blood in the homefront results in the reduction of blood loss at the warfront”/”I am a healthy citizen, I want to donate to the warfront”/”Those at the homefront are donating blood to us, let us charge ahead” (zaihoufang juan dian rexue, qianfeng keyi jianshao shangwang 在後方捐點熱⾎，前鋒可以減少傷亡/woshi jiankang guomin, woyao juanxue wei qianfang 我是

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健康國民，我要捐血為前方/houfang minzhong douzai wei women juanxue, women xiang qianfeng ba 后方民眾都在為我們捐血, 我們向前鋒吧). Finally, it conveyed the location of the blood bank at the Kunming’s Kunhua hospital (kunhua yiyuan, junyishu xueku 昆華醫院, 軍醫署血庫). These messages linked the outcome of the war to the ability of Chinese civilians to contribute to the war effort. Adet Lin saw this comic strip as an opportunity to highlight the importance of donating to the blood bank. Such use of mimeographed comic strips reflect the dissemination and politicization of a host of related popular cultural forms such as spoken dramas, cartoons, and newspapers during the War of Resistance.74 However, the response to the blood bank was lukewarm, largely because it was difficult for people to travel to the blood bank at Kun-hwa hospital to donate. Adet Lin wrote in an August 22, 1944 letter to Stevens, complaining that she has “learned to believe donors when they are actually here.”75 By August 1945, only 8% of the blood collection was done at the blood bank itself – the rest was to be drawn in the mobile blood bank units sent out to the various civilian and military institutions.76 The poor attempts at getting soldiers to donate, as well as the limited success of subsequent outreach to civilians through advertisements reinforced the gulf between elites’ medical plans and the response by civilians on the ground.

What worked eventually was due less to the efforts at propagation by the elites, and due more to the participation of local elites who compensated workers and students for donating blood. The advent of a local blood economy changed the dynamics of donations, and induced many more civilians to contribute. Schools and work-units

74 Chang, War, 271.
75 Lin to Stevens, August 22, 1944, in folder entitled “1944,” ABMAC archives.
created opportunities for local elites to provide avenues for emotional spectacles that moved recalcitrant individuals to donate. As a result, the mobile blood bank units met with relatively more receptive audiences in the schools and work places.

The blood bank’s visit to the largest university in Southwest China, the Southwestern Associated University (Lianda 聯大), in October 1944 revealed the importance of participation by local leaders.77 The dean of Lianda as well as the faculty members at the university were very enthusiastic about blood donation and publicly urged their students to donate blood. They knew many students could not afford better quality food outside of the university because of the wartime austerity. Moreover, food at the university was very scarce, increasingly unhygienic, and of extremely poor quality on Lianda’s campus.78 Lianda’s university professors then decided to offer every blood donor a bowl of soybean milk as well as three fresh eggs, sponsored to the tune of 100,000 Chinese dollars by the university’s alumni.79 Such efforts appeared to have been inspired by the blood bank’s attempt at providing similar refreshments at the physical blood bank to attract donors.80 Indeed, just as people were attracted to such nourishments at the bank, these food and drinks meant a lot to hungry students on campus. As a result, many students decided to donate, with several even attempting to lie about their age to donate.81 The blood bank personnel collected a total of 125,000 cc to 150,000 cc. of

77 Southwestern Associated University was formed as a result of the merger of Beijing University, Qinghua University, and Nankai University after the fall of Beijing to the Japanese in 1937. They migrated to Changsha, before ended up in Kunming in 1938 until the end of the war. See Israel, Lianda.
78 Ibid., 313-314. Students at Lianda did not have meat for up to three months since the university started in 1938. The College’s food committees will wait until mid-afternoon before the markets close to buy battered cabbage leaves and bits of pork skin to save money. Lianda kitchen were infested with flies, rat droppings, fleas, and bugs. By 1943, breakfast was no longer provided by the university.
79 Ibid., 308.
81 Lin to Stevens, October 23, 1944, in folder entitled “1944,” ABMAC archives.
blood, a relatively high amount.\textsuperscript{82} The high rates of donations suggest that the endorsement by the faculty as well as their efforts to offer eggs and soymilk in exchange for the hungry students’ blood were crucial to the success of the mobile blood bank at Lianda.

Besides the professors at Lianda, labor leaders at the Burma Road Construction Bureau (BRCB) in October 26, 1944 welcomed the blood bank personnel to their work site 68 kilometers from Kunming.\textsuperscript{83} The BRCB organized a “Blood Donation Committee,” using the materials by the blood bank to spread the news about blood donations among its workers, guards, students, and nearby farmers. The committee members put up elaborate signs, shared the bank’s bulletins, and set up posters everywhere. Students from a nearby school held up a large triangle flag “Chung Sin School Blood Donation Corps” to welcome the blood bank personnel. Similarly, all donors were given soybean milk as well as eggs after donation, courtesy of the school’s refreshment committee. Two hundred and thirty four donors registered for donation, and a hundred and ninety donated. The total amount of blood collected of this one trip was 47,160cc, more than the amount collected in August.

It was significant that those who donated the most to the blood bank were students and laborers in institutional settings. Institutions of education and labor created opportunities for the principals, professors, and foreman to disseminate knowledge, and effectively distribute rewards for blood donations. Schools and construction sites not only provided top-down economic avenues of compensations that changed medical practices;

\textsuperscript{82} I estimate that Lianda personnel donated around 125,749cc of blood by dividing the total amount donated for October (260310 cc) by the total number of donors that month (963) and then multiple by the percentage who were Lianda personnel (48.3%). Israel, citing local newspapers, claimed that Lianda faculty and students donated a total of 150,000cc of blood. See Israel, \textit{Lianda}, 331.

\textsuperscript{83} Adet Lin, “Trip to Tu Kuan Chun,” in folder entitled “1944,” ABMAC archives.
they also provided non-hierarchical emotional spectacles that transformed attitudes towards blood donation. On a November 1944 trip to Central Electric Works, several young men who were initially unwilling to donate changed their minds after seeing an older employee cry when he was turned away because of his old age. At the Chuan-tien Railroad Company, thirty girls from the nearby Kunhwa high school registered to donate after being influenced by older peers, but most were rejected because they appeared too young. At a telephone-manufacturing factory on the hills of Kunming, department heads and workers turned blood donation into a competition. Emotional spectacles, watched by many laborers at these technical institutions, inspired more donations.

This early advent of market-based efforts to draw blood from donors appears to be unethical, along the lines of critiques of similar trends in contemporary China by scholars. Yet if Chinese civilians and local elites were complicit in bioethical violations by buying and selling blood in order to obtain some milk and eggs under extremely hungry wartime circumstances, the diasporic elites’ disdain for soldiers-as-human beings should also be called into ethical question. Even though we now know that pre-modern (and modern) China was neither against the free market nor against scientific endeavors, part of the discomfort still arose from the greater moral ambivalence towards the commodification of the body, shared across cultures in modern times. Gail Hershatter’s assertion that prostitution, a commodification of the body, in Republican Shanghai was akin to everyday drudgery of work should give pause to these encounters of blood transfers – was it really that problematic to exchange blood for bread and soymilk in

84 Lin to Stevens, November 21, 1944, in folder entitled “1944,” ABMAC archives.
85 Ibid.
86 Report from the Donor’s Clinic, November 1944, in folder entitled “1944,” ABMAC archives.
wartime China. The everyday forms of the extraordinary — constant migration, hiding in bomb shelters, studying under poor conditions in Southwest China, and constantly repairing bombed roads and buildings — was so encompassing since 1937 that the advent of a blood banking in 1944 was seen as a natural extension of the upheavals brought about by the war. The Chinese civilians appeared to have seen the buying and selling of blood as an everyday extension of their interest in participating in the war effort; or as an everyday encounter where they had to make choices based on peer pressure or influence.

**Overall Trends of Blood Donation in Wartime China**

The blood bank personnel’s endorsement of the local elites’ strategies increased the number of donors, and shifted the donors’ bases from military to civilian personnel:

| TABLE 4.1 | Number and Type of Donors from July 1944 to December 1944 |
|---|---|---|---|---|---|---|
| Months (1944) | July | August | September | October | November | December |
| Numbers of donors | 85 | 146 | 492 | 1,111 | 700 | 504 |
| Military (% military) | No Data | No Data | 407 (91.7) | 57 (11.4) | 51 (7.3) | 28 (5.6) |
| Civilians (excluding Students) (% civilians) | No Data | No Data | 53 (8.2) | 364 (26.5) | 612 (87.4) | 298 (45.4) |
| Students (%) | No Data | No Data | 0 | 690 (62.1) | 37 (5.3) | 178 (35.3) |
| Amount of blood withdrawn (cc) | No Data | No Data | 81,996 | 260,310 | 180,760 | 129,800 |

As shown in Table 4.1, the blood bank university’s initial use of mobile units resulted in the increase in the number of donors from 146 people in August 1944 to 492 people in

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89 Data collected from various reports in folders entitled, “1944,” and “China Blood Bank 1945,” ABMAC archives.
September 1944. By the end of the war, the mobile bank units accounted for 92% of the blood drawn from donors, which meant that the permanent bank was mainly used to process whole blood into blood plasma rather than develop as a site of blood donation.

Because of the opposition by soldiers and their officers to the process of blood donation, each person only donated an average of 201cc of blood, instead of the expected 300cc of blood. After Robert Lim’s intervention in October 1944 to expand the mobile bank’s outreach to civilians, there was a 125% increase of donors, and the total blood withdrawn increased more than threelfold to 260,310cc, an average of 234cc of blood per donor.

Civilians and students came to dominate the donors’ numbers as they increased from 8.2% in September to 88.6% of total donors in October. Fewer military personnel donated over time, as reflected in the month of December, where only 5.6% of donors were military personnel.\(^90\) Moreover, most people who donated blood from July 1944 to July 1945 were civilians: 77% of donors were civilians, with ordinary laborers making up the largest share. In sum, a total of 10,347 Chinese donated a total of 1.7 million cc of blood from July 1944 to August 1945.

**Results of Donated Blood – Keeping the Chinese Nationalist Soldiers at War**

The blood plasma saved soldiers on the battlefront. In one field report, 95% of wounded soldiers recovered from their wounds as a result of an infusion of blood from the plasma.\(^91\) The bank distributed a total of 259 units of plasma on July and August 1945 to military organizations such as the Fifth Group Army Hospitals, Robert Lim’s military

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\(^90\) No data for the breakdown of donors were available for the months of January 1945 to August 1945, although we do know that around 7,000 Chinese donated in this period. Robert Lim and the ABMAC expanded and renovated the blood bank from January 1945 to April 1945. They wanted to clean up the blood bank after the contamination scandal in October 1944, and to gear up for expected expansion of the bank. As a result, the overall number of donors was relatively low during this period.

medical institutions, the Twenty-Sixth medical department of the Nanning Airstrip as well as to civilian organizations such as the Chinese Red Cross, and the Department of Food at Kunming. Given that most of these reports came after April 1945 when the faulty rubber stoppers were replaced and cleanliness of the bank improved, it was clear that most of the plasma could be safely used. Major William King of the Fifth Headquarters of the U.S. Army Group praised the bank’s plasma,

The whole blood obtained from voluntary donors among the Chinese Armies were of course more satisfactory as far as extreme cases are concerned, but the plasma did its job well in primary and secondary shock cases, awaiting corrective surgery. In addition to the use of plasma on the battlefield, Chinese plasma was also used in the treatment of nutritional edema with quite satisfactory results.

In addition, Major Owyang of the US Army Medical Corps concluded that almost 98-99% of wounded soldiers were saved after receiving plasma at the battle of Tengchung in October 1944. As I have shown in the introduction, the blood bank also provided red blood cell transfusion to prominent anemic patients such as Dai Jitao. In total, the Chinese blood bank in wartime Kunming distributed 2,317 units of blood plasma, of which 1,153 were directed towards active combat Chinese units. The multifaceted use

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92 In the early days of the blood bank, the bank distributed most of the plasma through an intermediary in the US army, Col. Jennings. See Yi to Scudder and Co Tui, November 8, 1944, in folder entitled “1944,” ABMAC archives.
95 Yi to Stevens, April 10 1945, in folder entitled “Blood Bank 1945,” ABMAC archives. Yi wrote, “If a civilian or soldier brings in a written statement and lab finding on blood picture from a physician, we will be responsible for cross matching, the supplying of the recipient set, but pyrogen-free saline for suspending the red cells or the actual transfusion of red blood cells.”
96 Robert Lim, “Summary.”
of plasma in various military and civilian contexts attested to the blood bank personnel’s flexibility, and the ability to adapt to wartime circumstances despite the physical constrains of Southwestern China.

The general upturn in blood donation enlivened the spirits of the Overseas Chinese blood bank personnel, even though it reinforced the separate worlds between them and the rural Chinese. Dr. Helena Wong talked about how the fear of donating blood was diminishing by November 1944. The staff personnel could be more relaxed, and during one of their trips, picked red winterberries in the countryside to bring back to the city. “With the wind blowing and sun shining,” they trekked through a bushy mountain path to view a stone-carved sleeping Buddha. During the BRCB visit in October 1944, Lin remarked, “some ex New Yorkers could not help being amazed to find themselves walking in the moonlight of Burma Road.”

With the creation of a mobile unit that brought blood donation to rural Chinese, these Overseas Chinese had the unexpected opportunity in seeing more of rural China. The reference to New York however, suggests that they kept a separate identity of their past as Americans, even though they have signed up for the war effort against the Japanese. The wartime rural geographies inspired these tourist-like reflections. This was in contrast to many of these Overseas Chinese’s pre-war careers in cosmopolitan Shanghai, historic Beijing, and international Xiamen, where they would have the opportunities to mingle with fellow like-minded indigenous Chinese such as Hu Shi, Alfred Sze, and Liu Rui-heng who had studied and worked in the United States. Their experiences reveal how the two communities of Overseas and rural Chinese were equal but separate in their fight against the Japanese.

97 Trip to Tu Kuan Chun.
Conclusion: Bridging the Expectations and Realities of Blood Banking

The initial report on the New York trial run seemed so promising: Americans of all races were donating to the Chinese war effort, and at the same time, opposing racial inequality and political injustice in the United States. After the bank moved to China, the reports revealed widespread opposition to both blood transfusion and blood banking. Chinese soldiers criticized the blood bank personnel for their reluctance to fully explain the nature of blood transfusion, and for their high rejection rates of fellow soldiers. Civilians found it difficult to physically travel to the blood bank, even if they saw advertisements about the bank at the movie theatre, or through the comic strips distributed by the blood bank personnel. It took the blood bank personnel to travel on mobile units beyond the comfort zones of the hospital and the laboratory to the courtyards, temples, schools, and camps. Local labor leaders, university professors, and students were able to leverage the use of a blood economy with the help of these blood bank personnel in mobile units, which was critical in the eventual success of the bank in Wartime China.

Besides grappling with the problem of getting enough donors, the Overseas Chinese had to deal with the incompatibility of local wartime conditions with imported blood bank equipment and technology. The arrival of the most cutting edge equipment from New York to China had to undergo multiple refinements before they could be used in China. For example, technician Louis De Fott constructed a hand pump to move water from the well to the water tower, so that running water could be used to cool the blood processing equipment.98 In addition, he created a mechanical hand pump to crank the plasma-pooling unit to avoid dependence depending on an automatic pump operated by

unreliable electricity. These initial technological interventions were highly important, even if it could not prevent cases of blood contamination. As I have reiterated, it was the fortuitous element of human contingency for the bank to eventually bleed enough Chinese civilians to create a bank where Chinese generals could draw on for their relief efforts.

Therefore, even though there were problems with institutionalizing the blood bank, the blood processed and collected by the bank nonetheless changed the lives of many Chinese. The 2,314 units of plasma delivered to Chinese and Americans saved many lives, and those lived to fight another day contributed to the survival of the Nationalist Chinese regime in Southwestern China. Many historians of the War of Resistance have emphasized the debilitating effects of the war on the mental state and physical conditions of the ordinary Chinese soldiers and civilians, as well as its pernicious effects on the effectiveness and the popularity of the Nationalist government led by Chiang Kai Shek. In contrast, I argue in this chapter, as well in the broader dissertation, that wartime China was not merely filled with “seeds of destruction,” but its residents did benefit from the fruits of medical knowledge and practices brought by the Overseas Chinese to China.

Finally, this chapter shows the relative progressiveness of the Chinese blood bank in a global context. The Overseas Chinese, who dominated wartime medical institutions in China, were less concern about racial purity in blood than their Axis enemies or their American allies. They did not expend time and effort to categorize and distribute blood

100 Eastman, *Seeds.* Eastman argued that the Chinese Nationalist Party’s ultimate defeat by the Chinese Communist Party in 1949 can be traced back to the Nationalists’ corrupt and incompetence governance that began during the War of Resistance.
according to race, and thus could focus on processing and distributing blood to soldiers and civilians. Free China’s eight-years war of attrition against Japan - as compared to the fast-paced, and subsequently long occupation periods of Allied countries by Axis powers on the Western front - also revealed the remarkability of setting up and managing a viable blood bank under relatively challenging conditions. China’s blood bank was akin to the underground blood banks movement in occupied Holland. Even then, the Nazis left the Dutch’s banks alone, unlike the Japanese who repeatedly sought to destroy the blood bank and other military medical institutions. Wartime China had a far more progressive and competent medical system in the Second World War, even though it was long thought to be the weakest link among the Allied powers.
Chapter 5

From Shanghai to Taipei: Civil and Cold War Medicine, 1945–1970

Robert Lim expected that the end of the Second World War in China would allow him to start with a clean slate. After the Republic of China was included in the “Big Four” Allied countries that fought the Axis Powers, post-war problems would vanish with the promise of aid from the United States. With the help of American marines, Nationalist Chinese troops reclaimed areas previously occupied by the Japanese. The American-Nationalist cooperation proved to be an early blow to the rival Chinese Communist Party’s plans to capture Chinese territories from the retreating Japanese. Lim was poised to benefit from the post-war reconstruction efforts as he emerged after the war as the Surgeon-General of the Chinese Army, overseeing a medical complex comprised of the Army Medical Field Service School, the Chinese Blood Bank, and auxiliary military hospitals.

Yet, the Chinese Civil War posed new challenges for Lim and his colleagues. The war between Nationalists and Communists injected a high level of uncertainty into Lim’s endeavors. He faced a reduction of funding from traditional allies in America and Southeast Asia, high rates of inflation, opposition from Japan- and German-trained doctors, as well as an increase in student unrest. This chapter examines how Robert Lim sought to create a post-war medical system in China, and later in Taiwan, in the context of the Civil War. At the heart of this post-war medical system was the creation of a comprehensive medical institution known as the National Defense Medical Center. As I will show, wanting to bring existing military medical facilities under one roof, Lim merged rival medical institutions, intensified efforts to reach out to his American military
contacts, and commandeered Japanese resources to fulfil his vision for the Center in Shanghai. Through the NDMC, he introduced dual-track professional and vocational medical training for medical personnel, expanded China’s nursing program, and created a dental program. In addition, he started a blood-banking program and promoted an overseas fellowship program for NDMC faculty and students. In 1948, Lim persuaded a third of the NDMC personnel in China to move to Taiwan. These efforts contributed to the emergence of the NDMC as the most important institution of Western medicine in post-war China and Taiwan.

Critical to this medical institutionalization was the assistance of Americans and Overseas Chinese. After the NDMC moved to Taiwan, conservative American politicians, American Bureau for Medical Aid to China’s (ABMAC) personnel, Robert Lim, and Lim’s successor, Loo Chih Teh, created an image of vulnerable Overseas Chinese to solicit funding from the United States Foreign Operations Administration (Foreign Operations Administration). Their strategy was to convince the Foreign Operations Administration to provide money to NDMC to prevent Overseas Chinese from heading to Communist China. The funding was critical in enabling the NDMC to operate in Taiwan, contributed to the expansion of medical training, and elevated nursing on the island. The Foreign Operations Administration’s intervention opened doors to more funding from other United States agencies as well as from reluctant Overseas Chinese who would despite initial misgivings support the organization into the 1960s. Medical training at the institution grew rapidly, and the organization attracted a sizeable number of Overseas Chinese. Robert Lim’s institutionalization of medicine from 1945-1970 was remarkably global and contingent on the complex interactions between the Overseas Chinese,
conservative American politicians, local Taiwanese, Robert Lim, and Chinese general Chen Cheng. These endeavors, I argue, resulted in the unprecedented growth in medical training, research, and delivery in the Civil and post-Civil War period.

**Reappraising the Civil War Period and the Early Years of the ROC in Taiwan**

This chapter is the first attempt in the English language to examine the history of medicine during the Civil War and post-Civil War period. Through delineating the history of medicine from 1945-1970, I seek a revisionist view of the last years of Republic of China on the mainland and the early years of the ROC in Taiwan. At the heart of the traditional political approach was the question that preoccupied America’s Far East politics during the Cold War – that is, who lost China? In other words, what were the reasons for the Nationalists’ defeat by the Communists in 1949?

Conservative American politicians from 1949 onwards have blamed the post-war American administrations and their allies for losing China through their neglect of Chiang’s regime, while the U.S. State Department blamed Chiang for losing China.¹ Historians of China have eschewed this externalist approach, and turned to research on the indigenous causes for the Communist victory.² Even though scholars of the Civil War have arrived at different conclusions, they have been motivated by similar searches for the roots of and reasons for the Nationalists’ failure.

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² Scholars have emphasized different reasons for the failure of the Chinese Nationalist regime in China: Lloyd Eastman blamed the Nationalists’ longstanding ineptitude rule; Suzanne Pepper and Steve Levine articulated the many strengths of the Communists over the Nationalists; Jay Taylor criticized the Nationalists’ economic mismanagement and the out of control military expenditure; and Odd Arne Westad eschewed structural reasons for the multiple contingencies that led to the Nationalists’ defeat. See Eastman, *Seeds*; Pepper, *Civil War*; Levine, *Anvil*; Westad, *Decisive Encounters*; and Taylor, *The Generalissimo*. 
In contrast, I hope that an examination of the everyday life of medical personnel and their social networks in a transnational context will allow us to see a much more dynamic history of the Civil War era. The problems of the Civil War should frame the larger context in which the period should be considered rather than be determinative of the entire era in question. Medical actors were inspired to adapt imported ideas, technology, and science to local conditions and sought an even larger international community of organizations to overcome economic problems and international isolation. Just as the end of the Qing dynasty was not simply a period of doom for China but one that inspired a multitude of ideas and reforms from the Chinese people across the globe, similarly, the end of the Republican period was not simply a dark period, a period where the regime and its people was destined for failure, despair, and defeat. It was rather a period of frantic institutionalization, and a preparation for a brighter future for China. In contrast to the historiography of the Late Qing era, narratives of the Civil War period have yet to recognize the existence of multiple self-reflective voices. Even though China was “lost,” many medical personnel reinvented themselves in Taiwan, bringing with them a wealth of experiences, expertise, and fund-raising powers that enabled the institutionalization of Western medicine on the island.

This chapter, however, has no intention of making heroes out of those individuals who moved to Taiwan. Rather, I seek to de-emphasize existing historical narratives that romanticize the Nationalist retreat to Taiwan. I wish to move beyond the nostalgic, ahistorical, and victimized narratives that have been emphasized by some Taiwanese

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intellectuals and their Western allies.\textsuperscript{4} Also, I would like to suggest the common narrative that the Korean War saved Taiwan is inadequate.\textsuperscript{5} By showing that medical personnel in Taiwan had to collaborate with multiple international and domestic actors to secure financial aid from the United States, I illustrate how local actors actively pursued the project of medical institutionalization on the island. Furthermore, the pressure kept up by ABMAC, conservative American politicians, and NDMC personnel from 1949-1970 for more U.S. assistance was vital to the success of medical institutionalization in Taiwan.

**Challenges in Creating a New Medical Training Center (1947)**

After the War of Resistance, Chiang Kai Shek appointed Robert Lim the Surgeon-General of the Chinese Army. Lim called for the formation of a new medical center that would draw on the expertise of both civilian and military medicine.\textsuperscript{6} This new institution,

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\textsuperscript{4} An example of such literature can be found in the prominent Taiwanese intellectual and current Minister of Culture, Long Yingtai’s (龍應台 born 1952) 2009 best-seller. See Long Yingtai, *Dajiang dahai-yijiu sijiu 大江大海一九四九 [Big river, big sea-untold stories of 1949]* (Taipei shi: Tianxia zazhi gufen youxian gongsi, 2010). Historian Lee Ou Fan criticized Long’s book as contrived and lacking in historical sources in her attempts to appeal strongly to the emotions of her readers. Lee argues that Long had painted everyone as a victim of the era through the manipulation of the words of historical actors. To Lee, the book suffers from “over-writing” and over-sentimentality. See Leo Ou-Fan Lee, “Lung Yingtai, *Dajiang dahai - 1949* (Big river, big sea. untold stories of 1949) and Chi pang-yuan, *Ju lìu he (The River of Big Torrents),* *China Perspectives* [Online], April 22, 2010, Website: [http://chinaperspectives.revues.org/5077](http://chinaperspectives.revues.org/5077) (Accessed July 8, 2013)

\textsuperscript{5} Zhang Shuya points out rightly that almost all the existing narratives on Taiwan’s history in English and Chinese focused on how the United States sent in the seventh fleet to save Taiwan after the outbreak of the Korean War, reversing the U.S. earlier stance of abandoning the Republic of China to her own fate. This became the turning point of ROC’s history on Taiwan, saving her from obliteration by the Chinese Communists. In contrast, Zhang argues that the Americans were willing to hold out for a rapprochement with the Chinese Communists and reversing its support for Chiang even after the Seventh fleet was sent, and it was only towards the end of the Korean War that the U.S. gave up finding hopes of finding a solution to U.S.-PRC tensions. Zhang Shuya, *Hanzhan jiu Taiwan?: jiedu Meiguo dui Tai zhengce 韓戰救臺灣?: 解讀美國對台政策 [Did the Korean War save Taiwan? Unpacking America’s Taiwan policy]* (Xinbei shi: Weicheng chuban, 2011).

\textsuperscript{6} Robert Lim, “National Defense Medical Center – Raison d’être (Report of Medical Services in 1946),” *National Defense Medical Center* 1 (June 15, 1947): 1-15. Lim argued that the Japanese defeat did not mean the job of providing medical care was done or that everything would be “rosy”; rather it exposed the Chinese army’s weakness in education and the inability of its economy to provide transportation and industry. The overall weakness in the economy and technical expertise could be overcome with greater participation by civilian technicians and business and academic elites. In addition, he urged civilians from the business and industrial sectors to provide medical aid and expertise. He urged the creation of a new
which would be named the National Defense Medical Center, provided the doctors, nurses, dentists, military medical officers, medics, and technicians needed to sustain the Nationalists in the fight against the Communists.\(^7\) Lim proposed to bring together two wartime medical institutions – his ally and student Loo Chih Teh’s Army Medical Field Service School and his rival Zhang Jian’s (張建 1902–1996) Army Medical College – to form the basis of the new NDMC, which would be based in Jiangwan, Shanghai. The NDMC would be comprised of medical training schools to provide long-term professional training for doctors, dentists, and nurses as well as shorter-term service schools focusing on training field units in specialized techniques.\(^8\) To supplement teaching and research, the NDMC would have a fully equipped laboratory, medical museum, research library, and supporting buildings such as an auditorium, barracks, staff quarters, training areas, and recreational facilities.

Lim’s vision for the NDMC was much harder to implement in reality. The first challenge that he faced was to persuade rival medical institutions to work together. Medical personnel at the Army Medical College (Junyi xuexiao 軍醫學校) opposed folding their institution into what they essentially saw as a Robert Lim’s organization. The Army Medical College was a small outfit that trained medical personnel during the war and was backed briefly in 1944 by Robert Lim’s rivals – George Bachman and the United China Relief – to counter Lim’s much larger Emergency Medical Service
council for Research and Development in China similar to similar post-war endeavors in the United States and Great Britain.
\(^7\) Drawing up the proposal for the center in late 1945, Lim obtained official approval for the National Defense Medical Center from Chiang Kai Shek in January 1946. Construction of the Center began soon after, and the Center became fully operational by the fall of 1947.
\(^8\) Long-term professional training at the NDMC took four to six years, while shorter-term service schools provided training in two to four years.
Training School, later renamed the Army Medical Field Service School. ABMAC officials and Robert Lim considered the Japan- and German-trained doctors at Army Medical College to be inferior to the British- and American-trained physicians at the Emergency Medical Service Training School. Army Medical College doctors on the other hand, thought that British- and American-trained physicians at the Emergency Medical Service Training School were arrogant given that their medical skills were not necessarily better than doctors trained in Japan and Germany. The head of the Army Medical College, German-trained Dr. Zhang Jian, was unsurprisingly reluctant to merge his organization into the proposed NDMC in 1947, knowing full well that Robert Lim would be the director of this new institution. Both sides marshaled their allies – Zhang gathered support from KMT generals in his home province of Guangdong, and Lim sought the help of General Chen Cheng then Chief of General Staff and director of the Northeast Headquarters of the Chinese Army. At a meeting to discuss the merger, Chen Cheng spoke up in support of Lim:

Whoever of you wants to bring down Robert Lim, you have to defeat me first. If you cannot defeat me, then you cannot bring down Robert Lim.

We feel that Robert Lim is a real talent. He not only has a firm foundation in medicine, but he is also highly patriotic. Under his leadership, he can

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9 See K. Cheung (Dean of Army Medical College) to George Bachman, August 23, 1943 in folder entitled “Army Medical College,” ABMAC archives.

10 Chen Cheng was a close confident of Chiang Kai Shek. He was made the minister of war in December 1944, and chief of general staff of the armed forces and commander in chief of the Chinese Navy in 1945. He fought the Communists in North China during the height of the Civil War. He later underwent successful stomach surgery at the NDMC in 1948, before heading to Taiwan to take over the position of governor of Taiwan in January 5, 1949. Chen Cheng was later appointed the premier and vice-president of the ROC in Taiwan. See Ramon Meyers, “Chen Cheng,” in Political Leaders of Modern China: A Biographical Dictionary, ed. Pak-Wah Leung (Westport, CT: Greenwood Press, 2002), 13-14.

definitely attract capable teachers and technicians who will lead to the expansion of the military medical system.\textsuperscript{12}

Chen’s exhortation and lobbying proved effective with Chiang Kai Shek ordering Zhang Jian to merge his Army Medical College into the newly formed NDMC. Zhang reluctantly agreed and became the deputy director of the NDMC, sharing the position with the former head of Emergency Medical Service Training School, Loo Chih Teh. Some Army Medical College doctors refused to join the NDMC, including those who had been appointed to head the new dental and pharmaceutical departments at the reorganized NDMC. Even though the Nationalist government could compel the Army Medical College to fold into the NDMC, it could not persuade Zhang to force his subordinates to join the NDMC.

**Securing Funds for the NDMC (1947-1948)**

Besides the tensions that came with the consolidation of previously rival institutions, the NDMC also faced significant financial and medical challenges in setting up the institution. The Overseas Chinese in Southeast Asia who were the main donors to Lim’s organizations during the War of Resistance withdrew their support for the Nationalists as the Civil War dragged on. A new generation of ethnic Chinese abroad increasingly believed that the Nationalists were incompetent and corrupt. By 1947, unprecedented criticism of the Nationalist Party emerged in the local papers in Singapore.\textsuperscript{13} This criticism translated into a reluctance to support the NDMC, and it was

\textsuperscript{12} Ibid.

\textsuperscript{13} See Wang Gungwu, “China, Nationalist,” in *Southeast Asia: A Historical Encyclopedia, from Angkor Wat to East Timor*, ed. Ooi, Keat Gin (Santa Barbara, CA: ABC-CLIO, 2004), 334-337. Wung argues that during the Civil War period, for the first time, the Nationalist Party lost the support of major sections of the Overseas Chinese. This was because the local Chinese were adapting to new development that replaced colonial regimes with indigenous nationalists in Southeast Asia but also because the younger generation of Chinese were sympathetic to the criticism of widespread incompetence and corruption among KMT.
in deep contrast to the wartime situation in 1938 when Lim’s Chinese Red Cross Medical Relief Corps received almost a third of its funding from Chinese in Southeast Asia.

It was in this context that Robert Lim sought to commandeer Japanese resources in China. He applied to the Nationalist government to have dental equipment from the wartime Shanghai-based Tokyo College of Dentistry and the Osaka Dental Manufacturing Cooperation turned over to the NDMC.\(^\text{14}\) Lim also appropriated laboratory, radiological, serological, and electrical supplies formerly owned by Japanese medical personnel.\(^\text{15}\) More important, he sought to have the Japanese hospitals in Shanghai turned over to the NDMC, which the Executive Yuan ultimately did in August 1946, bequeathing six hospitals of approximately 1.5 million square feet of floor space.\(^\text{16}\) These buildings were repaired and remodeled for the NDMC, and by 1947 held the NDMC General Hospital, central supply offices, warehouse, residents’ dormitory, garage, guard house, swimming pool, greenhouse, animal house, laboratories and classrooms,

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\(^\text{14}\) See “Guofang yixeuyuan yakeyi fazhan jihua shuomingshu” 國防醫學院牙科系發展計畫說明書 [Schemes in building up the dental school of National Defense Medical Center], National Resources Commission Files, Academia Historica, Taipei (hereafter NRC, AH), 003000007759A. The English-translations of NDMC-related National Resources Commission Files were provided by the National Resource Commission.

\(^\text{15}\) See “Lianqin zongbu junyishu guofang yixueyuan yakeyi ni chaiqian xuexiao ji gongchang xujian jihuabiao” 聯勤總部軍醫署國防醫學院牙科擬拆遷學校及工廠機械運華建廠計畫表 [A plan of transferring Japanese machines to China; Directorate of Medical Service Combined Service Forces], NRC, AH, 003000007758A; “Guofang yixueyuan weisheng zhuanhui shiyanshu yakeyi fengzhuang jihuabiao” 國防醫學院衛生實驗院牙科擬充實計畫說明及細菌與血清學系向日索償物件表 [Plan for equipping vaccine plant, medical laboratory, National Defense Medical Center and list of laboratory supplies requested by the department and serology, medical laboratory, National Defense Medical Center], NRC, AH, 003000007761A.

\(^\text{16}\) See National Defense Medical Center, “National Defense Medical Center, Sites, Facilities and Installation, IV, February 28, 1947” and “National Defense Medical Center Raison D’être (Report of Medical Services in 1946),” National Defense Medical Center 1, no. 1 (June 15, 1947).
barracks, latrines, medical service corps schools, etc. 17 In sum, the appropriation of Japanese premises and equipment allowed the NDMC to reduce their reliance on foreign assistance.

Even though using Japanese resources alleviated the NDMC’s funding crunch, Lim still had to construct additional buildings such as the headquarters, library, museum, auditorium, sewage disposal plants, animal houses, medical equipment laboratories, shops, and additional living accommodations. Because of reduced funding from Southeast Asian Chinese, Lim turned to his longstanding ally from ABMAC, whose funding came largely from the more sympathetic Chinese Americans. In 1946, however, ABMAC had adopted a new post-war funding policy, and the organization became interested in funding a wider variety of medical institutions. As a result, the NDMC and its nursing department was slated to receive only CN$125,000 of a total budget of CN$1,400,000 in 1948, with the rest going to the newly reconstructed Beijing, Shanghai, Lanchow, Xiangya, Nanjing, and Canton Medical Schools. 18 Furthermore, the money for the NDMC was directed towards foreign fellowships for NDMC’s doctors to have short stints in American medical schools, rather than towards aiding the operational costs or the construction of new buildings.

As a result of the reduced levels of funding from the Overseas Chinese and ABMAC, Lim turned to the U.S. Army for assistance in 1946. It agreed to help fund NDMC and funneled money to the institution via Colonel George Armstrong (1900-.

17 Ibid.
Armstrong gave Lim and NDMC US$8,000 in 1945 and another US$2,000 in 1946, which made up the entire budget for the proposed NDMC for 1945-1946.\(^\text{19}\) That amount, plus bank interest, came up to around CNS$42.8 million. The NDMC used up almost all the money for 1946, presumably to remodel the Japanese hospitals for the NDMC. In 1947, NDMC did not receive any money from the U.S. Army, but instead it depended on other sources amounting to CNS$35 million (marked simply as “investment” in the audited accounts). This amount was also used up by the end of the year, and therefore was absolutely crucial in the setting up of NDMC’s programs in its first year of operation.

It was clear that Armstrong’s support was ad-hoc in nature, as the U.S. Army had no formal aid program for China, which was then the purview of the State Department.\(^\text{20}\) Even though the U.S. State Department at various moments promised aid to Chiang, little

\(^{19}\) Colonel Armstrong was then Chief of Personnel Division at the Office of the Surgeon General of the United States Army, and served in China from September 1943 to June 1946 in various capacities, the final being the theatre surgeon-general of China. Armstrong kept in close contact with Lim throughout the War of Resistance. For a brief biography of Armstrong, see US Army of Medical Department, “George Armstrong,” Website: [http://history.amedd.army.mil/surgeongenerals/G_Armstrong.html](http://history.amedd.army.mil/surgeongenerals/G_Armstrong.html) (Accessed July 15, 2013).


\(^{21}\) In the 1949 *White Paper on China*, the U.S. State Department claimed that the U.S. had given China US$1.5 billion of aid to China from 1945-1949, arguing that the Nationalists failed in China despite massive U.S. aid. It was clear, however, that most of the aid was for repatriation of Japanese and Overseas Chinese nationals and the relocation of Nationalists troops and personnel from Southwest China to the rest of China through the Land Lease Act as well as the United Nations Relief and Rehabilitation Administration. Freda Utley, a long-time China observer and journalist, questioned the *White Paper*’s aid figures in 1951, and argued that actual aid to the Chinese was closer to US$100 million from 1945-1948. Together with the amount disbursed by the China Aid Act, she argues that the total amount of 220 million was “too little and too late” to help the Nationalists. Walter Trohan, the editor of the *Chicago Daily Tribune*, made a similar case in 1949. See U.S. State Department, *The China White Paper, August 1949* (Stanford, CA: Stanford University Press, 1967), 405; Freda Utley, “Too Little Too Late – the Facts about ‘Aid to China,’” in *The China Story* (Chicago, IL: Regeny Co., 1951), 30-54; Walter Trohan, “Military Aid to China Held to be Small: Far East Neglected, Records Show,” *Chicago Daily Tribune* (May 16, 1949): 12.
of it came to fruition. It was only in 1948 that US$520 million was promised by the United States to China. This funding, however, came from sympathetic American congressmen rather than from the State Department. In April 1948, the U.S. Congress passed the China Aid Act, but it took the State Department several months to ship US$88 million of military supplies to China. By then, the consensus in America was that such assistance was “too little, too late” to aid the Republic of China. Given that it was unlikely that the U.S. government would provide aid to China or to the NDMC willingly, Lim decided, in July 1948, to leave China for the United States to seek out new streams of funding as well as search for procurement possibilities on the pretext of attending a polio conference in New York.

**Trip to the United States**

In New York, Lim was able to persuade some ABMAC leaders to join his efforts in supporting the growth of the NDMC. Lim met up with Chinese-American Allen Lau several times in New York, and they had amicable discussions on how to get US$3,000 worth of supplies to the NDMC as soon as possible. Lim also streamlined the procurement procedures, eliminated unknown middlemen, and appointed Lau as the Honorary Representative of the Military Medical Department (junyishu 军医署), a

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22 For example, the State Department promised US$200 million of soft loans to the Chinese in 1947, which did not materialize. See Taylor, *Chiang*, 375.

23 Supporters of Chiang in Congress had threatened to withhold funding for Europe if President Harry Truman’s administration did not put up a bill to aid China. What we do know is that the U.S. Congress passed a modified China Aid Act comprising US$520 million, of which US$88 million worth of military equipment reached China in October 1948. The rest of the funds appeared not to have reached China. See *Chicago Daily Tribune*, “88 Million Handed to China for War Against the Communists,” October 12, 1948: 15; *The New York Times*, “$88,275,170 for Arms Sent to China by U.S.,” October 12, 1948: 15.

24 Ibid.

25 Robert Lim to Tsing Yi, July 25, 1948, Lim Papers; Robert Lim to Tsing Yi, July 18, 1948, Lim Papers, 1804019. Lim saw Lau as particularly alienated from ABMAC bosses who wanted to diversify ABMAC support away from Robert Lim. Lau thus saw Lim as a person he could work with to improve his status within the organization. Lim remarked, “Allen Lau worked single-handedly and was tied down by all his bosses.”
position which authorized Lau as a Chinese official who could deal directly with the U.S. Army medical procurement officer in Brooklyn. Lau proved to be an invaluable ally who moved money and supplies from the United States to the NDMC.

Lim also convinced ABMAC directors to allow the NDMC nursing school to decide on how they would spend ABMAC funds, rather than having to seek prior final funding approval from Lim’s rival in the ABMAC. It was a small but important victory for Robert Lim and Zhou Meiyu, the head of the Nursing School at NDMC. He also reached out to pharmaceutical companies, and one company promised to ship gelatin for the creation of blood plasma at the NDMC. Finally, Lim reached out to receptive military medical personnel in America. Not only did he give fundraising speeches for the NDMC to these institutions, he was able to secure new cultures and bovine plasma stabilizer, Triton-X 155, from the Army Medical School at Walter Reed Medical Center for his colleagues at NDMC through his contacts in America.  

In contrast to his success with ABMAC, Lim was less successful in persuading the U.S. government to give money and supplies to NDMC. The secretary of war, Kenneth Royall (1894-1971), was supportive of ABMAC seeking resources from the Army and Navy Procurement representatives. However, any funding required the final approval from the then secretary of state, George Marshall (1880-1959). In contrast to Royall, Marshall was deeply ambivalent about Chiang and the Nationalist regime and thus a proponent of only giving very limited assistance to the Republic of China. As a result, Lim sought the audience of Minnesotan congressman Walter Henry Judd (1898-1994), a former medical missionary to China and a longtime supporter of Chiang Kai

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Shek and the Nationalist regime. Lim had wanted Judd to persuade Marshall to aid China. However, Judd revealed that it was unlikely that Marshall would see him, as he had been a fierce critic of Marshall’s inaction. However, Judd promised to continue lobbying the Truman administration to delegate the responsibility of providing aid to China to the pro-Chiang U.S. Army. Lim then met with Alfred Kohlberg, his longtime ally, and former finance minister of China, H.H. Kung (孔祥熙 1881－1967) to ask them to lobby the U.S. government. Despite the intense lobbying by Kohlberg, Kung, and Judd, George Marshall did not disburse more aid to the Chinese after the initial intervention by Congress in October 1948, and it was only when the Nationalists moved to Taiwan that large-scale monetary assistance was given to the NDMC under a new administration. The NDMC had to work with limited funds given by the Chinese government and the U.S. Army during the Chinese Civil War period.

**Drawing on Wartime Experiences (1946-1949)**

Besides making do with the resources he had, Lim also drew on his wartime experiences in building up the National Defense Medical Center. Continuing his emphasis on veteran rehabilitation during the Second World War, Lim and the NDMC organized 74,262 wounded and disabled veterans into 41 military units across the country, by December 1946, and began rehabilitation programs in these units. In addition, Lim put in place a variation of his wartime training philosophy at the NDMC, which he had not achieved during the Second World War. As I discuss in chapter 3, Lim wanted to implement a six-year medical program to train competent doctors during the war, but

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27 Robert Lim to Tsing-Yi, July 7, 1948, Lim Papers, 1804020.
28 Robert Lim to Tsing-Yi, July 18, 1948, Lim Papers. 1804019.
after widespread opposition his plans were shelved in favor of a short three-month training program.  

At the heart of the debate was whether quick medical training could serve the immediate needs of China even when it was provided poorly. Alternatively, should China forgo immediate care to focus on long-term development of medical services that would eventually aid more Chinese. The former won out during the War of Resistance, even as Lim resuscitated the latter concern after the war. At the NDMC, Lim created a dual track of vocational and academic training that brought together both wartime philosophies under one roof. At the NDMC, Lim offered short-term courses that ranged from four months for basic medical training for ordinary soldiers to nine months for non-commissioned officers. It concentrated, however, much of its resources in the three-year programs for military medical specialists and the six-year program for medical officers. Lim even sent around a hundred Chinese medical officers to the United States in August 1946 and again in August 1947. Those who were on U.S. Army scholarships received training at the U.S. Army Brooke Medical Center and in army hospitals and installations, while the rest were assigned to civil medical schools and public health institutions. In sum, the NDMC could train a sizeable number of medical personnel in the rudiments of first-aid, preventive care, and basic medical relief, without entrusting them with the complicated tasks of surgery, distributing pharmaceuticals, or medical research.

30 The six-year proposal then drew its influence from the pre-war Peking Union Medical College’s education model that stressed long-term quality medical training for a few high-achieving high school graduates. As a result, fewer than 500 students graduated from the college prior to 1949, but almost all went on to become medical leaders in their respective fields. In contrast, the Emergency Medical Service Training School trained more than 15,000 medical personnel on short three months program during the war, but many of them received a lower quality education.  
To supplement research and teaching at the NDMC, Lim constructed a comprehensive medical center laboratory at the institution, which was completed in January 1948. The laboratory hosted a new blood bank (a legacy of Lim’s wartime blood bank), as well as China’s inaugural pyrogen-free fluid plant. This critical technology enabled the center to produce germ-free water for laboratory and blood bank use. Depyrogenation machines were brought into from the United States to Shanghai for the first time to purify the water obtained from the nearby rivers and water sources. Pyrogen-free fluids meant the resolution of two wartime headaches: NDMC personnel could now avoid the severe problems of blood contamination experienced previously, as well as prevent laboratory equipment from being polluted by impure water.

Complementing the construction of the NDMC was the development of mobile medical units, a legacy from the wartime experience. Lim developed mobile clinics to treat surgical and medical cases of casualties, and sent similar clearing units to evacuate less serious cases to Treatment Centers near the General Hospitals in Guiyang, Chongqing, and Xian. He also continued to dispatch mobile delousing units to the military installations across the country to rid soldiers of the mites and lice that afflicted their bodies. In addition, Lim ordered the mobile units to take on additional roles as medical surveyors and compilers. In total, Lim and his mobile units compiled around thirteen data sets. They include the total number of sick and wounded soldiers from August 1937-1948, the number of sick and wounded from 1937-1948 compared with other countries in World War I and World War II, the anatomical nature of wartime wounds, the pathological distribution of sick soldiers, the cost of inpatient

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34 Ibid.
accommodation in Chinese hospitals in 1948, and the types and distribution of battle losses among different divisions in the army.\textsuperscript{35} Lim’s post-war efforts thus represented a significant effort in making wartime and immediate post-war data available for the first time in a tabulated and comparative format.\textsuperscript{36}

Lim’s wartime experiences compensated for the lack of immediate resources and funding. Setting up a blood bank, creating mobile units, organizing medical training that took into account dueling philosophies, and rehabilitating veterans would have required much more personnel, experimentation, and finances if Lim did not have experiences with similar forms of institutionalization during the war. Lim was able to overcome wartime limitations by importing new physical equipment in the form of a pyrogen-free plant, and a comprehensive medical lab that incorporated medical experimentation, medical equipment (depyrogenation machines), and with actual interactions with patients (blood bank). A new dental and an expanded nursing program could then be grafted on the infrastructural experiences that Lim and the NDMC drew on from the wartime period.

**Coping with Inflation and Student Unrest (1948)**

Prominent visitors, including Madam Chiang Kai Shek, U.S. Congressman Walter Judd, Chief of the U.S. Military Advisory Group General John Lucas, and U.S. Ambassador Leighton Stuart, toured the NDMC from October 1947 to January 1948. They were reportedly pleased with the progress of the NDMC despite the very limited

\textsuperscript{35} See “Sick and Wounded Hospitalization (1937-1948),” “Sick and Wounded Hospitalized (Comparison with World Wars I & II Statistics),” “Anatomical Distribution of Wounds in Percent (Comparison with other wars’ statistics),” “Wounds and Weapons Concerned,” “Pathological Distribution of Sick (Approximate),” “Rates of Loss,” “Distribution of Battle Losses for Armies (Corps) and Larger Units,” “Net cost per inpatient day Fiscal Year 1948 (Sept),” Lim Papers.

\textsuperscript{36} Such efforts were an extension of the regular social surveys increasingly done by indigenous Chinese by the 1930s. For an overview of the institutions and personnel who conducted social surveys in the first half of the twentieth century, see Tong Lam, *A Passion for Facts: Social Surveys and the Construction of the Chinese Nation-State, 1900-1949* (Berkeley, CA: University of California Press, 2011).
resources with which the institution had to work.\textsuperscript{37} Their visit coincided with the height of the NDMC’s institutionalization, as Lim adapted to the lack of resources by drawing upon wartime experiences. As I will show, the NDMC was able to cope with the high rates of inflation and student unrest in China, two factors that purportedly were crucial to bringing down the Nationalist regime from within. It is within this context that the order for the NDMC to retreat to Taiwan in the late 1948 was given by General Chen Cheng. NDMC personnel, who thought that they could still flourish on the mainland without the Nationalists in charge, adamantly opposed the order.

Inflation was a general scourge in Shanghai from 1945-1949 with prices of many goods and services rising more than four thousand fold. The propensity for the Nationalists government to resort to the printing press to finance its growing military expenditure;\textsuperscript{38} the efforts of post-war unions to bid up their wages\textsuperscript{39}; the ineffective emergency price control measures in 1947-48 that succeeded only in creating a vast black market;\textsuperscript{40} and the failed Gold Yuan currency reform in 1948 were representative of a period that seemed utterly chaotic.\textsuperscript{41}

Robert Lim and his wife, Tsing Yi, were able to cope with the high levels of inflation. Despite Tsing Yi complaining to her stepson in America that it cost CN$125,000 to subscribe to a newspaper for one month in 1947,\textsuperscript{42} she admitted that things were improving after the war, and affordable buses were again plying the streets of

\textsuperscript{37} Ibid.
\textsuperscript{38} Eastman, Seeds, 301-311.
\textsuperscript{40} Eastman, Seeds, 311-314.
\textsuperscript{41} Ibid.; Taylor, Chiang, 386-387.
\textsuperscript{42} Tsing Yi to Jimmie, October 16, 1947, Lim Papers.
Shanghai by March 1947. Though the NDMC found it difficult to procure food even in the Shanghai black markets, it nonetheless was able to provide for soldiers’ meals. A key reason was that the NDMC received much of its funding in U.S. dollars, which mitigated the erosion of the Chinese dollars. Even by October 1948, NDMC students were provided in the school cafeteria with one dish, one soup, and two big bowls of rice at eight US cents each. Robert Lim admitted that while funds for the NDMC were inadequate given the “economic deficiency, civil war and inflation,” he was “get[ting] along with the little we have.”

Besides inflation, the Nationalist government also faced widespread student protests on the streets of Shanghai. In 1947 when Army Medical School students protested against the proposed merger of their institution with the NDMC, they put up posters in their compound in Shanghai and outside the houses of Loo Chih Teh and Robert Lim. Chen Cheng warned students that they would be treated harshly if they did not end their opposition. As a result of his intervention, as well as the shared knowledge that the merger was a done-deal, student leaders called off these demonstrations.

Fortunately for Lim and NDMC personnel, there were no other recorded cases of student unrest despite alleged Communist infiltration into the campus.

In assessing the efficacy of the NDMC, we find that a total of 1,504 medical students and officers and 100 nurses were trained from 1946 to 1949. These figures were significantly fewer than the 5,400 students envisioned by Robert Lim in 1946 when he first drafted the plan for NDMC and the 15,000 medical personnel trained by Lim from

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43 Tsing Yi to Jimmie, March 4, 1947, Lim Papers. She complained of the lack of buses in her earlier letter to Jimmie dated December 8, 1946. See Tsing Yi to Jimmie, December 8, 1946, Lim Papers.
44 Tsing Yi to Jimmie, October 20, 1948, Lim Papers.
45 Robert Lim to Jimmie, Dec 16, 1947, Lim Papers.
46 Robert Lim to Jimmie, June 1, 1947, Lim Papers.
1938-1945 during the Second World War.\(^{47}\) Clearly, the lack of resources had limited the number of students trained, even though a figure of fifteen hundred was substantial given the constraints of the Civil War. Moreover, NDMC students were far better trained than their Emergency Medical Service Training School counterparts during the war, and they were crucial as foundational members of the ROC medical corps when the Nationalists moved to Taiwan.

**Resisting the Move to Taiwan (1948-1949)**

The order to move to Taiwan had its origins in General Chen Cheng’s sudden illness in 1947. Chen was surveying his troops in North China in 1947 when he suddenly felt unwell. He was admitted to a hospital in North China and diagnosed with a duodenal ulcer. Upon hearing about Chen’s conditions, Dr. Loo Chih Teh had Chen evacuated from North China to Shanghai, and arranged for the NDMC head of surgery, Dr. Zhang Xianlin (張先林 1902－1969) to operate.\(^{48}\) The operation lasted several hours, but it was ultimately successful as Zhang removed the ulcer from Chen’s stomach. Chen Cheng, who was already a keen supporter of Lim and NDMC, now felt that the NDMC was indispensable to his personal health as well as to the health of the nation. He began to develop plans to move the institution to Taiwan. After the Nationalists’ debacle in Manchuria in October 1948, Chen thought that it was time that the NDMC should move

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\(^{47}\) Robert Lim wrote to Magnus Gregerson in March 3, 1948 stating that there were 1,604 students at the NDMC and that by the September of 1948, NDMC was expected to have around 3,000 students. Around 1,400 students moved with the NDMC from Shanghai to Taiwan in 1949, suggesting that there were at least 1,400 students by the end of 1949. Robert Lim to Magnus Gregersen, March 3, 1948, in folder, “NDMC 1948-1954,” ABMAC archives. Also see “NDMC Personnel and Dependents, June 20, 1949,” *National Defense Medical Center* 3 (June 20, 1949).

\(^{48}\) “Yidai yixue zongshi Lu Zhide boshi — 一代醫學宗師 劉致德博士 (1901－1979) [The Teacher of his times, Dr. Loo Chih Teh],” *Yuanyuan jikan* 源遠季刊 31 (2009): 12.
to Taiwan. He ordered the complete transfer of NDMC personnel and equipment from Shanghai to Taipei in December 1948.\footnote{Robert Lim to James Lim, December 20, 1948, Lim Papers. It was significant that the NDMC was the only medical institution in China that was asked to move to Taiwan, as neither the prestigious pre-war medical institutions of PUMC nor the Hunan-based Hsiang-Ya Medical School were asked to do so.}

In retrospect, this move to Taiwan greatly benefited the NDMC, as I will show in the second half of the chapter. Medical research, training, and teaching at the NDMC took off after initial difficulties. In contrast, the Peking Union Medical College was devastated by Mao Zedong’s China. The Chinese Communists forbid any aid from the Rockefellers, shut down classes, suspended academic exchanges between China and America, banned American textbooks, and renamed the college.\footnote{Bullock, 	extit{Oil}, 130-139.} The temptation is to read backwards from the present, and see General Chen Cheng’s decision as one that “saved the NDMC” from a Communist Regime.

In reality, few doctors in 1948 wanted to move from Mainland China to Taiwan as they saw no future with the Nationalists on the island. Robert Lim wrote on the doctors’ dilemma in his update to the ABMAC after the NDMC begin its move to Taiwan:

The reason why so many [NDMC personnel] have not been able to come to Taiwan is chiefly one of financial and political uncertainty. To many, Taiwan is a foreign country, a place where one would be forever [be] banished from family and friends! The expense of bringing one[s] family and relatives appeared prohibitive, and in view of the political uncertainty, the possibly that after arrival in Taiwan the NDMC might be adversely
affected or abolished so that financial support might cease deterred many
who fear unemployment in a “foreign” environment.\textsuperscript{51}

It was an uphill battle persuading doctors to move from Shanghai to Taipei. At a meeting
of NDMC faculty, Zhang Xianlin, the head surgeon who operated on Chen Cheng, passed
around a sheet of paper for volunteers to move to Taiwan with the NDMC.\textsuperscript{52} Nobody
signed. Zhang decided to sign his name, and passed the paper around the second time.
This time, a few doctors penned their names, but they were still the minority among the
medical personnel. Among those who chose not to go with the NDMC was Zhang Jian,
the deputy head of NDMC and the former director of the Army Medical College. Zhang
Jian decided to leave Shanghai for Guangdong to head the education bureau in the
reorganized KMT government, before moving to Taiwan just in time before the
Nationalists collapsed on the mainland.\textsuperscript{53}

One of those who went over to Taiwan was Lim’s fellow Overseas Chinese
doctor from Penang, O.K. Khaw. Khaw was the head of the parasitology department at
the NDMC, the same position he held at the PUMC from 1925-1938, where he was a
colleague of Robert Lim. Khaw decided to move to Taipei with the NDMC. After
moving to Taiwan, Khaw focused on understanding the nature of communicable diseases
on the island, just as he did in Mainland China. Khaw studied the nature of
schistosomiasis in Taiwan, investigated the parasitological fauna of the aborigines in the

\textsuperscript{51} Robert Lim to Allen Lau, April 6, 1949, Lim Papers.
\textsuperscript{52} Shen Huaiyu 沈懷玉 and Lin Dongjing 林東璟, “Wang Xueshi xiansheng fangwen jilu 王學仕先生訪
問紀錄 [Records of interview with Wang Xueshi]” in Taibei rongmin zongyiyuan banshiji: koushu lishi huigu 台
北榮民總醫院半世紀：⼝述歷史回顧 (下篇: 各部、科、中⼼主任與教授) [Half century of Taipei veteran hospital: Oral history (Second half: heads of
departments and professors)], edited by You Jianming et al (Taipei shi : Zhongyanyuan jinshisuo, 2011),
1-50.
\textsuperscript{53} Robert Lim to Allen Lau, April 6, 1949, Lim Papers. In 1951, Zhang Jian was forced out of the NDMC
after being accused of being anti-Chiang. He left the NDMC for private practice in Hsinchu, and migrated to America in 1985.
Wulai District, and conducted research on clonorchiasis at Sun Moon Lake, a famous Taiwanese tourist site.\(^54\)

Khaw, however, was a clear minority among the faculty. Many medical personnel were not just concerned about leaving their family on the mainland, or potential unemployment in Taiwan, as Robert Lim claimed. Chinese medical personnel trained in Anglo-American medicine had reasons to believe that Communist China was likely to demand their expertise. At the same time Sun Fo (孫科 1891-1973), the new prime minister, asked Robert Lim to take up the position as the minister of health in late 1948,\(^55\) the Communists announced through their radio stations that they would appoint Robert Lim minister of health, if he would stay on the mainland.\(^56\) It was clear that the Communists wanted Chinese doctors not to move to Taiwan with the Nationalists. When Lim rejected their overtures, the pro-Communist media in Shanghai began claiming that Lim was a Chinese who did not know Chinese characters. They portrayed him as a doctor who “lost his job as the minister of health” because he could not handle his two appointments as the head of the NDMC and the ministry of health at once.\(^57\) Furthermore,


\(^{55}\) Robert Lim appeared to have held the minister of health position briefly from December 1948 to January 1949. He was not sacked from the position, as the post-communist media suggested. Lim actively wanted to resign from this position, as he preferred to focus on his endeavors at the NDMC, as well as on a possible move to the United States. See Zhang Pengyuan, and Huaiyu Shen, *Guomin zhengfu zhiguan nianbiao, 1925-1949* [Annals of the official positions in the National Government of the Republic of China, 1925-1949] (Taipei shi: Zhongyang yanjiuyuan jindaishi yanjiusuo, 1987), 221.

\(^{56}\) Robert Lim to Jimmie, December 20, 1948, Lim Papers.

\(^{57}\) Wang Daozhong 王道中, “Budong Zhongguohua de junyi shuzhang – Lin Kesheng” 不懂中國話的軍醫署長－林可勝 [Robert Lim - the Director of the Military Medical Department who does not understand
a female doctor at NDMC who was the wife of a senior CCP cadre invited doctors to parties at her house and sought to persuade them to go to Dalian instead of Taiwan to replace the numerous Japanese and Taiwanese doctors who left Manchuria for their homeland after the war. She claimed that Communists were paying doctors highly for their services in North China. Her persuasive skills and a general reluctance to move to Taiwan meant that only slightly more than a third of the faculty and half of the students decided to move with the leadership of NDMC. It was no wonder that Lim said in March 1947 that the Center had lost so many staff that he could not be sure how to restart the school in Taipei.

Survival and Adaptation in Taiwan (1949-1952)

The process of moving to Taipei was traumatic for NDMC personnel and Robert Lim. In a letter to his son, Robert Lim described the move as “the most trying” experience he had had. In contrast to the relative efficiency of movement of Chinese troops during the war (he described it as if the Chinese troops did not get going immediately, the enemy would be upon them the following day), the process of moving to Taiwan took four months, from December 1948 to March 1949. Part of the delay was that many NDMC personnel hoped peace negotiations between the Nationalists and Communists would succeed, which meant that they could remain on the mainland. As Lim indicated in his letters, however, this process dragged on and ultimately failed, affecting the morale of the NDMC personnel. It took the Anadalun (安達輪), the ship...
that Chen prepared for the NDMC’s relocation from Shanghai to Taiwan, three trips in
the early months of 1949 to complete the transportation of personnel, books, equipment,

NDMC personnel faced immediate problems in housing the institution in Taiwan.
Lim had less than one-fifth of the space in Shuiyuan (水源), a small plot of land near the
National Taiwan University (Taiwan Daxue 臺灣大學 NTU) in Taipei, than the space he
had at Jiangwan, Shanghai. Moreover, as faculty members recalled, there was absolutely
no proper infrastructure for living, teaching, or research in Taipei. Trainees had to
consume army rations because there was no canteen where fresh food could be cooked.\footnote{See Hong Dexian, Chen Suzhen, Zhou Weipeng, “Luo.” and Zhou Meiyu, Zhang Pengyuan, and Luo Jiurong, Zhou, 86.}

They sat on small stools in classrooms, and wrote on long wooden benches in front of
them.\footnote{Hong Dexian, Chen Suzhen, Zhou Weipeng, “Luo.”}

There were not enough laboratories and classrooms to host the already few professors who moved from Shanghai to Taiwan.

Under these circumstances, it was no wonder that Lim and others reminisced
about their time in Shanghai. To one professor, no matter how bad the Civil War was it
did not affect the level of instruction at NDMC because the government had prioritized
education and sought to provide the best for the NDMC.\footnote{Ibid.}

Classes in Shanghai were
conducted without interruption, and the basic instruction was allegedly delivered in a
firm and accurate manner. The trainees had plenty of access to cadavers (two trainees to
one cadaver), as there were many leftovers from the Japanese hospitals in the area. In
contrast in Taipei, classroom instruction was interrupted because of the lack of classrooms, and cadavers were in relative short supply.

Lim sought again to adapt to the Spartan situation in Taiwan by importing Quonset huts from America. These aircraft hanger-like buildings were designed by the United States Navy in 1941, and were made of lightweight prefabricated structure of corrugated galvanized steel with a semicircular cross-section. More than 153,000 of them were produced during the war, and in the post-war period, they were exported to U.S. bases in South Korea and later to South Vietnam. Lim brought 19 of them to Taiwan, and converted them to classrooms, living quarters, and research facilities for the NDMC. To overcome the lack of storage space for equipment, all laboratory apparatus and supplies pertaining to similar or allied disciplines were centrally placed in one storeroom in a Quonset hut, instead of distributed evenly to all departments. Triple bunk beds were installed in the Quonset hut-designed living quarters. Even though these living quarters were cramped and vulnerable to communicable diseases, they provided an immediate solution to the housing crunch faced by NDMC personnel.

Besides seeking to resolve infrastructure issues, Robert Lim also sought to secure medical supplies and equipment for the NDMC on Taiwan. Allan Lau of ABMAC in the United States asked Lim if he would like to divert medical shipments bound for Shanghai to Taiwan in December 1948. Lim agreed, and on March 1949, three ships arrived in the port of Keelung (Jilong 基隆) in Taiwan, bearing six million and eight thousand pounds.

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67 Allen Lau to Robert Lim, April 7, 1949, Lim Papers.
67 Allen Lau to Robert Lim, April 7, 1949, Lim Papers.
of Quonset huts, drugs, bandages, classroom, engineering items, and lab equipment, of which 14,474 cases were medical items.\textsuperscript{69} A Pan American Airways aircraft bound for Shanghai landed in the same month in Taipei bringing more drugs and amino acids for patients and researchers.\textsuperscript{70} The U.S. Army-Navy procurement office as well as Allan Lau worked closely on these shipments, and part of the groundwork of their cooperation was done when Lim was in America in 1947, where he made close contacts with various parties. This critical act of diversion meant that the NDMC could begin operations in Taiwan. The fortuitous diversion of medical supplies from Shanghai to Taipei was a political act, done with the acquiescence of the U.S. Army, U.S. Navy, and ABMAC.

In contrast to the U.S. State Department’s rejection of the Nationalists, the U.S. military and ABMAC fully backed Lim and the NDMC. It was an extraordinary act, given that it was unclear that in the early months of the Communists’ takeover of Mainland China that the Chinese Communists would necessarily be hostile to the United States. The combined effort of the three actors saved the NDMC from operational standstill. These initial supplies, which will not be sent again to Taipei until the late 1950s, were crucial to the reconstruction of the NDMC on the island.

Having secured adequate supplies from the United States, Lim turned to the more challenging problem of the lack of adequate instructors, as many faculty members did not come with the NDMC to Taiwan. Lim sought to revive the old strategy of merging medical institutions to achieve economies of scale. This time, Lim eyed the National Taiwan University College of Medicine (\textit{Taiwan Daxue Yixueyuan 維大學醫學院}, NTUCM). He was hopeful for the merger between the Taiwanese college and the NDMC,

\textsuperscript{69} Allen Lau to Robert Lim, March 11, 1949, Lim Papers; Allen Lau to Robert Lim, March 24, 1949, Lim Papers; Allen Lau’s Summaries of Letters from January to March 1949, Lim Papers.

\textsuperscript{70} Allen Lau to Robert Lim, March 15, 1949, Lim Papers.
just as he had managed to incorporate the Army Medical College into the NDMC in 1946. A merger would have instantly given the NDMC more facilities, professors, students, and accommodations. Lim approached Dr. Du Congming (杜聰明 1893－1986), the first head of NTUCM and the first joint-head of the Japanese-era Imperial Taiwan University’s College of Medicine (the precursor to NTCUM), to inquire if an amicable merger was possible.71 Lim told Du that a merger would bring economies of scale and medical unity similar to the establishment of the wartime Lianda, which brought together the pre-war institutions of Beijing, Qinghua, and Nanjing Universities. Du, however, rejected Lim’s proposal, arguing that it would create unnecessary conflict between NDMC and NTUCM personnel, especially in leadership positions. Du was also concerned that more experienced professors from the mainland would undermine the growth of the younger Taiwanese professors at the NTUCM.

Failing to bring about a merger, Lim was able to forge a compromise – an agreement with Du to begin faculty exchanges between the two institutions. Lim invited Taiwan University Professor Yesu (葉曙 1908-) to help restart the pathology department at the NDMC, as no pathologist came to Taiwan from the mainland. He also invited the psychology department professor Lin Zongyi (林宗義 1920-2010) to head the department at the NDMC,72 despite Lin’s family involvement in the February 28 Incident.73

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71 See Zhang Xiurong, *Taida yixueyuan 1945-1950 彰大醫學院 1945-1950* [National Taiwan University College of Medicine, 1945-1950] (Taipei: National Taiwan University Press, 2003), 66 and Du Congming, *Huiyi lu Taiwan shouwei yixue boshi Du Congming 回憶錄，台灣首位醫學博士杜聰明 [Recollections of the first Professor of Medicine, Du Congming]* (Taipei: Longwen chubanshe, 2001), 191-192.
72 Hong Dexian, Chen Suzhen, Zhou Weipeng, “Luo.”
73 On February 28, 1947, a police officer in Taipei City struck a woman for selling cigarettes illegally. Local Taiwanese confronted the police officer, and a crowd gathered. One officer fired his weapon, killing bystanders. The next day, the Taiwanese held protests in Taipei, and the protests soon spread throughout the island. The Incident, which was initially a critique of police brutality, became a wider protest against
professors similarly shared their expertise in pharmaceuticals and nursing with the National Taiwan University faculty and students, which allowed the latter to start similar programs on their campus. These exchanges aided both institutions as both sides drew upon each other’s strength. Even though the NDMC leadership after Lim remained openly pro-KMT, and the National Taiwan University College of Medicine was much less so, these professional exchanges transcended political differences and advanced growth of sub-departments in both institutions. In sum, Lim’s active outreach to the Americans and local Taiwanese, setting aside the political sensitivities of the times, ensured that the infrastructural, medical, and teaching needs of the NDMC were met in the first three months after arriving in Taipei.

**Financing the NDMC in Taipei**

Even though Lim was able to adapt to the sparse conditions by importing Quonset huts, diverting medical shipments, and borrowing professors from the National Taiwan University, it was far more difficult to solicit sustained funding and resources from the early KMT rule in Taiwan. Many Taiwanese thought of the regime as intensely corrupt, and one that unfairly privileged mainlanders over the Taiwanese in local political and economic appointments. Initially, mainland troops and officials quickly folded under local pressure, and local Taiwanese took over the reins of governing the island. The KMT government, however, soon sent reinforcements from the mainland to Taiwan in March 1947, crushing the rebellion. They arrested many Taiwanese elites as well as mainland elites who opposed the KMT government. After the incident, Chiang Kai Shek took steps to improve KMT governance on the island by appointing a new governor and enacting land and political reforms that were generally well received by local Taiwanese. This event became known as the 2-2-8 Incident (Ereba shijian 二二八事件). It could not be mentioned publicly during the martial law period, and efforts to remember the event began in the 1990s as Taiwan democratized. For more analysis of the 2-2-8 Incident, see Steven Philips, “Introduction,” in *Between Assimilation and Independence: The Taiwanese Encounter with Nationalist China* (Stanford, CA: Stanford University Press, 2003), 1-17 and Shelley Rigger, *Why Taiwan Matters; Small Island, Global powerhouse* (Maryland, MD: Rowman & Littlefield, 2001), 25-26.

Loo Chih Teh’s 1962 speech in America reflected the pro-KMT slant of the NDMC. Loo argued that there were no differences between the Formosans (Taiwanese) and the Chinese, and that everyone living on the island were “Mainlanders,” just that some had lived on the island longer than others. Any differences will be akin to separating “New Yorkers” from “Americans.” This was very much the standard KMT argument on the nature of ethnicity on the island from 1945 to the 1980s, with some variations across time and space. See Loo Chih Teh, “Medical Education and Service in Free China,” 1962, in folder, “NDMC 1962,” ABMAC archives.

See Zhang, *Taida*, 67 for the names of the NTUCM professors and students arrested during the February 28 incident.
United States for the now-Taiwan-based NDMC. In the absence of official assistance 
from the United States for the Republic of China, and by extension the NDMC, Robert 
Lim reached out to this old ally ABMAC for funding. ABMAC had funded Lim’s 
endeavors since 1938 when he set up the Chinese Red Cross Medical Relief Corps. 

Yet, the contexts had radically changed by 1949, and the money for “China” had 
become diversified. As stated earlier in the chapter, Chinese in Southeast Asia became 
much more skeptical of the KMT and its related institutions right after the Second World 
War, but Chinese in America kept faith with the regime and continued to donate to the 
ABMAC. Now it was their turn to spurn the appeals of ABMAC. They refused to donate 
to ABMAC and the NDMC as they waited to see the outcome of the Civil War in 1948. 
As a result, ABMAC was unable to send the US$50,000 to Lim as the latter requested in 
December 1948, and Allan Lau cited the division of the Chinese into different political 
camps as the key reason.76 Lau urged Lim to reach out to non-Chinese allies such as 
Alfred Kohlberg, and he urged Lim and NDMC to be more partisan about fund-raising 
efforts – that is to rally KMT supporters to the NDMC and to give up on those Chinese 
who were increasingly sympathetic to the Communists and other political parties. Even 
as Lim was much more circumspect about such a suggestion, it was a difficult time for 
the NDMC because ABMAC could only send an average of US$1,500 per month in cash, 
excluding ad-hoc contributions donated by anti-Communist Chinese Americans. Even 
though this amount was barely enough to sustain the NDMC, Liu Rui-heng, an ABMAC 

76 Allen Lau to Robert Lim, Jan 4, 1949, Lim Papers.
Creating an Image of the Vulnerable Overseas Chinese (1953-1954)

When Robert Lim handed over the reins of NDMC governance to his deputy, Loo Chih Teh, he left behind a legacy of instituting Western medicine in China and Taiwan. It was, however, a quick and confidential departure, as Lim appeared to have told few people about his plans to leave Taiwan for the United States. Lim left in October 1949 to take up a visiting professor position at the University of Illinois but remained active with medical developments in Taiwan. He revisited the island several times to do research and to arrange for graduate training for Chinese physicians in the United States. The year before his death, he spent six months in Taiwan setting up a neurological laboratory.

Loo Chih Teh was less sympathetic than Robert Lim to ABMAC. In 1952, Allan Lau asked Loo why he had yet to send a proposed budget for the NDMC to ABMAC, adding “the Army Medical Service and National Defense Medical Center has been receiving help from ABMAC since 1937,” and ABMAC would like to see that continue. Perhaps Loo knew that the funding from ABMAC was considered too little to attract much attention at that moment. Even Allen Lau admitted a year later to Robert Lim that ABMAC could not do much because of limited funding, even though he was

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77 Liu Rui-heng to Magnus Gregersen, February 23, 1953, Lim Papers. It was likely that Liu exaggerated this claim, because the NDMC received around NTDS6 million per year from the ROC Ministry of Defense, or roughly US$140,000 (exchange rate of NT$42=1USD) by 1953. See NDMC Expansion Program, March 6, 1956, in folder, “NDMC 1956,” ABMAC archives. ABMAC’s US$18,000 made a difference in the early years of 1950-1952, but by 1953, the NDMC could have done without the amount and survived.

78 Davenport, “Robert Lim.”

79 Allen Lau to Loo Chih Teh, February 6, 1952, Lim Papers.
hopeful for more support from the public in the future as there was a “definite trend
towards a friendlier attitude to Free China.”

The limited amount of support from ABMAC, as well as the drying up of aid
from the Chinese in Southeast Asia meant that Loo had to reach out to the U.S.
government for funding and expansion of the NDMC. Yet, there was no aid forthcoming
to the NDMC, even though the U.S. government gave some assistance to the Republic of
China through back channels, which came about in a second fortuitous event, the creation
of the Foreign Operations Administration under the newly-elected U.S. President Dwight
Eisenhower (1890-1969). The Foreign Operations Administration which took over State
Department duties relating to international development, assistance to private foreign
relief organizations, programs for aiding persons who have escaped from Communist
areas, and operating functions with respect to United States participation in the United
Nations Technical Assistance Program. Heading the department was Harold Stassen
(1907-2001), a former governor of Minnesota, who hailed from the same state as Walter
Judd, a congressman from Minnesota and a firm backer of the NDMC.

Judd saw this unexpected appointment as an invaluable opening, and convened a
preliminary meeting with Robert Lim, a U.S. assistant secretary of defense, a Rockefeller
Foundation representative, the executive director of ABMAC, and the director of U.S.

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80 Loo Chih Teh to Robert Lim, March 6, 1953, Lim Papers.
81 Dwight Eisenhower, “Executive Order 10477 – Authorizing the Director of the United States
Information Agency to exercise certain authority available by law to the Secretary of State and the Director
of the Foreign Operations Administration,” August 1, 1953, from the American Presidency Project,
Website: http://www.presidency.ucsb.edu/ws/index.php?pid=59220&st=foreign+Operations+Administration&st1=
82 Dwight Eisenhower, “Special Message to the Congress on the Organization of the Executive Branch for
the Conduct of Foreign Affairs,” June 1, 1953, from the American Presidency Project, Website:
83 Harold Stassen, Report to the President on the Foreign Operations Administration, January 1953-June
Public Service, on May 24, 1954 in Washington D.C. to discuss possible representation of the NDMC’s case to the Foreign Operations Administration. At the meeting, Judd stressed the need to pay special reference to “eleven million overseas Chinese,” who were vulnerable to the Communists’ calls for them to head to Mainland China for medical studies.  

There was an urgent need to have them orient towards Taipei instead of Beijing.

Lim concurred, arguing that 90 percent of the eleven million overseas Chinese were from Fujian, speaking the same dialect as the people of Taiwan, and thus amenable to the educational conditions and linguistic environment of the island. A few attendees concluded that Taipei would become the Second “Cairo” in Asia, reminiscent of earlier periods where Tokugawa Japan was perceived by scholars to be the Second Rome for Chinese studies, and Cairo the center of Islamic Studies for Southeast Asians in the twentieth century. Lim and his allies hoped that training at NDMC would subsequently inspire new centers of medical training in Vietnam, Thailand, Philippines and other pro-American states.

To attract more Overseas Chinese, Loo argued for the raising of admission rates from the present 10 percent to 25 percent of applicants, with special quotas reserved for international students. To raise the admission rate, Loo called for a massive expansion plan that included the construction of new dormitories, classrooms, laboratories, and

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87 B.A. Garside, Robert Lim, J Heng Liu, Loo Chih Teh, and the Chief of U.S. Public Health Division, Dr. John Hanlon attended the second meeting to discuss in details their proposal for the Foreign Operations Administration.
residences. It also meant increasing the number of faculty, administrative, and technical personnel, as well as the sponsoring of more scholarships for NDMC students and faculty to study in the United States. These measures would raise student enrollment by sixty percent from the current 220 students to 352 students per annum. Loo’s request was included in a subsequent proposal to the Foreign Operations Administration written by his American counterparts entitled the “National Defense Medical Center: A focal point of American cooperation in Asia.”

The report stated that funding from the Foreign Operations Administration would not only increase the number of competent medical and personnel for “Free China and other Southeast Asian nations,” but also will “divert the stream of those [Overseas Chinese] now going to Communist China and thus constitute a signal psychological gain for the forces of freedom.” Loo’s agenda of promoting the growth of NDMC dovetailed with Judd’s wider aims of promoting anti-communism in the region. It was no wonder then that the working group endorsed the paper; even though ABMAC representatives remained concerned the U.S. government would displace their influence over NDMC.

A medical committee made up of doctors from Harvard University, the University of Minnesota, and the University of California accepted the NDMC proposal. But it was

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89 Ibid.
91 Harry Urrows to Magnus Gregerson, “Washington Meeting on May 26,” in folder, “NDMC – ABMAC approach to Foreign Operations Administration Funds, 1954,” ABMAC archives. Garside of ABMAC was determined to administer the Foreign Operations Administration funds on behalf of Administration. His colleague at ABMAC, Gregerson, wrote a letter to Dr. Norman Topping, the head of the medical committee of the Foreign Operations Administration, to request that ABMAC administer these funds slated for the NDMC. Topping rejected ABMAC’s request to administer these funds on September 30, 1954. However, the Administration apparently changed their minds a few weeks later for reasons unknown. Stassen wrote to Judd on October 29, 1954, saying that B.A. Garside of ABMAC would now administer the...
Harold Stassen who first replied favorably, recommended the Foreign Operations Administration proposal to the medical committee, and appointed B.A. Garside of ABMAC to disburse the first US$114,000 to the NDMC to allay ABMAC fears of being sidelined.\(^9\) The act of giving was explicitly political, aligning the interests of the newly elected Eisenhower administration with that of ABMAC, Judd, and the NDMC. A few days later, it was apparent to the NDMC that the Foreign Operations Administration had approved a sum of US$1.2 million, to be disbursed to the institution over three years. Garside, whose relationship with Lim and Loo had its ups and downs since the War of Resistance, delighted in his new role, and quickly approved Loo Chih Teh’s request to spend US$100,000 on laboratory equipment, with the rest on new buildings such as an audio-visual laboratory and local administrative assistance for the NDMC.\(^9\)

The Overseas Chinese, who are the main actors in my dissertation, had by 1954 become the objects of interest of a variety of actors. American conservative politicians, US government officials, NDMC personnel, and even Robert Lim appropriated the specter of vulnerable Overseas Chinese for their own purposes. This had the fortuitous effect of expanding the NDMC, which resulted in the increase in the numbers of Overseas Chinese medical students enrolled at the NDMC. As shown in the Graph 5.1, more Overseas Chinese medical students enrolled at the NDMC from 1954-1958 as a percentage of the

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overall number of students, hitting a high of 49 percent in 1956 (34 out of 69 students). This rise, however, was temporary settling to a rough average of 15 percent by 1959, which persisted till 1981.

Graph 5.1
Percentage of Overseas Chinese Students at NDMC from 1951-1981

The NDMC expansion was a long-term strategy that primarily targeted local students, and consequently the relative number of Overseas Chinese students declined. As seen in Graph 5.2, the expansion of the NDMC meant more ROC students could be enrolled. As many as 180 students enrolled in 1974, more than four times the 35 students enrolled in 1954 in the pre-Foreign Operations Administration days. The strategy, however, meant

94 The data were collated from Guofang yixueyuan yuanshi bianzhuan weiyuanhui 国防医学院院史编纂委员会编著 [National Defense Medical Center editorial committee of the NDMC official history], Guofang yixueyuan yuanshi 国防医学院院史 [History of the NDMC] (Taipei: Guofang yixueyuan, 1995), 381-389.
that the number of Overseas Chinese students remained stable, rather than increase in tandem with the expansion of the NDMC.

Graph 5.2

*Number of Overseas Chinese and ROC Nationals enrolled at the NDMC*

It was clear that Loo considered the Overseas Chinese an important short-term tool to solicit official funding from the United States government. What Loo actually sought were other forms of funding from the United States. For example, he did not reply immediately to Lau’s request on January 18, 1955 when the latter inquired about the logistical and financial aspects of training of Overseas Chinese students at the NDMC.  

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95 Lau to CT Loo, January 18, 1955, in folder, “NDMC 1955-1959,” ABMAC archives. Allan Lau of ABMAC wrote a letter on Jan 18, 1955 asking Loo Chih Teh to account for the number of overseas Chinese students admitted between 1953 and 1954, the total number of overseas Chinese who had studied in Taiwan; regulations covering military training for Overseas Chinese students, the cost of transportation for overseas Chinese students; and the cost of training a student for one year at the NDMC, as well as the number of NDMC overseas Chinese students graduating and returning to their homes. Lau claimed that these details were needed to inform potential donors on the cost of training at the NDMC an Overseas Chinese student from Singapore, Thailand, Indonesia, and the Philippines.
It took him two and a half months to state in a report that the NDMC admitted 18 Overseas Chinese medical and pharmaceutical students in 1956. This figure was fewer than the years of 1952 (19) and 1951 (33), even though it was slightly higher than the admission rate in 1950 (12), 1953 (4), and 1954 (1). In addition, Loo admitted the Overseas Chinese students paid for their own education and had to render two years of military service, which differed from an earlier understanding that ABMAC had that Overseas Chinese who paid their own way need not serve in the ROC military. An army major confirmed the policy in a July 29, 1954 meeting: he argued that the Overseas Chinese students should be self-supporting “and required to serve in the army for only two years after graduation.” No officers of the NDMC mentioned facilitating a return-trip for these students, suggesting that part of serving the military was to prepare these students to become ROC citizens. It was clear that NDMC preferred a policy of assimilating Overseas Chinese into “China,” in this case, the ROC on Taiwan, diverging from the Americans who preferred these Overseas Chinese return to Southeast Asia to build up the medical services there, so as to validate the superiority of a non-Communist medical system. Even though the NDMC could provide quality medical education for Southeast Asian Chinese with this expansion brought about by Foreign Operations Administration money, it was unable to provide the monetary or personal incentives for

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97 “US Aid for Defense Medical Center,” July 29, 1954 in “NDMC Counterpart fund,” in folder, “Xingzhengyuan jingji jianshe weiyuanhui, wenjian shiliao yijiu wuqi niandu guofang yixueyuan qicai’an [The documentary history of the machines in the National Defense Medical Center’ in the files of the Economic Development Council of the Executive Yuan], 040000000258A, Academia Historica, Taipei. The Major in question was T.M. Peng from the NDMC.
the Overseas Chinese to come in large numbers, or once in Taiwan to return to their home countries.98

The loss to Southeast Asia was Taiwan’s gain. Ye Xinhua (葉鑫華 born 1928), a prominent nuclear scientist and doctor in Taiwan, was an example. Ye grew up in Indonesia and received his secondary education in China.99 After completing high school in Hangzhou, he enrolled as a student at the NDMC in 1948. Before long, he was asked, like many of his friends, to move to Taiwan. Ye supported the move, because he thought that the Communists were “using people as instruments for their own purposes” (gongchandang baren dangcheng gongju 共產黨把人當成工具). After graduating in 1955 from the NDMC, Ye worked as a radiologist at the 801 General Hospital in Taiwan. After eight years as a radiologist, he enrolled at Stanford University to study nuclear medicine. Upon returning to Taiwan in 1968, he set up the first nuclear medicine center (heyi zhongxin 核醫中心) at the Taipei Veteran Hospital. Even though Ye never returned to work in post-independent Indonesia, his expertise greatly benefitted the growth of nuclear medicine in Taiwan, and he became a beneficiary, like many, of the NDMC’s policy of allowing Overseas Chinese students to enroll in its facilities back in the days of the Civil War.

Transnational Agents and the Growth of NDMC

The successive generation of students after Ye, benefitted greatly from Foreign Operations Administration-funded expansion of the NDMC. From 1955-1957, the

98 Lau and the ABMAC did not follow up with this report, and all parties appeared to move on from this issue.
organization provided for not only the initial construction of buildings and lab equipment, but it also sponsored 15 fellowships for local students and faculty, subsidized the salaries of 42 instructors and the costs of running administrative and teaching departments, paid for a thousand mosquito nets, bought 1,200 mattress covers, and funded the construction of 12 dormitories of 40 students, six classrooms, and 18 faculty residences. The NDMC as well as the Council for United States Aid (CUSA) supervised the constructions of the buildings through a new official contract known as the Counterpart Fund Agreement. In addition, Foreign Operations Administration’s support for the NDMC in 1954 opened doors for the NDMC to benefit from other US aid projects. The International Cooperation Administration and CUSA provided funding of NT$53 million, or around US$1.33 million for the construction of the Veteran General Hospital in Taipei (Taipei rongmin zongyiyuan 臺北榮民總醫院). The hospital was subsequently given to the NDMC as a teaching hospital, which to this day remains a key affiliate of the NDMC.

Unofficial aid also continued to pour in. Chinese Americans donated generously to ABMAC in solidarity with the international non-communist camp after the outbreak of the Korean War, and in turn, ABMAC had the funds to donate US$120,000 to the NDMC in 1960 to construct an “ABMAC village,” which hosted faculty members in ten four-
family residential units, allowing them to leave their Quonset hut accommodations. In addition, the Upjohn Company in the United States donated nine million multi-vitamins to NDMC personnel. Furthermore, the National Federation of the Business and Professional Women’s Clubs in the United States, together with ABMAC and the China Medical Board, contributed funds intermittently from 1945-1956 to support the NDMC Nursing School, and American nurses such as Gertrude Hodgman, the Director of Nursing at New York University, flew to Taiwan to assist General Zhou Mei-yu. Finally, Alfred Kohlberg’s family donated US$130,000 to build the three floors of the Alfred Kohlberg Memorial Laboratory at the NDMC in 1962, as well as an unspecified sum for the Ida Kohlberg Kindergarten at the ABMAC village after Kohlberg’s death in 1960. These fortuitous events combined the efforts of Robert Lim, Loo Chih Teh, and Zhou Meiyu, NDMC allies in the United States, and the U.S. aid agencies. They provided the infrastructure and funding necessary for the institutionalization of Western medicine in Taiwan by the 1960s. From 1947 to 1962, the NDMC trained a total of 14,132 medical personnel, 13,946 of them in Taiwan. This was comparable to the numbers trained by

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108 “NDMC Interim Report, April 1963.” The yearly cost of training a student was around US$834, a figure that was then considered relatively low.
the Emergency Medical Service Training School during the War, but at a significantly higher level of quality due to the longer periods of training, and the availability of advanced laboratory and classroom equipment.\textsuperscript{109}

Practical sciences were the focus at the NDMC. It was a first in Asia that the NDMC emphasized the study of the combined sciences as academic subjects. During the War of Resistance, Robert Lim had proposed the study of combined sciences as a larger aim to make the scientific and medical education in China more practical. I have shown, however, it was ultimately abandoned after various parties inside and outside of China abandoned the program. It came to fruition in Taiwan where new departments of combined sciences in the form of biophysics, biochemistry, and biomorphics were established. The biomorphics department, for example, handled all teaching in general biology, comparative anatomy, developmental morphology, pharmaceutical botany, gross, micro- and neuro-anatomy.\textsuperscript{110} This system enabled a department head to administer, correlate, and supervise the teaching of the various subjects within his field, thus economizing on space, teachers, and teaching aids. Graduates of the NDMC were often then given fellowships by ABMAC to study in the United States to develop their interests in more specialized medical fields, before returning to assist in the military hospitals and training schools in Taiwan.\textsuperscript{111}

The NDMC was also able to elevate the status of nursing in Taiwan. Lim was concerned that nurses were treated poorly in China, and part of that disrespect came from their low ranks in the military. He promoted the head of nursing, Zhou Mei-yu, to a major

\textsuperscript{109} See chapter 3 of this dissertation, “The Politics of Medical Education.”
\textsuperscript{110} Peng, “Medical Education in Taiwan.”
\textsuperscript{111} See “Dr. George Humphrey’s address to the Executive Committee of the American Chamber of Commerce at the MAAG Officers Club, Taipei Taiwan, September 27, 1975, 7 a.m.,” in folder, “Dr. Humphrey’s Trip to Taiwan,” ABMAC archives.
after the Second World War, the first nurse in Chinese military history to have that position. His successor subsequently promoted Zhou to the rank of a general in 1956. With her newfound authority, Zhou instituted reforms to boost nursing education, such as the directive to bestowed bachelor degrees for nurses on the academic track, which meant that degree holders could become instructors at nursing schools and hospitals. They could become officers in the ROC military, going beyond the non-commissioned status they held in Mainland China. Zhou later introduced a master’s program in nursing. Many nurses from that program went on to America for further studies before returning to Taiwan to head nursing departments in hospitals across the island.

Zhou sought also to reform Taiwanese hospitals, which she saw as discriminatory towards nurses. She threatened to stop sending nursing interns to Taiwanese hospitals that compelled nurses to sleep on tables instead of on proper beds. In addition, Zhou persuaded Taiwanese hospitals to install female toilets for nurses, rather than have them share restrooms with their male colleagues. Finally, she told leaders of Taiwanese hospitals that nurses were not meant to raise chickens or to wash clothes for patients. Nurses were meant to care for patients in a scientific manner in order to alleviate their ailments, and they were meant to assist doctors in medical duties. Her authority forced Taiwanese hospitals to change their practices, hereby elevating the status of nurses in hospitals. In sum, her reforms upgraded nursing in the ROC from a purely vocational job to a viable professional career.

112 Zhou claimed that the NDMC was the first school in China to institute a bachelor of science in nursing. She disputed that the much-cited claim of PUMC giving out degrees for nurses in the first half of the twentieth century. She argued that these “degrees” were simply certifications for course-work done at the college and the PUMC graduates actually obtained degrees in non-nursing related fields at partner universities. See Zhou Meiyu, Pengyuan Zhang, and Jiurong Luo, Zhou, 80.

113 Zhou Meiyu, Pengyuan Zhang, and Jiurong Luo, Zhou, 90-95.
Effects of Institutionalization of Western Medicine on Chinese Medicine

Lim and his colleague’s efforts at institutionalizing Western medicine from 1937 to 1947 placed enormous pressure on Chinese medicine. Zhang Ruwei, a doctor trained in Chinese medicine, lamented the government’s constant demand for accountability from Chinese medical institutions, which he felt did not square with its complete lack of financial support. On the one hand, the authorities wanted Chinese medical institutions to examine their students constantly and construct detailed degree programs like that of their Western medical counterparts; on the other hand, the government refused to provide the financial support necessary for these endeavors and even sought to shut these institutions down periodically because of their “unscientific nature.” Zhang hoped that the government would reverse its hostile attitudes towards Chinese medicine, and include them in the wider projects of providing modern public health for the population.

Chiang was responsive to such lobbying from the community and agreed to set up a National Chinese Medical College (Guoli zhongyiyao xue xiao 国立中医药学校) in 1947. Even though Chiang was supportive of the community’s efforts at institutionalization, a sense of crisis persisted as doctors continued to look for reasons to marginalize Chinese medicine. For example, one Chinese medical doctor blamed his colleagues for not being as innovative as their Western medical counterparts, chastising

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115 “Jiangzhuxi duiyu sheli zhongyiyao guanli weiyuanhui, guoli zhongyao yixueshool pishi”蒋主席對於設立中醫藥管理委員會、國立中醫藥學校批示 [Chairman’s Directive towards the establishment of a bureau of Chinese Medicine, and the National Chinese Medical College], Guoyi dizhu 國醫砥柱 [Pillar of Chinese Medicine] 59 (1947): 1. The college did not materialize in the end because of the ongoing Civil War.
them for holding on to medical traditions dating from the Han Dynasty. To this doctor, even acupuncture, which was widely recognized to provide superior relief of certain medical problems, suffered from its inability to scientifically measure the effects on the body. The juxtaposition of an active Chinese medical community and its constant introspective rationalization of marginalization drew from the relative success underpinning the growth of Western medicine – that success included financial and political support for its institutions as well as the field’s ability to create international scientific measurements of the results of Western medical intervention. Their constant complaints and redressing of the field’s marginalization ironically sustained Chinese medicine, which was the only pre-modern field of Chinese science, technology, and medicine to have thrived in the contemporary Chinese world. Doctors of Chinese medicine adopted the strategies and rhetoric of Lim and his colleagues, even though they lacked the international support that the latter had. Their efforts would culminate in the mainland doctors’ setting up the China Medical College in Taizhong in 1959, which remains the one of the most important training centers of Chinese medicine in Taiwan today.

**Conclusion: the NDMC and its Transnational Agents of Science and Medicine**

The success of the NDMC presented a viable solution to the longstanding tensions in medical education in China, between meeting the needs of a wider population and fulfilling the responsibilities of training competent medical doctors, nurses, and technicians. In providing a dual track of vocational/academic studies, the NDMC could attract and train students for its longer medical program, while deflecting persistent

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117 Elman, *Terms*, 405-408.
criticism that it was an elitist institution like the Peking Union Medical College. It is noteworthy that the six-year program, which focused on combined sciences, was significantly shorter than the PUMC’s eight-year Johns Hopkins University program and allowed doctors to be trained more quickly without sacrificing rigor. Such a system also avoided the problems of post 1979 PRC, where health care leaders struggled with replacing poorly trained barefoot doctors with more professional medical personnel.\textsuperscript{118} As a result of the post-war intervention, as well as 1990s reforms towards a universal health care system, the Republic of China in Taiwan now has the second highest physician to patient ratios and the third highest nurse to patient ratios in Asia.\textsuperscript{119}

The example of the NDMC allows us to reflect more critically on the Civil War and post-war period. On the one hand, the levels of funding for the NDMC dropped perceptibly during the Civil War as Chinese abroad became increasingly ambivalent about the Nationalists. The war also meant the efforts by the Nationalist government to fight high levels of inflation and student unrest were ineffective, which brought significant challenges to the NDMC leadership. On the other hand, Shanghai, as the former Japanese colonial center in Central China, provided the opportunities and resources for the NDMC to develop quickly. Together with the backing of Chinese

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\textsuperscript{119} In 2012, Taiwan has 20.2 physicians per 10,000 residents in the country, as well as 59 nurses and midwives for every 10,000 Taiwanese Residents. Only Japan has more physicians per 10,000 residents (21.4), and South Korea and Singapore (63.9) more nurses and midwifes per 10,000 residents in the country. See World Health Organizations 2013 Statistics, \url{http://www.who.int/gho/publications/world_health_statistics/EN_WHS2013_Part3.pdf} (Accessed, July 5, 2013); and “Zhiye yishi renyuanshu ji mei wanrenkou yishi renyuanshu 執業醫事人員數及每萬人口醫事人員數 [Statistics on the numbers of professional medical personnel as well as number of medical personnel per 10,000 residents],” in National Statistics, Republic of China, Website: \url{http://www.stat.gov.tw/ct.asp?xItem=15428&CtNode=3638&mp=4} (Accessed July 5, 2013)
\end{flushright}
officials and ABMAC, the NDMC was poised to grow tremendously in Shanghai, until
the war turned in favor of the Nationalists’ opponents.

The Center’s retreat to Taiwan was marked by tremendous hardship for the
doctors, students, and nurses all of whom had little on their backs and little to look
forward to. It was far less idealistic than what many contemporary scholars envisioned
the retreat to be. For many of these medical personnel, it was understandable that they
thought that life in Shanghai was better than in Taipei, which increased tensions between
them and the local Taiwanese medical personnel. While mainland nurses such as Zhou
saw the Taiwanese hospitals as backward and stifling for nurses, the Taiwanese saw these
mainland doctors as threatening their academic positions on the island. The early years of
the ROC on Taiwan was not simply a period of medical consolidation and reconstruction
but should also be seen a period of bold experimentation by transnational medical agents
who ultimately were able to secure long-term solutions for the development of the
NDMC.

I have asserted throughout the dissertation that the Overseas Chinese were
indispensable to the institutionalization of Western medicine in China. They held key
administrative positions in medical and scientific institutions, conducted localized
research using China as a wider laboratory, leveraged their expertise, medicine, and
machines to lead medical institutions, and donated their time and money to medical relief
efforts. This continued in the Civil War and post-Civil War period, as Robert Lim
commandeered Japanese resources, flew to America to seek potential donors, secured aid
from ABMAC, created a new curriculum, organized the retreat to Taiwan, imported
Quonset Huts, created the NDMC from scratch in Taiwan, elevated the status of nursing, and persuaded the Foreign Operations Administration to fund his institutions in the ROC.

Lim’s language skills, medical expertise, military medical knowledge, and cross-cultural administrative capabilities were part of his identity as an Overseas Chinese who grew up in Singapore, went to school at Edinburgh, and worked in Britain, America, and China for most of his life. In particular, Robert Lim’s native Chinese dialect of Hokkien (Minnan hua 閩南話) was similar to Taiwan’s own dialect, Taiyu 臺語. His compatriots, however, did not necessarily share Lim’s dedication to the cause, as many of them became increasingly oriented towards their host societies in America and Southeast Asia and were ambivalent towards both political parties in China. Their withdrawal from Nationalist China did not mean they became unimportant. Some stayed on in Taiwan to become medical leaders on the island. Others stayed on the mainland to help the Communists. More significant was how they developed new identities as objects of interests, whose vulnerability to Communism would be used to solicit long-term U.S. funding and support for the development of Western medicine in Taiwan.

The history of Western medicine in China is a history of formulating institutions that sought on the one hand to adapt imported ideas, concepts, and materials to local conditions and on the other hand to maintain a rigorous medical curriculum that will solve the vast medical problems in the country. In Taiwan, the promise was fulfilled as medical outcomes improved on the island with the dramatic increase in the number of doctors, nurses, and dental personnel, many of whom trained at the NDMC. Collectively, it worked for the ROC in Taiwan, even for the individual institution of the NDMC, there were moments that the enterprise was tremendously challenging – such as the inability to
integrate more Taiwanese doctors and resources into the NDMC system, the limitations posed by the spartan conditions of 1950s Taiwan, the boom and busts of U.S. official and unofficial assistance from 1945 to 1960s, and the disruptive changes in medical personnel when the institution moved from Shanghai to Taipei. What was consistent then was the dedication of many ABMAC personnel to that endeavor of building up Western medicine in China and the unwavering commitment of Robert Lim and his colleagues to the cause of military medicine in China and Taiwan.
Conclusion

Global Medicine in Twentieth-Century China

My dissertation sheds light on the expansion of Western medicine in China through the lens of the Overseas Chinese who from 1911 to 1970 brought to China new medical theories, ideas, and institutions. In particular, I argue that Overseas Chinese doctors, nurses, and technicians led an expansive military medical complex in Southwest China during the Second World War. Comprised of the Chinese Red Cross Medical Relief Corps, the Emergency Services Training School, and the first Chinese blood banks, the military medical complex saved the lives of more than three million Chinese soldiers and civilians and trained more than fifteen thousand medical personnel.

Western Medicine in China

Guiding the operations of these wartime military medical institutions were the principles of adaptability, portability, and mobility. Medical delousing units in 1937, mobile blood bank units in 1944, and mobile evacuation and surveying units in 1948 were examples of how Overseas Chinese overcame the limitations of physical geography through the creation of mobile units that sought to bring Western medicine to the masses. Choosing blood plasma over whole blood made medicine portable. When faced with the absence of reliable electricity, clean water, and steady funding, Overseas Chinese substituted labor for automation and introduced local materials in lieu of expensive imports. This adaptation meant that they could still use cutting-edge technology in wartime China. Robert Lim and his colleagues veered from their purely academic interests to respond to wartime needs and conducted lab experiments on the efficacy of imported anti-dysentery drugs. Orthopedic centers were set up to help wounded soldiers
integrate back into Chinese society, and vaccine plants were created to sustain preventive care during the war.

The war proved an unprecedented catalyst for the transformation of healthcare in China and Taiwan by encouraging the state to provide healthcare. In the pre-war period, John Grant, a professor of public health at Peking Union Medical College, advocated the extension of medical care beyond the urban regions of China. He sought to implement a rural health care program that trained village doctors in the rudiments of Western medicine in Dingxian, a village near Beijing.\(^1\) Despite a relatively successful experiment in Dingxian, most Western-style medical care, as I show in chapter 1, was located in hospitals and clinics that catered to an urban clientele who could afford to pay for their visits. Peking Union Medical College, for example, drew most of its students from the sons and daughters of upper-middle-class Chinese professionals who had spent time abroad.\(^2\)

Such an urban-centered focus on medicine was inadequate for Robert Lim. Lim, who was eager to expand military medicine to the frontlines of North China in the 1930s, articulated a much more expansive health care system in China. In 1936, right before the outbreak of the Second World War, he advocated for “state medicine” in which the government would extend healthcare to all Chinese people, paid for fully by taxpayers.\(^3\) During the war, Lim and the military medical complex used the power of the state to extend medical care to soldiers and a substantial number of civilians. Overseas Chinese

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\(^1\) Liping Bu, “From Public Health to State Medicine: John B. Grant and China’s Health Profession,” *Harvard Asia Quarterly* 14, no. 4 (December 2012): 26-35.


\(^3\) Robert Lim and C. C. Chen, “State Medicine.”
and American aid organizations financed the system rather than Chinese taxpayers, as originally envisioned.

Two New York-based aid organizations, the American Bureau for Medical Aid to China and United China Relief, vigorously vied for the opportunity to lead and direct healthcare in China. Raising funds for medical care (as opposed to raising funds for direct military assistance) was a widely accepted activity in the United States. And both organizations used donated cash and resources to influence Robert Lim and his colleagues in China. The nature of such transnational politicking strongly reinforced the idea that medical care in mid-twentieth-century China should be directed and supported from the center rather than dependent on local elites and private philanthropists as was characteristic of the earlier Ming and Qing dynasties. The competition for Lim’s resources support bolstered the idea of state medicine rather than weakened it. While the wartime medical system was by no means universal, the impulse to provide healthcare for all residents persisted in the post-war period and ultimately contributed to the creation of a universal health care system in the Republic of China.

Getting the finances right was critical in making Western medical care work in China. The generous and laissez-faire nature of support from the Rockefeller Foundation, various Chinese authorities, and the Overseas Chinese provided unprecedented funding and freedom for Overseas Chinese doctors to pursue their own agendas in the pre-1937 period. These doctors often mimicked the emphasis on laboratory medicine and higher education of the West – the establishment of institutions such as Peking Union Medical College, the development of China-based scientific and medical research in the

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4 Angela Leung argues that private philanthropists and local elites, rather than the state, provided for healthcare in the Ming and Qing dynasties. See Leung, “Organized.”
laboratories of Manchuria and Beijing, and the development of a science-oriented facility in Xiamen. While the level of funding remained high during the Second World War, the level of control over how the funds were used increased tremendously. United China Relief battled the American Bureau for Medical Aid to China to control Robert Lim’s institutions. Among other control mechanisms, they critiqued Lim’s methods of medical education in China. While financial support for Western medicine remained fortuitously high from 1937 to 1943, the heightened scrutiny of Lim’s endeavors was a double-edged sword. Robert Lim resigned from his position as the head of the Emergency Medical Services Training School, even as his ideas about medical education persisted in the post-World War II period.

A key tension in Western medical education was the trade-off between the quality and quantity of personnel trained in Western medicine. Western medical education in the pre-war period was largely decentralized, and national and local authorities showed little interest in pushing for mass medical education. During the war, increasing the quantity of medical personnel became much more important. Through a three-month program at the training school, Lim tripled the number of personnel trained in Western medicine in a matter of three years. Yet, the training program, in Lim’s mind, was inimical to the long-term development of medical services in China. Compared to pre-war training programs at Peking Union Medical College it was far too short. A six-year stage program was proposed that would marry the rigors of the pre-war program to a short-term wartime training program that would boost the number of medical personnel.

United China Relief and their allies rejected the proposal, however. They seized on the six-year training period, proclaiming it too long and impractical, and mobilized
local Chinese generals, Lim’s rivals in Hong Kong, and top-level politicians. Stymied in his efforts, Lim briefly resigned from the Emergency Medical Services Training School. As we saw in chapter 5, however, the six-year program became the foundation of medical education in the post-war National Defense Medical Center, which developed a dual track program for the rapid training of sanitary engineers and technicians, as well as comprehensive longer-term training for medical doctors and nurses. Taiwan’s relative success with medical education was by no means given, but it drew on two highly successful and contentious strands from its Japanese colonial experiences as well as the wartime Nationalists’ interventions. The longstanding tension between quality and quantity in medical education, mediated by the wider societal and political context, was emblematic of the perils and promises of Western medicine in twentieth-century China.

The calibration of medical and scientific policies was challenging for the Overseas Chinese, but it was a greater challenge persuading ordinary Chinese of the efficacy of Western medicine. It was not simply a matter of spreading information and providing education, which they did well. Western medicine challenged Chinese views of the integrity of their bodies. In the pre-war period, Wu Lien-teh extended anti-plague public health infrastructure across Manchuria but found it difficult to persuade ordinary Manchurians to buy into overzealous forms of surveillance. Lim Boon Keng poured resources into constructing an impressive institution of science and medicine in South China but faced opposition from indigenous Chinese intellectuals such as Lu Xun and ordinary students who fundamentally opposed the autocratic elements of scientific governance in the university. Robert Lim and Yi Chien-lung found it difficult to persuade soldiers and civilians to donate blood, as they saw the draining of blood from their body
as a loss of vitality. It took the fortuitous support of local professors, students, and labor leaders as well as the development of mobile blood bank technology and a proto blood economy for civilians to donate in numbers large enough to ensure the eventual success of blood banks in wartime China.

The creation of institutions – large-scale pre-war ones in Beijing and Xiamen and mobile units in wartime China – provided the basis for the projection of power for Overseas Chinese medical elites to act on and spread the ideas of Western medicine. Yet these institutions alone did not, could not, and often would not challenge ordinary Chinese people to adapt Western medical theories and practices in their everyday lives. Overseas Chinese chose to use pre-modern nomenclature of diseases, such as huoluan to describe cholera, to connect better with local residents. They also emphasized the importance in Western medicine of nutrition, which was a highly regarded component of Chinese medicine. Yet, elements of the indigenous – Chinese medicine, local beliefs, and May Fourth radicalism – limited the acceptance of Western science and medicine in China, even as they appropriated the scientific discourses commonly associated with the latter.5 Large infusions of money ensured the longevity of Western medicine in China, but they could not convert the population towards its wholesale adoption.

In showing the diversity of Western medicine in China, I broaden the scope of future inquiry on the nature of medicine in twentieth century China. The project of Western science and medicine was not solely restricted to the realm of public health and scientific education, but also had salience for the diverse concerns of military medicine. During the Second World War, Overseas Chinese doctors investigated a wide variety of

5 Even in the United States, there remains a strong strand of resistance to the adaptation of the mainstream notions of biomedicine in the twentieth century. For a history of alternative to biomedicine in America, see Anne Harrington, The Cure Within: A History of Mind-Body Medicine (New York: W.W. Norton, 2008).
ailments such as dysentery, scabies, and malnutrition suffered by Chinese soldiers and emphasized the prevention of major diseases through measures such as delousing and special diets. Besides delousing, blood banking, nutritional intervention, vaccination, veteran rehabilitation, publication of medical manuals, fieldwork experiments on drugs, and surgical intervention became part of the repertoire of Western medicine in China. The extensive nature of medicine in China should prompt a comprehensive examination of the assumptions of military medicine and medical technology in the West, which has largely focused on the psychological interventions of military medicine as well as medical technology in hospitals and laboratories. Furthermore, future research on the relationship between military medicine and Chinese society in the twentieth century is needed, and should be encouraged to reveal a greater diversity of the Chinese experience during the Second World War.

My focus on the expansion of the medical system that resulted in the treatment of more than three million soldiers and civilians shifts attention away from the existing literature of collective suffering and trauma of those caught in the vicissitudes of a global and civil war. Wartime China was not simply filled with “seeds of destruction.” Rather, the war acted as a catalyst for the transformation of the medical landscape in China that had already begun in the early years of the Republic. The War of Resistance inspired many Overseas Chinese to head to China, bringing with them money, labor, varied technologies, and knowledge. They joined an existing group of Overseas Chinese who had left institutions in North China for Southwest China in order to create a more extensive wartime military medical complex. This revisionist view of wartime China as a catalyst must thus be seen from an international perspective on the history of medicine.
rather than from a domestic critique of inadequate tax base, morality, and political will.

Wartime support from Overseas Chinese compensated for a lack of local revenues and domestic medical experts.

**Legacies of Wartime Medicine in China and Taiwan**

Institutions, actors, and philosophies of Western medicine persisted in the post-war period. In the case of the blood bank, Overseas Chinese and Americans worked together again in 1954 to reinstate blood banks in Taiwan. This time, the leader of these blood banks was Penang-born O.K. Khaw, who once headed the pre-war department of parasitology at PUMC and the post-war department of parasitology at the National Defense Medical Center. He constructed and led the first American-style blood bank in Taiwan. Khaw went on to design other blood banks in Taiwan including the one at Keelung hospital, which opened in 1955.

Since then, Taipei has developed one of the most extensive outreach programs for blood donations anywhere in the world, and one can see ubiquitous mobile units situated at important sites of education, shopping, and tourism throughout the city. On the mainland, the wartime problem of inadequate donors persisted well into the 1950s and 1960s evidenced by crack downs on buying and selling of blood near Chaoyang gate.

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6 “Mei anquan gongshu weishengzu tai sheli xueku” 美安全公署衛生組台設立血庫 [Department of Health at the American Security Bureau sets up blood bank in Taiwan], October 1953, 028000000206A, Academia Historica Archives, Xindian, Taiwan.
8 “Taida yiyuan jueding jintian kaishi shishi bingren qinyou juanxue banshu youxian kaidao” 台大醫院決定今天開始實施 病人親友捐血半數優先開刀 [Taida Hospital decides to prioritize surgery for those patients’ families and friends who can donate half their blood], Lianhebao [United Daily News], October 02, 1973. The first Taiwanese mobile blood bank unit appeared to be the one sent by Taiwan University (Taida 台大) Hospital to Taida campus.
杨湄湄) in Beijing. It would take however, until the 1990s for blood banks to once again flourish in the country. The first mobile blood bank units in universities began in 1999 at Qingdao; and the first US-style blood banks emerged in Beijing in 2002 at the United Family Hospital, a Sino-American joint venture.

In Taiwan, the institutionalization of Western medicine contrasted with the decline in the training, research, and administration of Western medicine and its institutions in the early years of the People’s Republic of China. In Communist China, much formal medical education was suspended from the late 1950s until the end of the Cultural Revolution in 1979. For example, the new Chinese government criticized Peking Union Medical College’s eight-year medical curriculum for being too elitist, and consequently told the college to shorten its courses. When its leaders refused, the government dismissed the president of the College in the 1950s, and shut down classes from 1954–1959 and again from 1966–1979. The institution which Lim and many National Defense Medical Center personnel had worked and trained in for many years became a shadow of its former self. Similarly, the government saw nurses trained by the Emergency Medical Service Training School and the National Defense Medical Center as politically unreliable, had them write multiple confessions, and forced them to tear up

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9 See “Benjú guānyú guǎnlì shùxué zànshí bànfá” [Regarding the temporary laws of the management of blood transfusion], February 1951, Beijing Municipal Archives, 135-001-00216; “Weishengjú yu benjú guānyú shùxué guǎnlì gōngzuò tōngzhī” 衛生局於本局關於輸血管理工作通知 [Bureau of Public Health’s notice regarding management of transfusion work], 1964, Beijing Municipal Archives, 135-001-00833. The People’s Daily criticized the Republic of China’s government on Taiwan for condoning the selling of blood in Taiwan. See Jinrî Taiwan [Today’s Taiwan], Renmin ribao [People’s daily], February 24, 1957.

10 Yang Meimei 杨湄湄, “Beijing hémù jiàyuán yìyuàn jiànlì xìyòu xuèkù” 北京和睦家医院建立稀有血库, [Beijing United Healthcare Hospital sets up rare blood bank], People’s Daily, May 4, 2002; Song Xuechun 宋学春 and Sun Xiaoli 孙小莉, “Qíngdào chénglì dàxuéshèng liúdòng xuèkù” 青岛成立大学生流动血库 [Qingdao sets up university’s mobile bank unit], People’s Daily, April 28, 1999.

11 Bullock, Oil, 132-139.

12 Ibid.
their pre-1949 diplomas before they could practice nursing.\textsuperscript{13} Rather than depend on large medical institutions to train personnel, conduct research, and disseminate Western medical thought, in the early years of the PRC, Mao preferred to support the growth of traditional Chinese medical institutions,\textsuperscript{14} and in the late 1960s, mobilized and endorsed the use of barefoot doctors, who used traditional Chinese medicine to treat their patients.\textsuperscript{15}

Despite the mainland Chinese government’s skepticism of Western medicine, it also sought to militarize medicine by ordering PUMC to accept military personnel as students,\textsuperscript{16} and by creating military medical units and mobile blood bank units during the Korean War to combat alleged “germ warfare” by the Americans.\textsuperscript{17} The PRC also sought to increase access to health care by increasing the number of doctors in the countryside.\textsuperscript{18} What differed was that Lim and his allies at National Defense Medical Center were committed to a modified version of a twentieth-century American-style health care system. In other words, the expansion of medical services in Taiwan was contingent on a centralizing system of professionalization (long years of medical training), certification (doctors and nurses must be trained formally in medical institutions), and

\begin{footnotesize}
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\item[16] Bullock, \textit{Oil}, 131.
\end{itemize}
\end{footnotesize}
internationalization (medical services and training required constant endorsement by Americans). In contrast, Mao opposed such an elitist system and opted for a decentralized brigade-level medical training system that could churn out barefoot doctors quickly, with minimum supervision from the center, and largely independent from international surveillance and domestic accountability.

While Mao’s reforms did improve health outcomes in the early years of the PRC, the post-1979 marketization of the health-care system and the increasing complexity of diseases that came with a more urban and sedentary lifestyle meant that the earlier emphasis on barefoot doctors and traditional Chinese foundations could not cope with the overwhelming demand for Western medicine in the post-1979 period. In contrast, the Republic of China created in the 1990s a universal health care medical system based on a national insurance model (Quanmin jiankang baoxian zhidu 全民健康保险制度) that continues to be praised internationally. The National Defense Medical Center moved to a new campus in Neihu, Taipei in 1999, and continues to be one of the three most important medical training facilities on the island today, the other two being the National Taiwan University College of Medicine and Kaohsiung Medical University.

The Republic of China’s health care system required a large number of domestically trained medical personnel to sustain the increasing numbers of medical consultations for the poorer classes, who traditionally had little access to the health care system. Without the training of medical personnel offered by the National Defense Medical Center and the National Taiwan University College of Medicine, it was unlikely

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19 For a sampling of such international praises, see Uwe E Reinhardt, “Humbled in Taiwan,” British Medical Journal 336, no. 7635 (January 12, 2008): 72; and Karen Davis and Andrew Huang, “Learning from Taiwan: Experience with Universal Health Care,” Annals of Internal Medicine 148, no.4 (February 19, 2008): 313-314. Taiwanese scholars are generally more critical of their health care system, but few, if any, want to go back to a pre-universal health care model.
a universal health care system would be sustainable. The alternative would have been a large-scale immigration policy for medical personnel, similar to the strategy Singapore undertook in the 2000s to correct its earlier policies of limiting medical school enrollments to a few hundred students a year.\textsuperscript{20}

Even though large-scale immigration of medical personnel has solved Singapore’s health care problems in the short-run, it has created tensions between foreign health care professionals and local patients, many of whom have problems communicating with their doctors and nurses.\textsuperscript{21} Taiwan has fortunately avoided this problem, although it has faced challenges in recruiting sufficient medical and nursing students. The history of medical training in Civil War and post-Civil War Republic of China contributed to the successful implementation of universal health care in Taiwan.

While the immediate post-war situation was more favorable for Western medicine in Taiwan, China also saw tremendous growth in Western medicine after the Cultural Revolution ended. In the 1990s, the Chinese government began strongly supporting the growth of biomedical research and medical education at Peking Union Medical Center, reviving the two core strengths of the institution during the Republican period.\textsuperscript{22}

\textsuperscript{20} For a brief history of the Singapore government’s policy on the enrollment of medical students, see Paul Tambyah, “Selection of Medical Students in Singapore, A Historical Perspective,” \textit{Annals of the Academy of Medicine} 34, no. 6 (August 2005): 147c-157c. Because historically too few doctors were trained in Singapore, the government introduced a policy of attracting foreign doctors to Singapore in the early 2000s. By 2010, 24 percent of all doctors registered to practice in Singapore were from abroad. As of 2012, 75 percent of auxiliary medical personnel (including nurses) in Singapore were foreigners. See Lim Meng Kin, “A New Approach to Solving Doctor Shortage,” \textit{Health Policy Monitor}, April 2010, and the \textit{Straits Times}, “Foreigners a Must in Health-care Sector; How Reliant are Singapore’s Essential Services on Foreign Labour,” December 20, 2012.

\textsuperscript{21} See the \textit{Straits Times}, “China Docs Learn to Take Local Pulse; They are Well-trained But Have to Adapt to Culture and Systems,” September 30, 2011. Periodic complaints from Singaporeans have emerged even in the traditionally pro-government media. See Flora Moo, “Letter to the \textit{Straits Times} Online Forum,” May 14, 2013, Website: http://www.straitstimes.com/ premium/forum-letters/story/facebook-20130514 (Accessed July 26, 2013) Moo noted that “language barriers (exist) between foreign doctors and nursing aides, who speak only English, and elderly patients who understand only Mandarin or dialects.”

\textsuperscript{22} Bullock, \textit{Oil}, 144-145.
has again become the pre-eminent institution of Western medicine in Mainland China, with many of its faculty trained in the West. After 1979, Xiamen University emerged as the major center of life sciences, engineering, and natural sciences in South China. Xiamen University’s departments of life sciences and natural sciences were ranked in the top 300 in the QS 2013 World University Ranking, and the department of engineering, technology, and computer science was ranked in the top 200 out of 830 institutions by Shanghai Jiaotong University’s Academic Ranking of World Universities. Reviving the strength of these institutions was contingent on their post-war contexts and experiences. Nonetheless, their Republican-era origins and trajectories inform our understanding of their contemporary relevance and growth in the wider Chinese and Taiwanese societies.

People, Things, and Medicine in Motion

The Overseas Chinese were in perpetual motion as they sought to institutionalize medicine in twentieth-century China. Born in Southeast Asia, they studied science and medicine in the United Kingdom and the United States before making their way to China. Within China these physicians frequently traveled outside of their institutions in Beijing, Manchuria, and Xiamen to the rest of the country to lecture, assist in medical relief, attend professional meetings, and confer with Nationalist officials. They organized international meetings in China and traveled abroad to meet colleagues in the field. During the Second World War, many trekked around the region in search of stability and work, and some found their calling in Southwest China. Many ethnic Chinese from around the world donated money and resources to support the war effort. Others were so

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inspired by the War of Resistance that they left their comfortable homes in Southeast Asia and America to aid an earlier generation of Overseas Chinese professionals in establishing a military medical complex in Southwest China. In particular, they imported medical technologies and pharmaceuticals from the United States, drove and repaired trucks that delivered medical supplies, drew on their medical experiences abroad, dealt with the transnational politicking of various aid organizations, and raised funds from Overseas Chinese for medical endeavors.

After the Second World War, many of them chose to leave China for Taiwan, bringing with them decades of peacetime and wartime experience, while others preferred to resettle in the United States and Southeast Asia to live out the rest of their lives quietly. Financial and political support for Overseas Chinese aided in their ability to move quickly and establish their presence, even as they faced native opposition in China from intellectuals, doctors, and politicians throughout their careers. Nonetheless, many of their ideas, institutions, and students had a lasting impact on contemporary China and Taiwan. The Overseas Chinese were not peripheral figures in twentieth century China; rather, they were central to the medical and scientific transformation of China and Taiwan from 1911 to 1970.
Appendix

Proportion of Diseases among Chinese Soldiers, Jan. 1939- Dec. 1940

<table>
<thead>
<tr>
<th>Disease Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaria</td>
<td>27.0%</td>
</tr>
<tr>
<td>Scabies</td>
<td>34.2%</td>
</tr>
<tr>
<td>Other Gastrointestinal Diseases</td>
<td>6.4%</td>
</tr>
<tr>
<td>Dysentery</td>
<td>5.5%</td>
</tr>
<tr>
<td>Other Respiratory Diseases</td>
<td>1.5%</td>
</tr>
<tr>
<td>Nutrition-related Diseases</td>
<td>3.1%</td>
</tr>
<tr>
<td>Bronchitis</td>
<td>6.9%</td>
</tr>
<tr>
<td>Sexually Transmitted Diseases</td>
<td>0.6%</td>
</tr>
<tr>
<td>Tetanus and Gas Gangrene Cardiorenal</td>
<td>0.3%</td>
</tr>
<tr>
<td>Diseases</td>
<td></td>
</tr>
<tr>
<td>Relapsing and Typhus Fever</td>
<td>0.7%</td>
</tr>
<tr>
<td>Others and Undiagnosed</td>
<td>13.6%</td>
</tr>
<tr>
<td>Others and Unclassified</td>
<td>13.6%</td>
</tr>
</tbody>
</table>


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