



INNOVATIVE PARTNERS

The Rockefeller Foundation and Thailand



THE ROCKEFELLER FOUNDATION
CENTENNIAL SERIES



INNOVATIVE PARTNERS

THE ROCKEFELLER FOUNDATION AND THAILAND

By William H. Becker, Ph.D.

Innovation for the Next 100 Years
Rockefeller Foundation Centennial Series



















จำนวนผู้โดยสาร 60 คน

BANGKOK BANGKOK

© 2013 by
The Rockefeller Foundation
All rights reserved.

Cover:
Top: Dissecting room,
Chulalongkorn University (1930).
Rockefeller Archive Center.
Bottom: Boats along the
Mekong River near Mukdahan (2009).
Patrick de Noirmont.

Book design by Pentagram.

Innovative Partners:
The Rockefeller Foundation and Thailand

Printed in Canada.

Published by
The Rockefeller Foundation
New York
United States of America

In association with Vantage Point
Historical Services, Inc.
South Dakota
United States of America

ISBN-13: 978-0-9796389-3-0
ISBN-10: 0-9796389-3-3

**Rockefeller Foundation
Centennial Series**

Books published in the Rockefeller Foundation Centennial Series provide case studies for people around the world who are working “to promote the well-being of humankind.” Three books highlight lessons learned in the fields of agriculture, health, and philanthropy. Three others explore the Foundation’s work in Africa, Thailand, and the United States. For more information about the Rockefeller Foundation Centennial initiatives, visit www.centennial.rockefellerfoundation.org.

Notes & Permissions

The Foundation has taken all reasonable steps to ensure the accuracy of the information provided in this book; any errors or omissions are inadvertent. This book is published without footnotes or endnotes. A manuscript version with citations and references for all sources used is available at www.centennial.rockefellerfoundation.org.

Captions in this book provide information on the creator and the repository from which the images in this book were obtained. The Foundation has made its best efforts to determine the creator and copyright holder of all images used in this publication.

Images held by the Rockefeller Archive Center have been deemed to be owned by the Rockefeller Foundation unless we were able to determine otherwise. Specific permission has been granted by the copyright holder to use the following works:

Steve McCurry: 6-7, 10-11
Harvard University Archives, 67
Patrick de Noirmont: 2-3, 14-15, 18-19,
60-61, 85, 86-87, 104-105, 109, 148-149,
150-151, 154-155, 158, 161, 166-167, 172,
176-177, 178
Estate of Bob Serating: 110-111
Ted Spiegel: 115, 130

	PREFACE FROM DR. JUDITH RODIN	22
	FOREWORD – PRAWASE WASI, M.D.	24
	INTRODUCTION	28
I	FIGHTING HOOKWORM, PROMOTING PUBLIC HEALTH	42
II	THE PRINCE, THE FOUNDATION, AND THE TRANSFORMATION OF MEDICAL EDUCATION	62
III	THAILAND AND THE GREEN REVOLUTION	88
IV	EDUCATION FOR DEVELOPMENT	112
V	FACING A WORLD OF “NEW REALITIES”	152
	CONCLUSION	178
	ACKNOWLEDGMENTS	182
	LIST OF ILLUSTRATIONS	184
	INDEX	189

DR. JUDITH RODIN

PRESIDENT, THE ROCKEFELLER FOUNDATION

In the world of development, partnerships that survive for ten years are rare. A collaboration that has flourished for nearly 100 years is extraordinary. The Rockefeller Foundation and the people of Thailand, however, will soon mark the centennial anniversary of a highly innovative partnership that has already become a model for development efforts in other parts of the world.

When the Foundation's first representative arrived in Bangkok, medical research and education were at the beginning of a profound scientific revolution that led to new ways of understanding and treating disease and addressing public health. The first collaborative campaign—which included the Foundation, the Siamese Red Cross Society and the government—sought to employ the tools and techniques of this scientific revolution to battle hookworm and other parasites to promote the well-being of the people of Thailand.

Today, we are at the beginning of another revolution. Digital technologies have sparked a communications revolution that has globalized commerce and transformed our culture. In cooperation with the people of Thailand, the Rockefeller Foundation remains committed to sustaining our innovative partnership to meet the challenges and opportunities of this new era.

By supporting innovative thinkers and doers in a variety of disciplines, we are working in communities like Chiang Rai to revalue ecosystems and promote sustainable development in ways that build resilient communities. To advance the health of the world's poorest and most marginalized people, we are establishing disease surveillance systems along the borders with Laos and Vietnam and supporting research with public and private partners to address circumstances and diseases that contribute to ill health. As cities like Bangkok expand and continue to serve as dynamic centers for

innovation and growth, we want to ensure that these communities have the capacity to meet the needs of all of their residents. At the same time, we are working with our Thai partners to foster entrepreneurial and employment opportunities that provide secure livelihoods for urban and rural communities throughout Thailand.

History matters to all of these initiatives. Past collaboration creates a basis of trust that streamlines our present and future programs to build upon Thailand's success. In this sense, all of us working today are indebted to the vision and commitment of H.R.H. Prince Mahidol and the physicians and nurses of the Foundation in the 1920s who set the stage for our current initiatives.

When the Rockefeller Foundation first came to Thailand, the country occupied a unique position in Asia. Surrounded by the vestiges of other empires, the monarchs of Siam had successfully preserved Thailand's independence. Today, Thailand offers a unique model for success in many arenas. It is also an active partner with other developing nations, providing expertise and assistance to other countries from Southeast Asia to Africa who are seeking their own path to permanent prosperity. At the same time, the partnership between the Rockefeller Foundation and Thailand has also evolved. Where once the Rockefeller Foundation and Thailand focused primarily on local concerns, a hundred years later our collaboration is deeply committed to issues that are global in scale, but rooted in the experiences of a proud nation. On the occasion of the Rockefeller Foundation's 100th anniversary in 2013, we are delighted to celebrate this strong and innovative partnership.

PRAWASE WASI, M.D.

CHAIRMAN, NATIONAL REFORM ASSEMBLY COMMISSION, THAILAND

“**T**o promote the well-being of mankind throughout the world” was and is a noble goal. Since its inception in 1913, the Rockefeller Foundation has accumulated a wealth of experiences and knowledge in pursuit of that goal. In *Innovative Partners*, Dr. William H. Becker has admirably revealed this history with insight for everyone interested in learning about philanthropy and development.

Although it started out by fighting hookworm in the southern United States, the Rockefeller Foundation became a great proponent of public health and public health schools around the world. Along the way, it discovered that promoting health and well-being must be integrated within broad efforts to improve human and social development.

As the Rockefeller Foundation discovered, development is extremely difficult. Merely spending money or applying what is already known is not enough. Efforts carried out locally or with the assistance of international organizations often lead to disappointment. For these reasons, the success of the innovative partnership between the Rockefeller Foundation and Thailand is a topic of particular interest for readers interested in development.

Although Thailand still faces many challenges, considerable progress has occurred in the past 100 years, particularly in the fields of medicine, public health, and education. Health care infrastructure is thoroughly distributed across the country, and universal health coverage has been established. The education of health care professionals now meets global standards. Thailand has also engaged in ambitious health systems reform and participated in global health activities. The Prince Mahidol Award

Conference brings together health policy leaders from around the world and makes clear that Thailand is committed to participating in a global conversation about health policy.

This humble progress would not have been possible without fundamental investments in human and organizational capacity building. For nearly a century, the Rockefeller Foundation and its Thai partners have been heavily committed to a creative partnership focused on “interactive learning through action.” These efforts depended on mutual respect and trust. For example, in the early days, when many Thai leaders were very sensitive to European colonial intrusion, Siriraj Medical School agreed to have the Rockefeller Foundation’s American professors serve as dean and heads of academic departments. This decision helped expedite organizational and academic capacity building. Thai leaders believed that the Rockefeller Foundation would bring value. At the same time, the Foundation found Prince Mahidol to be a man of virtue. He was knowledgeable, dedicated, humble, and esteemed by those who knew him. As everyone discovered, shared values proved crucial for a successful partnership.

Later, the partnership between the Rockefeller Foundation and Thailand evolved into other arenas, including agriculture and higher education. The Foundation’s Green Revolution and Education for Development initiatives in Thailand reflected the same spirit of “interactive learning through action.” Again, mutual respect and trust prevailed. I personally witnessed the collaboration between Dr. James S. Dinning of the Foundation and Dr. Stang Monkolsuk and Dr. Swasdi Skulthai. Together, they diligently and wisely worked with great insight to strengthen the Faculty of Science of

Mahidol University. Their legendary success increased the capacity of the country to produce more doctors and other health professionals. It also helped promote the broader development of science education in Thailand. Meanwhile, the Rockefeller Foundation's support of community health education at Ramathibodi Medical School inspired medical graduates of this school to be more community-oriented. These graduates later played important roles in health care and health systems reform in Thailand and around the world.

One unfinished but very important innovative partnership revolved around the Rockefeller Foundation's work with three universities on the Mae Klong basin. Led by the distinguished and highly respected Dr. Puey Ungpakorn, this project was disrupted by the political violence of October 6, 1976. Today, looking back, many people recognize that universities can play a key role in strengthening community and local organizations, and that this work is often crucial for sustainable development.

In the late 1970s the Rockefeller Foundation, through the leadership of Ken Warren and Kerr White, launched a major initiative called INCLEN (International Clinical Epidemiology Network). I had the privilege of working with these two great minds on this project. The initiative aimed to train clinicians in medical schools to focus more on epidemiological factors affecting clinical issues. The objective was to introduce population-based medicine into the thinking and practice of the medical schools to prepare them for future health systems reform.

In addition to the many health systems and medical training initiatives outlined in this book, the Foundation also supported the establishment of the National Epidemiology Board (NEB) in the Ministry of Public Health. A project initiated by Scott B. Halstead, who served as Associate Director of Health Science, the NEB became a national forum leading to health systems reform conceptualization and development.

The Rockefeller Foundation's rich history in Thailand demonstrates the Foundation's deep commitment to promoting the well-being of mankind. The challenges today are often more complex and interconnected. Poverty, population growth, aging, climate change, income inequalities, conflicts, violence, social disintegration, food crises, scarcity of resources, and more contribute to social instability and insecurity. The Rockefeller Foundation, well aware that a narrowly focused programmatic approach is no longer appropriate, has reconceptualized its efforts to promote the well-being of humanity. As reported here, it has wisely chosen to take a systems approach. Today, health and well-being are seen as part of a larger effort to promote human and social development. Thus, for example, the Transforming Health Systems Initiative (THS) outlined in this book should be a central strategy to "promote the well-being of mankind throughout the world."

Health systems reform, agricultural development, and university education have been critical to the partnership between the Rockefeller Foundation and Thailand for a hundred years. This history, I hope, will help strengthen the partnership's continued work on transforming health systems and other initiatives. And let us hope that the spirit of good will and partnership shown throughout this book will be a source of inspiration for concerned citizens, countries, and development and public organizations to work together for the well-being of mankind throughout the world.



Prince Sakon (third from left) and Phya Amorariddhi, Director-General of the Department of Administration (far right) agreed to meet with Dr. Victor Heiser in 1915 to discuss public health in Siam. (Rockefeller Archive Center.)

Dr. Victor Heiser arrived in Bangkok in April 1915 aboard the Steamship *Kuala*. As a representative of the newly created Rockefeller Foundation, he had sailed from Singapore to investigate the state of health in Siam. Over the course of eleven days in the country, the tall, genial, outspoken doctor met with government officials; visited a hospital for the mentally disabled; gathered data on agricultural production, imports and exports; and played tennis with other expatriates in the capital city of Bangkok.

Thai officials of the Royal Court who met Heiser were gracious, but probably skeptical about his intentions. In-fighting among the foreigners in Bangkok was notorious as westerners sought to influence the government for their own economic advantage. King Rama VI, who enjoyed drama and was a playwright, often depicted these westerners as silly or devious characters. Heiser, with his pith helmet and outsized personality, undoubtedly played to these stereotypes. But he was in Siam on serious business.

Pressed between French Indochina and British Burma, Siam (renamed Thailand in 1939) had jealously guarded its independence from European colonial intrusion. As a result, the country had been spared the harsh exploitation of colonial rule that would sometimes lead to failed or ineffective governments in post-colonial Southeast Asia, the Middle East, and Africa. With roughly eight million people in 1915, Thailand was governed by a hereditary monarch from the House of Chakri, which had ruled Thailand since the end of the 18th century. Over three generations, the kings of Thailand had been introducing western

ideas of public administration to strengthen the country. King Mongkut (Rama IV), a student of western languages and mathematics, opened diplomatic relations with major western powers.

His son, King Chulalongkorn (Rama V), who ascended the throne at the end of the 19th century, was educated by a British tutor and was the first Thai monarch to travel abroad, including two trips to Europe where he met with other heads of state. He abolished slavery and launched an extensive modernization effort, including important reforms to the legal system, public finance,

the military, and education. In the 1890s King Chulalongkorn introduced a cabinet government composed of twelve ministries. Civil servants were trained in special schools for government service, with the most promising students sent to study abroad.

After King Chulalongkorn's death in 1910, his son, King Vajiravudh (Rama VI), continued these initiatives, building the first modern hospital in honor of his father in 1912, and establishing a medical science research center in 1913 to produce vaccines for cholera and antidotes for poisons. Rama VI had studied at Oxford University, traveled widely, and surrounded himself with a court

Phra Meru, constructed in 1926, following the death of King Rama VI. Administrative reforms launched by Rama V and Rama VI were critical to the Rockefeller Foundation's ability to successfully partner with the government of Thailand. (Rockefeller Archive Center.)



of European advisers. Heiser concluded that the King's initiatives made Siam an ideal place for the Rockefeller Foundation to develop one of its first international public health campaigns.

The Rockefeller Foundation had been chartered in 1913 with a broad mission "to promote the well-being of mankind throughout the world." It was a bold international vision, and the Foundation quickly focused on ways it might make a difference in the world. The work was carried out by the International Health Commission (renamed the International Health Board or IHB in 1916), and Victor Heiser was named Director for the Far East.

The IHC's first global initiative was inspired by a little-known but highly influential project that had been one of John D. Rockefeller's first regional philanthropic efforts in the United States. In 1909 the Rockefeller Sanitary Commission had sent organizers into the rural counties of the American South to try to eradicate ankylostomiasis (hookworm disease) among two million poor farmers and their families. The campaign had been an overwhelming success. And, in the course of treating 500,000 people the commission's director, Wickliffe Rose, discovered something else that proved of enormous significance.

Attacking hookworm infections provided an opportunity for Commission staff to talk to local physicians, citizens, and county officials about other infectious diseases and the broader principles of public health. Organizers mobilized the press, businesses, schools, and churches to encourage public participation in the campaign. In short, as Rose reported in the fourth annual report of the IHC, "The relief and control of this one disease is

an object-lesson in the relief and control of disease in general... This one is simple and tangible; the common man can easily understand what it is, and what it means to him as a menace to his health and to his earning power; he knows it[s] whole story; he knows its simple treatment and its one simple preventive measure. Having seen this one disease brought under control and having had the work of the effort brought home to him, he is prepared to give heed when spoken to about the control of diseases that are less simple and less tangible.” Thus the treatment of hookworm not only cured the patient, it also secured the cooperation of the people in bringing this disease and other preventable diseases under control.

Wickliffe Rose had been the architect and organizational genius behind the campaign in the American South. When he was appointed Director of the IHC, he immediately began to study the prevalence of hookworm in the tropical regions of the world and concluded that targeted eradication campaigns would be a perfect way to introduce the new foundation and the concept of public health to the world. In July 1913, only months after the creation of the Rockefeller Foundation, the trustees authorized Rose to lead an international campaign against hookworm. He recommended surveys and eradication campaigns in Latin America, “the Orient,” and the colonies of Britain, France, and the Netherlands—a tropical region encircling the equator that was home to a billion people. Victor Heiser and King Vajiravudh brought Rose’s global strategy to Siam.

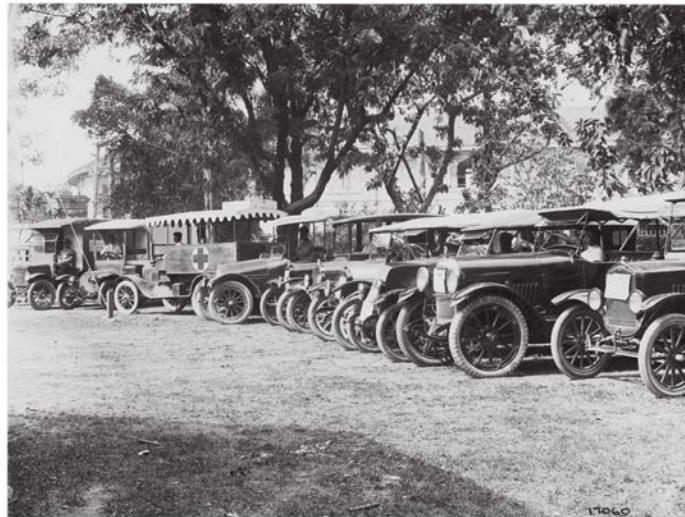
AN OVERVIEW

The Rockefeller Foundation’s experience in Thailand reflects a number of the major themes selected to mark the institution’s centennial celebration. From the Foundation’s initial commitment to eradicating hookworm disease, the Rockefeller-Thai relationship illustrated a commitment to solving global problems. Out of this effort grew a larger responsibility to improve medical and nursing education, an example of developing individual and institutional capabilities. Later, the Foundation built on this theme of capacity building by sponsoring a University Development Program in Thailand and other developing countries. Rockefeller funds were also invested in new knowledge and ideas, exemplified by its support of increasing agricultural output and productivity. Dubbed the Green Revolution to address the global problem of hunger, this broad-based Foundation initiative generated new knowledge by supporting research in the science of plant breeding and later rice biotechnology, which had a major impact on Thailand and other developing countries. Finally, the Foundation in recent years has committed itself to “connecting people to catalyze change” across the world. In promoting this initiative in Southeast Asia, Thailand became a critical node in the Mekong Basin Disease Surveillance (MBDS) Network designed to relate its experiences in coping with the spread of disease to other peoples in the region. Thailand has also played a critical part in the Foundation’s Transforming Health Systems

effort to promote universal health coverage. The Foundation also was a key part of the effort to connect people in many parts of the world to help them learn from the methods developed in the Mekong Delta to cope with disease, the effects of climate change in cities, and the migrations of rural peoples within their countries and the region.

While the Rockefeller partnership with Thailand illustrates the centenary themes of the Foundation's history, there are other unique aspects of that relationship. Both the Foundation and Thailand came to the partnership as innovators. John D. Rockefeller, the entrepreneur who built Standard Oil into one of the largest and most valuable companies in the world, was also a pioneer in the field of philanthropy. As a young

Cars loaned to the Department of Public Health during a cholera control campaign in 1926. The Rockefeller Foundation worked with the government and the Red Cross Society of Siam to improve public health in Thailand. (Rockefeller Archive Center.)



man just starting his career, he religiously gave to charity.

As he became wealthier his commitment to philanthropy increased, and he developed many of the strategies now used by modern philanthropists. In 1891 he provided funds to establish the University of Chicago. In 1901 he created the Rockefeller Institute for Medical Research, and in 1906 he helped support Abraham Flexner, an educational reformer, in a major study of medical education in the United States. All of his philanthropic work culminated with the formation of the Rockefeller Foundation in 1913. The eradication of hookworm in the tropics was the Foundation's first global project.

For Thailand, the Rockefeller Foundation's hookworm campaign came at an opportune time. Because of the reforms launched by Rama V and Rama VI, Thailand was one of the most modern and innovative nations in Southeast Asia, run by a well-trained group of public officials. A central focus of the reform was to improve education. In addition to working on elementary and secondary education, the monarchs paid attention to cultivating higher education, especially at Thai medical schools. Sharing their interest in medical education was one of the most important figures in the history of modern Thailand, H.R.H. Mahidol Adulyadej, Prince of Songkla (1892-1929), who was the father of H.M. King Ananda Mahidol (Rama VIII) and H.M. King Bhumibol Adulyadej (Rama IX), the current monarch. Prince Mahidol became a powerful advocate for improving medical and nursing education as well as the country's system of public health in the 1920s.

Prince Mahidol's deep commitment to improving medical and nursing education played a major role in the success of the

partnership between the Rockefeller Foundation and Thailand. His genuine personal qualities of character, intellect, hard work, and humility were essential to the creation of a strong relationship between Thailand and the Foundation. Working closely with him, and with similarly outstanding individuals elsewhere, helped cultivate among Foundation officials a habit of listening that led to strong engagement with the leaders and people with whom they worked.

An ability to listen is no small attribute in an individual or an institution. As the role of international assistance has grown rapidly following World War II, many newly created multilateral institutions have been criticized for a lack of such attentiveness. The Rockefeller Foundation has had its critics as well. Any institution that has to make hard choices about funding and program support is likely to invite criticism. But instead of being defensive, the Foundation has continued to listen and learn, steadfastly supporting human and institutional capacity building in Thailand and elsewhere. As a result, the Foundation has developed a growing cadre of well-trained advisors capable of questioning and making suggestions to the Foundation.

Not surprisingly, one of the Foundation's most popular programs in Thailand has been support for the advanced education of some of the country's most talented individuals—scholars and researchers affectionately known as “Rocky Docs.” It also has regularly promoted and funded home-grown institutions, including the Asian Institute of Technology, the International Health Policy Program, and the Thailand Development Research Institute.



Support for Rocky Docs and indigenous Thai teaching and research institutions underscores the fact that the Foundation is not static. For many years it has taken a strategic perspective. As the Foundation focused on development problems around the world in the 1960s, for example, Foundation officers viewed the work in Thailand as a model for other initiatives because the Foundation was able to coordinate efforts in several arenas—health, education, and agriculture. In contrast to many other nations, Thailand was also seen as a country where it was possible to have a good working relationship with government authorities and institutions. These conditions in Thailand promoted a remarkably innovative collaboration.

The creativity in the relationship between the Foundation and Thailand is also reflected in the changing character of the

Boats provided by public-spirited citizens ferried potable water from Bangkok to Thonburi during a cholera epidemic in 1926. The effort was organized by the Department of Public Health. (Rockefeller Archive Center.)

collaboration. New Foundation initiatives in Thailand have almost always been limited in duration, and were gradually phased out or replaced by local governmental support. Such a policy promoted flexibility and allowed the Foundation, local non-governmental organizations (NGOs), and the government to anticipate and respond to emerging problems and opportunities.

Acceptance of change has been a strong attribute of the Foundation as the process of globalization has quickened the movement of people, trade, and capital across borders in the last quarter of the twentieth century. In coping with the changes created by globalization over twenty years of work in the Mekong Delta Basin region, the Foundation has increased its emphasis on the problems that Thailand faces in common with its neighbors. Thailand, as one of the most advanced countries in Southeast Asia to confront the consequences of rapid economic growth and climate change, has served as a model for others in the Mekong River Basin. Two particularly important recent programs involving Thailand have been the MBDS Network, organized in 1999 by the Foundation and the World Health Organization (WHO), and the Asian Cities Climate Change Resilience Network (ACCCRN), initiated with Foundation funding in 2008.

The MBDS Network began to identify best practices in assessing signs of possible outbreaks of disease and to share the methods of its successful campaigns with similar disease-tracking networks elsewhere in the world. Similar goals have animated the work of ACCCRN, which is devoted to coping with the consequences of climate change, especially flooding, in urban areas. Effective practices the network discovers in a variety of different urban settings will be shared with other cities in Asia and beyond.

This book is the study of the deeply intertwined relationship between the Rockefeller Foundation and the government and people of Thailand over almost a century. It is centered on a series of stories organized in the following chapters. Chapters I and II examine the evolving relationship between the hookworm campaign and a larger effort to improve medical, nursing, and public health education in Thailand. Chapter III recounts the story of the Foundation, Thailand, and the Green Revolution. It highlights the important place the advancement and application of science has had on the relationship between the Rockefeller Foundation and Thailand. Chapter IV presents the story of the University Development Program (UDP) and the profound effects this Foundation initiative had not only on higher education but also on the role higher education plays in economic and social development. The UDP influenced Thai politics in ways never anticipated by the Foundation or the supporters of higher education. In Chapter V, the book addresses how the Foundation and Thailand coped with wide-ranging change brought about by globalization, rapid economic development, and climate change over the last thirty years. Finally, the Conclusion examines the impact of globalization on the Foundation and Thailand.

After almost a century, an unprecedented increase in the pace, scope, and complexity of change has fostered new programs and methodologies. Even so, careful examination of the Foundation's response to the changes reveals a continuing commitment to its original mission to promote the well-being of humankind, as it remained true to the most important aspects of the partnership between the Foundation and Thailand in very different circumstances.



Visiting Thailand in April 1915, Dr. Victor Heiser toured the site of the old city of Ayutthaya with Phya Amorariddhi, the Director-General of Administration. The two men discussed recruiting American doctors to work with the Department of Public Health in Thailand. (Rockefeller Archive Center.)

FIGHTING HOOKWORM, PROMOTING PUBLIC HEALTH

In the fight against hookworm, officials of both the Foundation and the Thai government took the measure of the other. Launching and sustaining the effort at times proved difficult and frustrating. Foundation officials learned the necessity of enlisting the support of local officials, high-ranking members of the government, and the royal family itself, including King Vajiravudh (Rama VI). As Wickliffe Rose had learned in the backcountry counties of the American South, it was virtually impossible to succeed unless local officials supported the campaigns. It became one of the Rockefeller Foundation's first principles to work with, not against, local authorities.

For Thai leaders, Victor Heiser was a strange, different breed. Unlike other westerners at the King's court, Heiser had no self-interest, no business interest, and no national interest. The Thai court had to decide whether the Americans associated with the Foundation were like the representatives of other western powers, and they had to overcome their suspicions that Heiser and the Foundation had a hidden agenda to get something from Thailand.

As part of his effort to gather information about the extent of hookworm infection overseas, Wickliffe Rose had made inquiries at first with the Siamese legation in Washington in 1913, and then with missionary outposts in northern Thailand. The information he received was vague. Much of the early data on the disease focused on Bangkok, although the evidence



the Commission gathered suggested that infection was greater in the northern provinces of Chiang Mai and Nan. Missionary hospitals had devoted trained medical assistants to the problem, but these initiatives were neither systematic nor large enough to make serious inroads in eradicating the disease. Hospitals operated by missionaries waited for patients to come to be treated, which necessarily limited the scope of who came for treatment and what could be done.

The IHC had divided its global fight against hookworm into regional commissions, which would administer country programs from the field. In Southeast Asia, they had started in Kuala Lumpur, the Philippines, and the Malay States in 1915. But Heiser concluded that Siam would be a big enough challenge to warrant its own program. To launch a successful campaign, however, the Rockefeller Foundation had to earn the confidence of Thai officials.

When Heiser arrived in Thailand in 1915, he visited Jens Westengard, special adviser to the King, and spent considerable time with the Minister of the Interior, Phya Maha Ammat. Heiser and Ammat already knew each other.

Victor Heiser included this picture of waterways on the grounds of the Bang Pa-In Palace in his official diary. Foundation officers kept detailed diaries of their meetings with officials and prospective grantees. (Rockefeller Archive Center.)

Heiser had worked in the Philippines before joining the Foundation, and while he was there, Ammat had sought his advice on a health program for Thailand. For his part, Heiser thought that Thailand was a promising place to initiate a hookworm program that would include treatment as well as public education about the disease. Elsewhere in the region, he concluded that the jealousies and self-interests of the colonial powers, who were actively staking out their influence in Asia, would complicate the work of the Foundation.

Indeed, the politics and protocols of the Royal Court were difficult for an outsider to navigate. After Heiser returned to Thailand in 1916, accompanied by Dr. C. Perrin Norris, the recently appointed Assistant Director for the IHC in the East, the two men visited with a number of high-ranking officials. The Minister of the Interior, the Viceroy of Chiang Mai, and the Viceroy of the Northern Province all received Heiser and Norris politely. The men also met with Prince Damrong Rachanupab, a half-brother of the late King Chulalongkorn. An intellectual, Prince Damrong had led a massive reform of Thailand's system of provincial administration. He also founded Thailand's modern educational system. At one time considered the second most powerful person in Thailand, after the King, Prince Damrong had fallen out of favor after King Chulalongkorn's death. He had gracefully resigned his position as Minister of the Interior in 1915, pleading health problems.

Prince Damrong had a great interest in public health. After rabies caused the death of his daughter, he worked to invite the Pasteur Institute to establish a facility in Bangkok. He also oversaw the establishment of Siriraj Hospital. Nevertheless, in conversation with Heiser and Norris, Prince Damrong suggested that the Americans should work with local medical officials to convince them of the value of the hookworm campaign. Their support would be critical to winning the government's backing. Prince Damrong also asserted that a successful demonstration in one part of the country would pave the way for a national campaign.

Hoping to make his case directly to the King, Heiser sought the help of the American ambassador, who arranged for an appointment. Late in the afternoon on June 12, 1916, even though it was hot and humid, Heiser and Norris dressed in formal diplomatic attire—top hats, grey pants, double-breasted coats, and patent leather shoes. Picked up in the royal motorcar, they were chauffeured to the palace as a light rain began to fall. King Vajiravudh received Heiser and Norris dressed in a formal military uniform. The King was surrounded by military officers and European advisers who were startled when his majesty granted a private audience he had never given to any other Americans. Heiser reviewed the work and success of the hookworm campaign in the United States, and described how that success

convinced the Foundation that the effort should be expanded overseas. Heiser also emphasized the long-term benefits of such a campaign in convincing the people that public health measures, improved hygiene, and basic sanitation could improve their lives. Finally, he underscored the idea that a successful campaign to eradicate hookworm would encourage people to take part in other large-scale programs against diseases like malaria.

The American physician also politely made the point to the King that improved health could not be imposed from above. Rather, it had to rise up from the people below. Patience and education, not force, were essential to the promotion of public health. Heiser's presentation ended with a request that the IHC be allowed to send a doctor to work with Thai physicians designated by the government, to carry out an infection survey of the extent and severity of hookworm in the country.

The King was apparently impressed by the Americans' presentation. At the end of the interview, he gave Heiser a plush box containing a medal honoring him as a member "Fourth Class of the Order of the White

Doctors Heiser, Barnes (right) and MacFarland and Ellis (left) posed with the statue of the physician to the Lord Buddha at Wat Phra Kaew in 1921. (Rockefeller Archive Center.)



“I give you this in confirmation of my promise to support the work of the Rockefeller Foundation in Siam.”
King Vajiravudh, 1916

Elephant, Busanabaran.” With the gift, the King said, “I give you this in confirmation of my promise to support the work of the Rockefeller Foundation in Siam.” Soon after the audience, the Minister of the Interior, writing on behalf of the King, authorized the survey. Heiser telegraphed New York to send

supplies and equipment. Dr. Norris traveled to Northern Siam, where he and a Thai colleague focused their investigations near the Circle of Bayap and in districts near Chiang Mai and Nan.

Once the survey work confirmed the extent and severity of the disease, Heiser turned to the task of appointing an American doctor to take charge of treating the disease and following up on the effectiveness of the program. Heiser and Wickliffe Rose set their sights on a young physician, Dr. Milford E. Barnes.

Barnes had trained in Ceylon in 1915 and was then sent to Java, where he worked with Dr. Samuel T. Darling. Barnes respected Darling’s way of relating to the local populace. Darling was friendly and accessible, and showed genuine interest in the lives of the people he dealt with. Barnes had evidenced similar behavior in Ceylon, mixing easily with the people whose diseases he was studying, getting to know some of them, and taking part in local celebrations and entertainments.

Barnes arrived in Bangkok in January 1916, enthusiastic about his new assignment. The leading physician at the Pasteur Institute in Bangkok and another recently arrived American physician, who acted as a sanitary adviser, both offered their help. Despite the King’s support, however, Barnes soon ran into resistance from the bureaucracy. At first Barnes thought the problems related to sorting out the details of his appointment. But he soon realized that the delays were more than a simple matter of bureaucratic tangles. Apparently, some government officials whose support was critical to his work had had a change of heart. Some high-level Thai officials went so far as to impugn the motives of the IHC. Others questioned whether hookworm was as serious as the Americans had suggested. There were also criticisms of the American doctors’ hard-driving behavior—their “rough and ready” approach to things.

These cultural conflicts were compounded by financial difficulties. Chao Praya Surasi Wisitsak, the Minister of the Interior, had anticipated financial help from elsewhere in the government. When funds were not forthcoming, it appeared that his ministry would have to spend from its own budget to cover the costs of the hookworm campaign.

Barnes grew discouraged. Writing in February 1917, Heiser counseled patience. He reminded the younger man “that results will come slowly, and that many obstacles will have to be overcome.” Avoid the cynicism of the many foreign representatives in Siam, Heiser advised. He reminded Barnes “that most of the [foreign] men in Siam are there for the purpose of getting something out of the country. You have the enormous advantage of being in Siam for the purpose of giving something to the country.”

While negotiations continued between the government and Rockefeller Foundation officials, Barnes began his work as best he could in an atmosphere of uncertainty. Forced by circumstances to remain in Bangkok, instead of setting out into the field, he investigated the prevalence of the disease in a large prison that housed 2,000 inmates from all parts of Siam. Barnes hoped that a study of the incidence of hookworm in the prison population would provide a rough measure of the rate of infection in different parts of the country. And by treating those with the disease, he could gather data on the effectiveness of his medicines.

Barnes also met privately with government officials. To reach a larger audience, he delivered public lectures to the Royal Medical College. Perhaps his most successful publicity came from his presentation at the annual public fair in Dusit Park in Bangkok, sponsored by the King. Working with the Director of Public Health, Barnes organized an exhibition on hookworm and other parasitic diseases that might be treated in the same way. This was exactly the way Rockefeller Sanitary Commission organizers had approached suspicious American Southerners at local county fairs. In the United States, these exhibits typically included photographs of hookworms and people affected by the parasite. Posters described the effects and treatment of the disease. Sometimes visitors were invited to look through a microscope to see hookworm eggs or embryos. In Dusit Park the exhibit drew large crowds. High-level officials attended, as did members of the royal family, including the King himself. The King’s kind words about the exhibit garnered further attention for Barnes’ work.

While all of this was going on, Barnes continued to meet with officials from the Department of the Interior. It became clear that Siam was in a strained financial condition that made it difficult for the government to provide the funds and assistance that Heiser believed had been agreed upon. Treaties with foreign powers prevented Siam from levying import duties above three percent. To raise revenue the government had resorted to lotteries, the promotion of gambling, and the sale of opium. It began developing a comprehensive system of taxation that would provide more stable and increased revenues, but during the interim it became clear that the government

did not have the revenues needed to support the hookworm project. Nevertheless, the Department of the Interior did offer to lend Barnes the services of one medical officer. Meanwhile, the Director of Health told Barnes that spending had to be prioritized, and studying the incidence of plague and high infant mortality was more important than fighting hookworm.

The archives of the Rockefeller Foundation also indicate that officials with the IHC and the government had misunderstood the fundamental terms of their agreement. While the IHC believed the government had promised to share the costs of the project, Thai officials made it clear to Barnes that they understood that the initial work would be done for free. Moreover, they believed that the IHC had proposed to conduct an initial survey and demonstration to prove that a larger campaign against hookworm could be effective and efficient. Once investigations showed the incidence of hookworm to be serious, these officials would then determine the roles of their agencies in the project.

Despite his mounting frustrations, Barnes believed that the stakes were too high to abandon the project in Siam. Supplies and equipment had already arrived. He and others had made a great effort to show the importance of the program. Despite the principle that costs for international projects should be shared between the Foundation and local governments, Wickliffe Rose and the Trustees agreed to shoulder all the costs of the project. Rose cabled Barnes, authorizing him to begin his work. Both Rose and Heiser believed that in time the government in Siam would provide the original resources promised. As Heiser wrote to Barnes, “We want the Siamese to know that we are fully prepared to meet the expenses of the demonstration and that we have no idea of attempting to exact an iron-bound contract from them. If they do not want to continue the work after a successful demonstration has been made, we want them to feel that they are under no obligation to do so.”

INTO THE FIELD

Barnes began his work in Chiang Mai in February 1917. To reach the country’s second largest city, located 500 miles north of Bangkok, he rode the railroad to the end of the line. Then it took two days to reach the city by road. Many challenges awaited Barnes. Caution was necessary. Originally, supplies and equipment were to be sent to the Standard Oil office in Chiang Mai. But Heiser and Barnes decided that it was best that such shipments should go to the American Vice Consul, eliminating the suspicion that the Foundation’s help was an instrument to increase the business influence of Standard Oil.

Happily, local officials were receptive to what Barnes wanted to do. They provided equipment as well as three assistants for his office, and the Ministry of the Interior supplied one medical officer. (While the ministry did not have control of operations in Bangkok, it did control areas in the North, including Chiang Mai.) In turn, Dr. Barnes made an effort to learn Thai, even as he worked to set up the hookworm program, but progress was slow.

Barnes considered recruiting American missionaries working in the area to help. Members of the International Health Commission, now renamed the International Health Board (IHB), debated this option, but ultimately concluded that useful as the missionary skills would be—these were well-organized dedicated workers who knew the language and customs of the people—their engagement would undermine the efforts to encourage local people to support the project. As a matter of policy, the IHB had decided to work with the government. As Heiser wrote, “we are largely in the field with the hope of being able to assist governmental authorities in the creation of a public sentiment that will support and demand adequate health protection.”

Traveling inspectors were trained by Rockefeller Foundation staff to survey sanitary conditions in villages and towns in northern Thailand. Data provided by these surveys shaped the strategies of the fight against hookworm. (Rockefeller Archive Center.)



The Rockefeller Foundation's International Health Board worked closely with government officials in Thailand. It also received support from American missionaries, like the interpreter in this photograph (far right), who provided health information to local communities. (Rockefeller Archive Center.)



Years later, this kind of innovative approach to collaboration would be called “capacity building.” It was an essential part of the hookworm effort from the beginning.

As a result, Barnes worked with local government authorities. The campaign progressed through cooperation with established sanitary districts that had taxing power. Following the innovative approach established first in the American South and then replicated in other parts of the world, the hookworm campaign included both treatment and public education. Individuals found to be infected with hookworm were given multiple doses of medication to expel the parasites. Meanwhile, educational programs sought to raise awareness of the disease. In local wats, or temples, Barnes talked to audiences about the dangers of hookworm. With charts as well as models of sanitary latrines, he explained the life cycle of the parasite. He urged the audiences to wear shoes and to construct sanitary latrines to prevent infection. Then he invited the audiences to view hookworm eggs and living larvae under the microscope. Barnes and other IHB representatives later expanded these programs to include lantern slides to enhance their presentations.

The IHB’s educational campaign was aided by the government. Officials in the sanitary districts had the authority to enforce regulations to improve hygienic conditions, which was essential to the hookworm program. They were also the vehicles through which Barnes could carry out the educational portion of the program. Beginning in the sanitary district established in Chiang Mai, Barnes’ efforts eventually spread into nearby towns and villages.

On the advice of local officials, Barnes early on initiated a program with the army. Civilians had a high regard for the army, an institution they believed brought stability and whose mission seemed continuous, despite the changes in various other government ministries. Barnes and leading government officials from the North thought that a successful demonstration of the effectiveness of the hookworm program would help reduce the misgivings and fears that many local people had about it. Prominent individuals and families were enlisted to support the project, including the household of Dara Rasmi, the daughter of the king of Chiang Mai and one of the wives of the late King Chulalongkorn. Barnes also received support from the Buddhist monks, who, like the prominent and titled people of local society, had great influence with the local population.

Barnes still had his work cut out for him. People receiving treatment objected to the odor, which some associated with evil spirits, as well as the side effects of the medicine, including dizziness and tingling in the limbs. But Barnes was able to push ahead with a more intensive approach to treatment. Meanwhile, the project continued to focus on encouraging the



construction of sanitary latrines to prevent infection. By the end of 1918, 224 protected pit latrines had been installed in the city of Chiang Mai and 977 pit latrines had been built in neighboring villages.

The staff of the hookworm unit at Amphur Sansai posed with Dr. Heiser and Dr. Barnes of the Rockefeller Foundation’s International Health Board in 1921. (Rockefeller Archive Center.)

The Rockefeller Foundation’s persistence and diligence helped to win the confidence of the Siamese people and the government. In 1917, Prince Sakol, the Director of Health and a representative of the Ministry of Interior, prepared a detailed study of the work that Barnes and the IHB had completed in cooperation with local officials. Concluding that the program was a success, the government authorized a sum of money to help continue the work. It was only about ten percent of what had already been expended by the IHB, but it allowed for three new assistants, and established the principle of joint financial participation. More importantly, the report and additional funding led to greater cooperation between the government and the IHB. For the IHB, the government’s



renewed commitment showed that the risk of initially funding the program alone had paid off.

From these beginnings, the Rockefeller Foundation enlarged its work on hookworm in Thailand. Studies showed that the incidence of the disease there was very high, with as many as three out of four people affected in some parts of the country. Starting in 1920, the Foundation and the government switched to a mass or intensive therapy program in certain key areas. Patients were not required to go through a diagnostic process that required submitting fecal samples. And instead of multiple treatments administered in a temporary clinic, patients were given a single dose in their homes or communities. With this new protocol, workers were able to treat five times as many people.

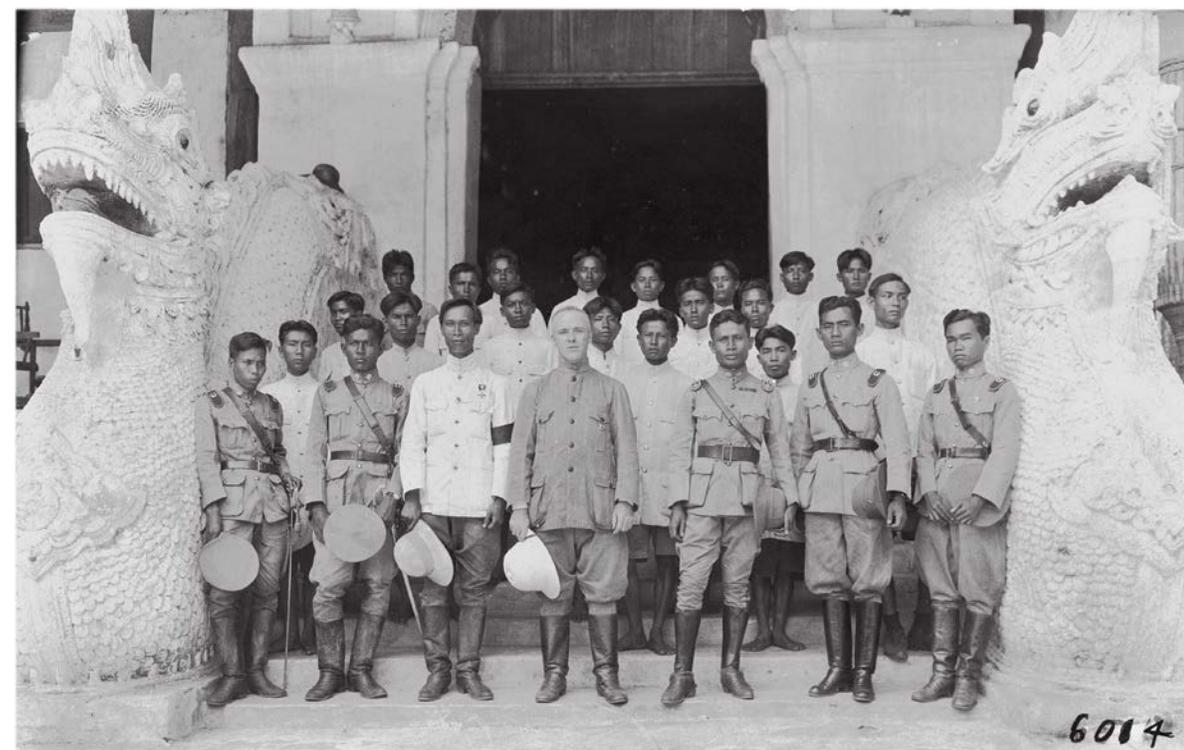
In 1923, discussions between the Department of Public Health and the IHB led to a campaign to improve urban and rural sanitation. Up to that time the IHB collaborated with the health section of the Siamese Red

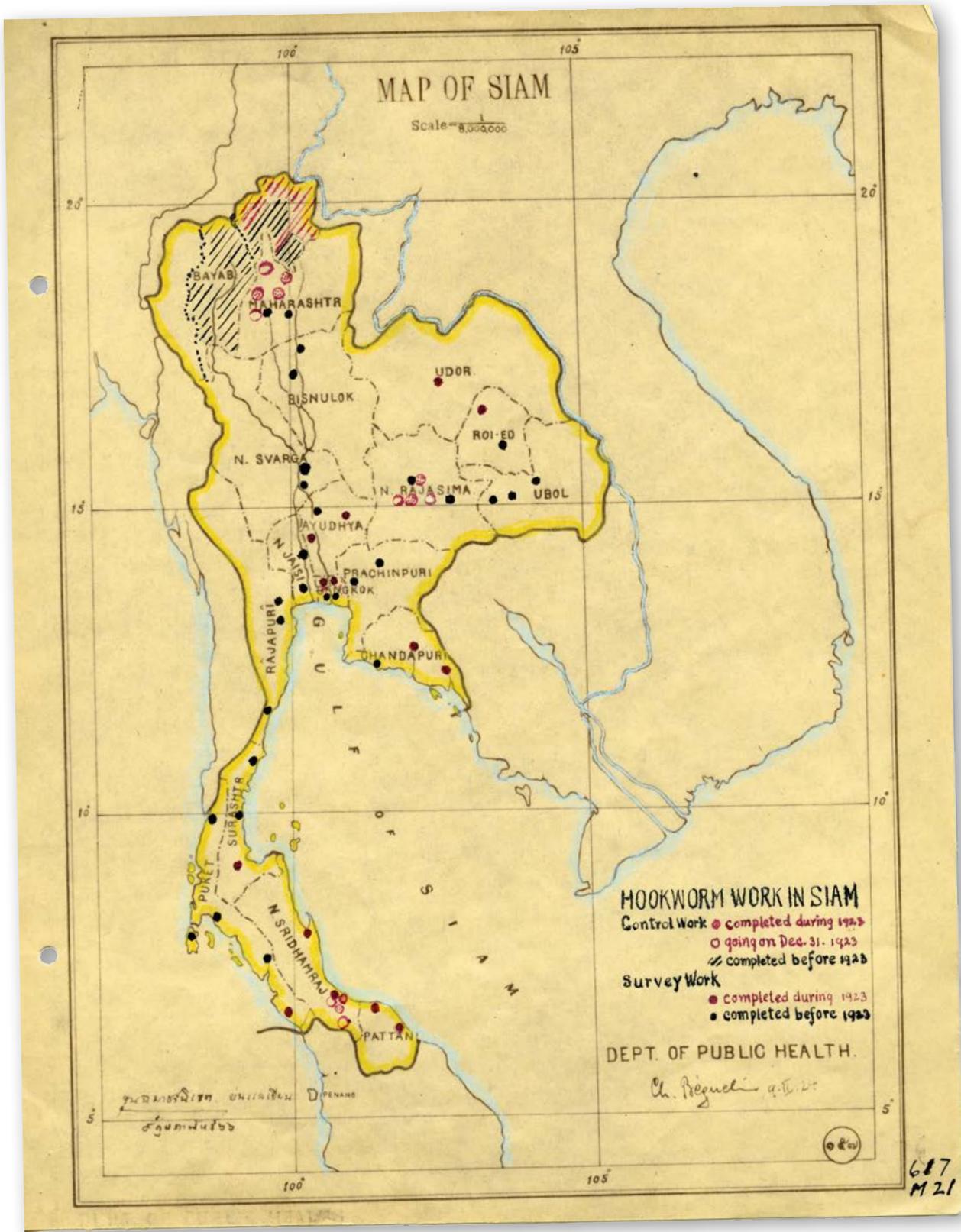
A Buddhist monk viewing hookworms through a microscope. In northern Thailand, support from the monks helped encourage people to participate in the hookworm campaign. (Rockefeller Archive Center.)

Cross Society to carry on the sanitation project. With the creation of the Department of Public Health (established by Royal Decree in 1918) the government established an agency that had responsibility for public health for the entire country. A collaborative agreement between the Department of Public Health and the IHB in 1924 transferred responsibility for the project to the Department of Public Health, with the IHB acting as an adviser. Funds from the Rockefeller Foundation to the IHB were scheduled to decrease over a period of five years, at which time Thai public health officials would carry the budget forward on their own. According to the agreement, “this arrangement [was] the adoption of a policy of cooperation, and not a contract.”

In effect, the program represented an enlargement of the objectives of previous IHB efforts. The project was to have a larger compass and more ambitious goals than the previous campaign. IHB was to work with a special bureau of the Department of Public Health. The agreement was designed to improve sanitary conditions, especially to control diseases of soil and water pollution—cholera, typhoid fever, dysentery, hookworm, and other parasitic worms. The government

Dr. Milford E. Barnes was a young American physician who came to Thailand to run the Foundation's hookworm campaign. In February 1917, he began the effort in Chiang Mai. (Rockefeller Archive Center.)





By 1923, the campaign against hookworm had expanded to regions throughout Thailand. Survey campaigns had been completed in fifteen changwats (provinces), while efforts to control infection were ongoing or completed in twenty-six amphurs (sub-districts). (Rockefeller Archive Center.)

intended to educate the people in Thailand, to increase their interest in public health issues and to ensure their sympathy and cooperation with department programs. The program was also designed to collect information about disease; to promote the development and training of health and sanitary staff, especially in rural areas; and to create an organization capable of making inspections to ensure that public health standards improved and continued to improve.

By the time the agreement expired, the cooperative effort between the International Health Board and the government of Thailand had succeeded in linking hookworm to larger questions of public health. In 1928 alone, 346,962 treatments were administered for intestinal parasites like hookworm. In that year, 83,085 latrines were installed, twice the rate of 1927 and five times that of 1926. Moreover, research facilities had been established to study the types of intestinal parasites found in Thailand. To be sure, not everyone who was treated was cured. Reinfection rates were very high. But the campaign had helped to raise awareness and encourage treatment of other related diseases. In fact, the hookworm campaign led to a major effort to improve sanitation. At the end of 1928, in 122 counties where the hookworm program had been active, there were 56 county sanitary inspectors at work. Overall, as Wickliffe Rose had hoped, with the Rockefeller Foundation acting as a catalyst and adviser, the Thai government had developed a successful public health system to prevent disease and save lives.

GEOGRAPHICAL-AREA REPORT ON COMPLETED WORK FOR THE RELIEF AND CONTROL OF HOOKWORM DISEASE
 IN Aumthur Muang, Changwat Lampang
 DATE WORK BEGAN April 25, 1923
 AREA SQ. MILES.

CENSUS	GIVEN FIRST EXAMINATION	TOTAL	NOT GIVEN	NOT LOCATED	REFUSED
71,055	1,935				
GIVEN FIRST TREATMENT		CURED	NOT GIVEN FIRST TREATMENT		
16,074					
OTHER PARASITES EXAMINATION		POSITIVE TO ANY PARASITE	HOOKWORM		
1,935		1,764	1,355		
RE-EXAMINATIONS		POSITIVE	NEGATIVE	TOTAL	
TOTAL		39	3,79		
TREATMENTS		TOTAL	FIRST TREATMENT	SECOND TREATMENT	THIRD TREATMENT
16,080		16,074	6		
INFECTION BY RACES		ALL RACES	WHITE RACE	BLACK RACE	BROWN RACE
1935		1682	1935	1682	
INFECTION BY AGES		ALL AGES	UNDER 6 YEARS	6 TO 10 YEARS	10 TO 40 YEARS
1935		1682	36	22	619
FIRST INSPECTION		TOTAL HOMES	HOMES WITH PRIVIES	HOMES WITHOUT PRIVIES	TOTAL
354		354			
LECTURES		NUMBER	PUBLIC	SCHOOL	SPECIAL
Total		37	Total 245		
SOURCE OF FUNDS		INTERNATIONAL HEALTH BOARD	GOVERNMENT	STATE OR PROVINCE	COUNTY
PERSONNEL		Control Unit No. 2, under 1. Nai Sanon Tapawan 2. 2nd Lieut. Yohann Turongriang 3. Nai Chai Ganita Yuk			

In this one area in 1923, health care workers found that more than 97 percent of the people they examined were infected with parasites like hookworm.

Hookworm campaign officials kept track of the number of new privies constructed.

Dr. Henry R. O'Brien, a physician educated at the University of Michigan, went to Siam to work with the Red Cross Society.

GEOGRAPHICAL-AREA REPORT ON COMPLETED WORK FOR THE RELIEF AND CONTROL OF HOOKWORM DISEASE
 IN Aumthur Chiang Kham, Changwat Chiang Rai
 DATE WORK BEGAN March 12, 1923
 AREA SQ. MILES.
 DATE WORK ENDED May 31, 1923.
 BUDGET NO. 61,688

CENSUS	GIVEN FIRST EXAMINATION	TOTAL	NOT GIVEN FIRST EXAMINATION	NOT LOCATED	REFUSED	REMOVED	DIED	POSITIVE TO HOOKWORM ON FIRST EXAMINATION	NEGATIVE TO HOOKWORM ON FIRST EXAMINATION	
30,973	7,175							6,544	631	
GIVEN FIRST TREATMENT		CURED	NOT GIVEN FIRST TREATMENT							
15,852										
OTHER PARASITES EXAMINATION		POSITIVE TO ANY PARASITE	HOOKWORM							
7,175		6,976	6,544							
RE-EXAMINATIONS		POSITIVE	NEGATIVE	TOTAL		RE-EXAMINATIONS AFTER SECOND TREATMENT		RE-EXAMINATIONS AFTER THIRD TREATMENT		
TOTAL		1,894	173	2		51				
TREATMENTS		TOTAL	FIRST TREATMENT	SECOND TREATMENT	THIRD TREATMENT	FOURTH TREATMENT	FIFTH TREATMENT	SIXTH TREATMENT	SEVENTH TREATMENT	
15,852		15,852								
INFECTION BY RACES		ALL RACES	WHITE RACE	BLACK RACE	BROWN RACE	YELLOW RACE	RED RACE	NOT CLASSIFIED BY RACE		
7175		6544	7171	6540	1	1	3			
INFECTION BY AGES		ALL AGES	UNDER 6 YEARS	6 TO 10 YEARS	10 TO 40 YEARS	41 TO 60 YEARS	OVER 60 YEARS	NOT CLASSIFIED BY AGE		
7175		6544	305	180	2834	2559	2493	1170		
FIRST INSPECTION		TOTAL HOMES	HOMES WITH PRIVIES	HOMES WITHOUT PRIVIES	TOTAL HOMES	LAST INSPECTION		EXTRA PRIVIES AT HOMES		
788		788				788		246		
NEW PRIVIES ERRECTED AT HOMES		TOTAL	"D"	"E"	TOTAL	NEW PRIVIES ERRECTED AT PLACES NOT HOMES				
788		788								
LECTURES		NUMBER	PUBLIC	SCHOOL	SPECIAL	LITERATURE		950		
Total		19	Total 4,299							
SOURCE OF FUNDS		INTERNATIONAL HEALTH BOARD	GOVERNMENT	STATE OR PROVINCE	COUNTY	COMMUNITY OR DISTRICT	OTHER SOURCES			
PERSONNEL		Control Unit No. 3, under 2nd Lieut. Soom.								

Statistics gathered by field officers from the Rockefeller Foundation, Thai public health officials, and the Siamese Red Cross tracked infection rates, the efficacy of different treatment strategies, and the success of local sanitary campaigns. (Rockefeller Archive Center.)

Education played a key role in the fight against hookworm. Over the course of six weeks, this team gave nineteen lectures to 4,219 school children and gave away 950 pamphlets.

In the southern United States, hookworm patients were treated with thymol to get rid of the parasite. After 1915, Rockefeller Foundation health officials began using oil derived from a plant called chenopodium. In rare cases and usually with children, as reported in the Foundation's Annual Report in 1919, the treatment itself could be fatal. To improve the safety of the treatment, Foundation officials modified the dosing.

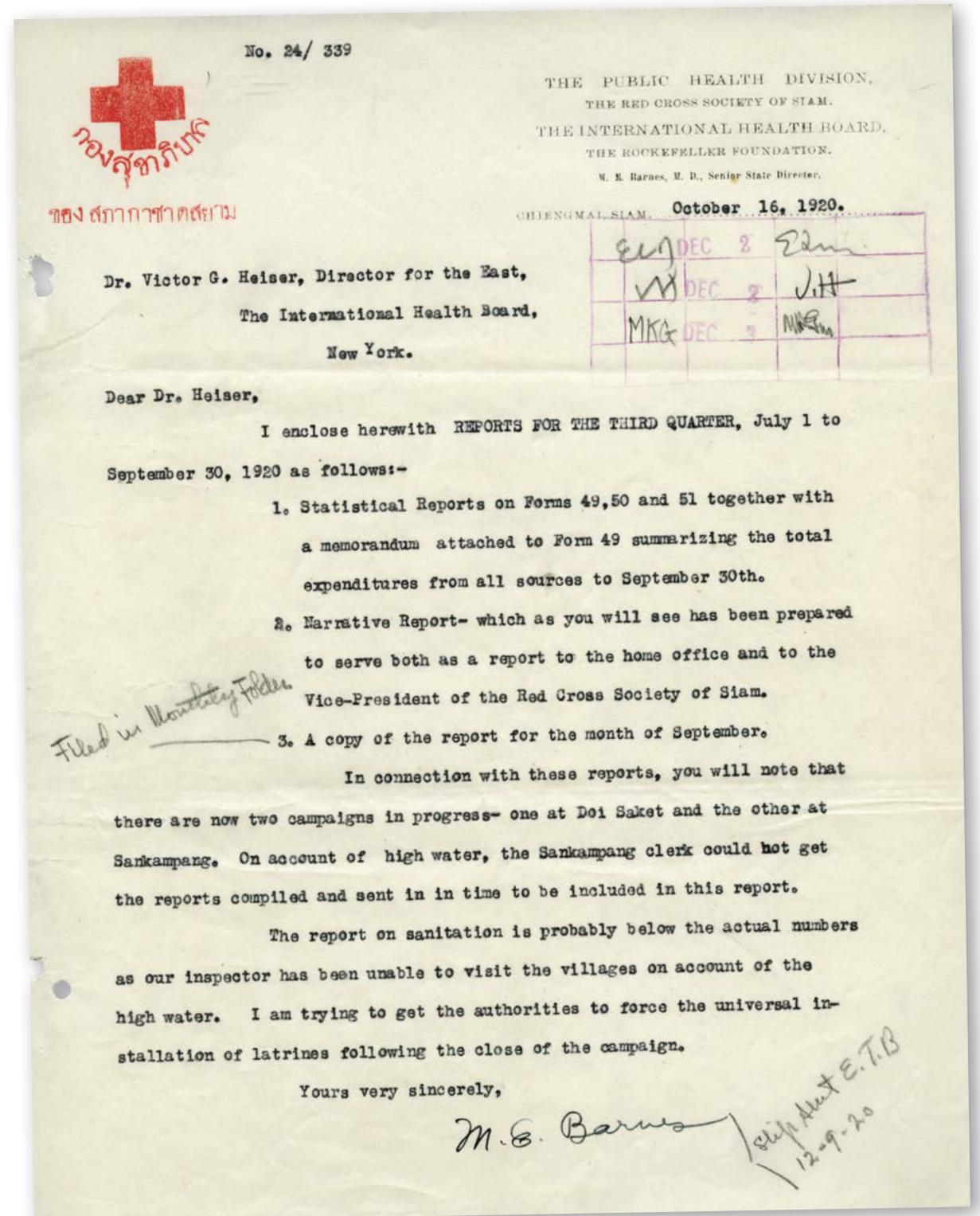


THE PRINCE, THE FOUNDATION, AND THE TRANSFORMATION OF MEDICAL EDUCATION

While the initial work in Thailand focused on hookworm eradication, Victor Heiser believed that over the long term the most progress in public health could be made by improving medicine and medical education. Others at the Rockefeller Foundation agreed, and much needed to be done. The first medical school in Thailand had been established in 1888 at the behest of King Rama V. It was expanded in 1900 to become the Royal Medical School, with a longer course of study and a larger number of students. When Chulalongkorn University was established in 1917, the medical school was incorporated into the university. By 1918 students of medicine followed a four-year course of study at the university and then spent the last two years of their training at Siriraj Hospital.

Heiser had prepared a short report on medical education after his visit to Thailand in 1915. The report echoed many of the themes articulated in the famous study of medical education in the United States undertaken by Abraham Flexner just five years earlier. That document was critical of medical schools that did not have full-time faculty and a science-based curriculum. The report extolled The Johns Hopkins Hospital (founded in 1889) and The Johns Hopkins University School of Medicine (founded in 1893) as the epitome of what a medical school should offer its students.

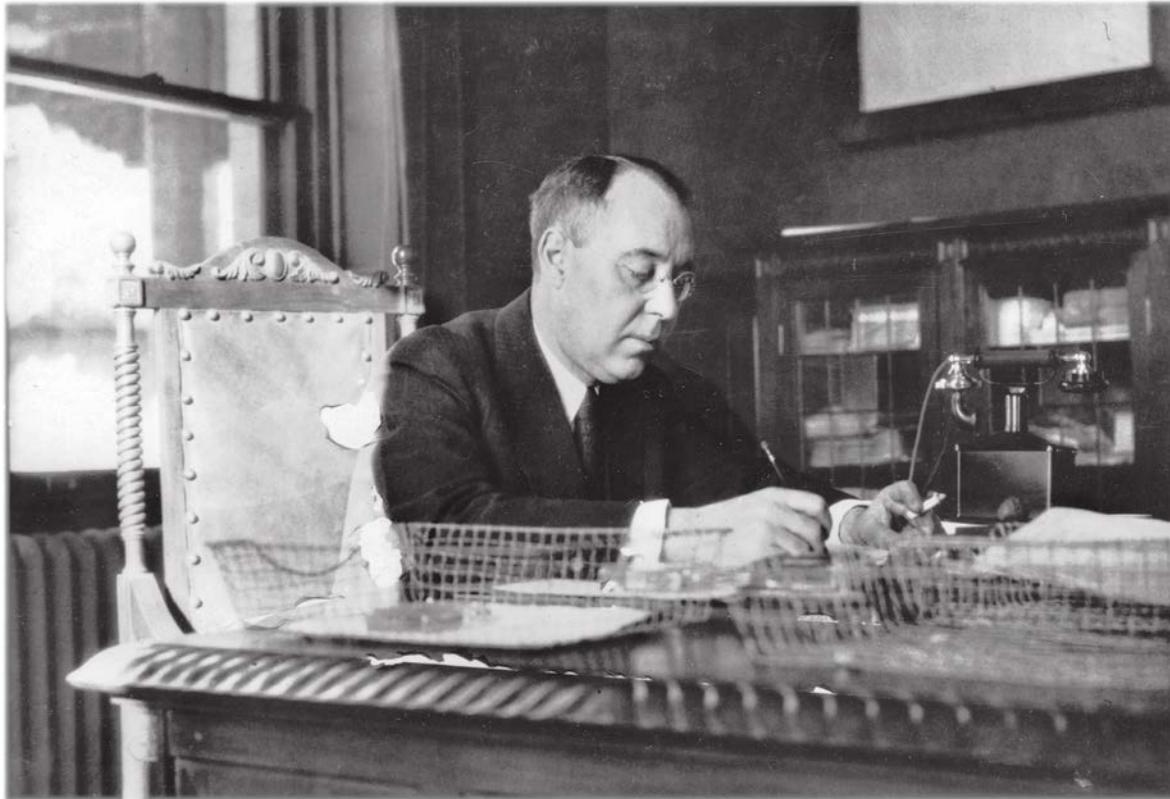
The Siam Red Cross Society, founded in 1893, operated King Chulalongkorn Hospital. The Society served as a critical partner in the hookworm campaign and worked with the Rockefeller Foundation and the Thai government to expand training for doctors and nurses. (Rockefeller Archive Center.)



In the U.S., Flexner's recommendations led to a fundamental transformation in medical education, funded in large part by Rockefeller philanthropies. Heiser's report on Siam echoed many of Flexner's recommendations. As in many American institutions at this time, the medical school at Chulalongkorn University included very little laboratory work, anatomy was "miserably neglected," and most of the faculty taught part-time. Heiser noted that the school graduated only 30 physicians a year.

In the short run, Heiser suggested that the best approach to coping with the limited capacity of Thailand's medical school might be to sponsor qualified Thai students for courses of medical training in the Philippines or perhaps Calcutta. His major concern about the country's medical faculty was that they insisted that instruction be in the local language. Heiser thought that such a requirement would produce a barrier between Thai professionals and the growing international world of medical research and knowledge. He wanted the training to be in English.

Dr. Richard M. Pearce, director of the Rockefeller Foundation's Medical Sciences Division, prepared a report on the state of medical education in Siam. Issued in 1921, the report set the stage for frank discussions between the Ministry of Education and the Foundation regarding a plan to improve medical education. (Rockefeller Archive Center.)



Heiser's initial interest was shared by others, including Dr. Milford Barnes. In addition to leading the hookworm campaign, Barnes served as a representative of the Medical Education Division of the Rockefeller Foundation. Working regularly with Thai government officials responsible for public health and medical education, he saw that high-ranking officials in Siam, including members of the royal family, and officials of the Siamese Red Cross Society also had an interest in promoting medical training. They had become familiar with the Foundation through working together with Barnes on the battle against hookworm disease.

As early as 1920, Barnes had begun to explore cooperation between the IHB and the Thai government on an effort to improve medical education. Heiser hoped that the King would instruct a high-level government official to issue an invitation to the IHB for a thorough investigation of medical training and a detailed proposal for how to improve it. Heiser worked diligently among the many officials he had come to know in Thailand during his earlier visits. When all the formalities were completed, the Thai Ministry of Education issued an invitation to the Foundation to conduct the study.

The IHB enlisted Dr. Richard M. Pearce Jr. to carry out the study and come up with recommendations. Pearce was an excellent choice. He had helped create the Medical Education and Medical Sciences Divisions of the Rockefeller Foundation. Because of his worldwide travels and investigations of medical training, he was well known as one of the leading experts on international medicine. Pearce's wide-ranging investigation included a discussion of medical care available in Thailand, and highlighted conflicts and problems that would complicate efforts to improve the training of physicians. Medical care in rural areas, for example, was delivered by numerous and popular "old practitioners," men who offered folk cures and traditional treatments for simple conditions. Complicated medical problems were not well treated by these methods, even though they enjoyed the support of much of the rural populace. On the other hand, American missionaries trained in western medicine who treated some rural people would be likely allies in supporting efforts to improving medical training. In the North they had built hospitals and schools, and a well-known modern facility in Chiang Mai. Other potential allies included the staff at Siriraj Hospital in Bangkok, the army, which had a medical facility nearby that provided medical training, as well as the Pasteur Institute, which was affiliated with the institution of the same name in Paris and provided basic medical testing and research facilities for the medical community in the country.

Pearce's report included a frank discussion of the immediate obstacles that the Foundation would face in promoting the training of doctors and

nurses in Thailand. He noted that students who aspired to a degree in medicine would need adequate science preparation. Also, Pearce suggested that the influence of rival European colonial powers, which had their advisers in branches of the Thai government, had a pernicious effect on the development of bureaucracy in Thailand. Heiser, too, had blamed self-interested European colonial powers for making Thai government agencies into “water-tight compartments.”

The resulting rigid boundaries between various ministries, departments, and agencies with an interest in medical training made it difficult to focus on the plan of action proposed by Pearce. Questions of who was to pay for improving medical education also became a serious issue. One government department handled the pre-university education needed to enhance the preparation of those who would study medicine, while another was responsible for the course offerings of the medical school that would provide the training. To change the system of medical practice and medical training would challenge traditional ways of doing things. Various officials and their agencies also had conflicting attitudes about education. Pearce and Heiser agreed that they needed a champion who could overcome the bureaucratic infighting.

H.R.H. Mahidol Adulyadej, Prince of Songkla, seemed as if he might become that champion. As a younger brother of the King, Prince Mahidol had great standing within Thai society. He also had the advantage of being well educated. He had studied in England and Germany as a youth, and had received in 1921 a certificate in public health from Harvard University. The Prince was also known for his generosity and keen interest in improving medical and nursing education in Thailand. “If the prince were to support an organization scheme,” Pearce observed, “it would practically guarantee its success.”

PRINCE MAHIDOL: MEDICAL AND NURSING EDUCATION

Prince Mahidol had a deep interest in public health and medicine that had been cultivated during his studies in Great Britain, Germany, and the United States. In 1905, when he was 13, his father, King Rama V, sent him to London to the Harrow School, where he remained for 18 months. His father, perhaps because of his acquaintance with the German Kaiser, then decided that Prince Mahidol should move to Berlin for military training at the Imperial Military Academy. When Rama VI ascended the throne, he convinced the Prince to enroll in the German Naval Academy. In addition

H.R.H. Mahidol Adulyadej, Prince of Songkla, played a leading role in the development of medical education, medical science, and public health in Thailand. Trained in Public Health at Harvard University, Prince Mahidol brokered a cooperative agreement in 1922 between the Thai government and the Rockefeller Foundation to expand facilities and medical training. (Harvard University Archives.)



to his studies, the Prince was assigned to a German battleship, where he cleaned decks and shoveled coal. He graduated from the academy second in his class. Returning to Thailand as war in Europe approached, he took a teaching position at the Royal Naval Academy. His tenure was marked by controversy because he advocated a Thai navy of numerous patrol boats designed to protect the country's extensive coastline, while senior officers favored a navy of fewer but larger heavily armed ships.

Prince Mahidol left the navy and began a search for another way to serve his country. One of his half-brothers, Prince Rangsit, provided Prince Mahidol with a new perspective. The two had been close growing up, and Prince Rangsit was anxious to show his half-brother his work as the Director of the Royal Medical College. He invited Prince Mahidol to visit him at Siriraj Hospital, where the medical school was located. Prince Rangsit did not have the status or financial resources that Prince Mahidol had. His mother was a commoner whereas Prince Mahidol's mother had royal blood. Prince Rangsit hoped to enlist his half-brother in his mission to improve medicine and public health in Thailand. He hoped Prince Mahidol would encourage greater royal support.

On his first visit Prince Mahidol was appalled at conditions in the hospital. Ultimately he agreed to help his half-brother, but he also decided to enroll in a university program in public health to prepare for a career in the medical field. He attended Edinburgh University, but suffered from a chronic kidney problem and concluded that the Scottish climate was not good for his health. He enrolled instead in the Certificate in Public Health program at Harvard University arriving in Boston in 1916 to begin his studies.

While engaged in his course work, the Prince continued to follow developments in Thailand. He worked on plans to improve Siriraj Hospital and also to organize a new medical school curriculum. At Prince Mahidol's request, Prince Rangsit recommended names of students for scholarships in medicine and nursing. Prince Mahidol hoped these students would return to Thailand to teach after training in the United States. He even paid some of their educational expenses out of his personal funds. His mother also helped fund the studies of two nurses each year.

In 1918, the Prince began to spend a lot of time with one of the nursing students, Sangwan Talaphat. They became engaged in 1919 and were married on a trip back to Thailand in 1920. After their marriage, they returned



to Cambridge, Massachusetts, where the Prince completed his studies. He and his wife had their first child in 1923, Princess Galyani. Later they had two sons, Prince Ananda and Prince Bhumibol, each of whom became king.

During the course of Prince Mahidol's studies at Harvard, the Rockefeller Foundation increased its interest in working with the Thai government to improve medical and nurses training. Late in January 1922, Dr. Pearce sent his proposal to the Minister of Education, detailing ways to improve medical education in Thailand. Early in February Prince Mahidol entered discussions about the proposal at a meeting in London with Rockefeller Foundation president George E. Vincent and Wickliffe Rose, the

With help from the Rockefeller Foundation, the Thai nurses in this picture studied abroad and then returned to Thailand to practice. (Rockefeller Archive Center.)



head of the International Health Board. With his knowledge of the proposal, his understanding of the issues of medical education, and his frank assessment of the challenges in his country, the Prince won both men over. Later in the month the Prince also met President Vincent in Bern, Switzerland, where they discussed in detail the financial requirements of establishing a modern medical school in Thailand. Vincent believed the Prince wanted to make clear that he knew the magnitude of what was required, in large part to ensure that there would not be any later misunderstandings.

Two months later, in April 1922, the Thai Minister of Education formally asked the Prince to serve as president of a committee to conduct negotiations with

the Foundation. In Paris six months later, Prince Mahidol and Dr. Pearce met for the first time. With Prince Mahidol representing the Minister of Education, they worked out in detail a cooperative arrangement. Once the Thai government and the Foundation approved, the Prince and Pearce met again, in London and New York, to plan implementation of the agreement. The cooperative arrangement included hiring six visiting professors to organize medical instruction; starting a building

program to expand the school; and establishing a Foundation fellowship program for post-graduate Thai teachers to study abroad. Another cooperative arrangement was reached later for additional building projects for the medical and nursing schools.

Cooperation at the highest levels also led to an agreement to improve the teaching of pre-medical subjects. This arrangement was between the Foundation and the Faculty of Arts and Sciences of Chulalongkorn University. Prince Mahidol approved this cooperative arrangement in September 1923, which led to a five-year agreement for four visiting professors and postgraduate fellowships for study abroad.

Prince Mahidol did more than take the lead for Thailand in negotiations for cooperative agreements with the Foundation. He assumed a direct role in

their initial implementation in 1924 and 1925 in Thailand. His first formal responsibility was at Chulalongkorn University, where he served as Director General. He began his tenure by initiating a full-scale study of its organization and curriculum. Of major concern was the nature of the university's mission: Was it to be dedicated primarily to preparing students for medical education or was it to be a more fully rounded institution? After lengthy discussions with government officials and leaders at the university, the Prince decided on the latter course of action. As a result, the Faculty of Arts and Sciences was expanded. While most students at the university were fixed on a medical career, the Prince saw the advantages of a more broadly based university and a faculty of arts and sciences that would eventually open opportunities for students to specialize in other fields, such as agriculture, teaching, and business. His next step was a building program that resulted in the construction of a science building and laboratories at the university.

In February 1924, Prince Mahidol took up a post at the Ministry of Education, where he oversaw all matters related to medical education. While he had numerous administrative responsibilities at the ministry, he also immersed himself in issues of pre-medical and medical education, and spent much time at the university and Siriraj Hospital. He was deeply involved in the plans to improve medical education, as well as issues of running the hospital; construction and renovation projects; and the general maintenance of its grounds. Late in 1924 he was heavily engaged in the reorganization of the hospital and the teaching of medical students. Teaching and the selection of teachers interested him, as well as programs to establish a nursing school. The Prince also was concerned about funding efforts to improve medical education and to advance the training of nurses.

In 1924, the Rockefeller Foundation trustees asked Alice Fitzgerald to survey nursing programs and facilities in Thailand. Fitzgerald had just finished a tour of duty with the International Health Board in the Philippines and was planning her return to the United States, but agreed to stop in Thailand. Foundation officer Edwin Embree was interested in an informal report. Fitzgerald's report highlighted opportunities for the Foundation to help improve nursing education and training in Thailand. Although cultural attitudes towards women undermined the status of nurses in health care, she noted that a number of men in leading positions in the field were eager to promote change. Fitzgerald also believed that efforts to reform the medical school would never be successful without a concomitant effort to improve nursing education.

Prince Mahidol shared Fitzgerald's view. In 1925, he reviewed a plan developed by Dr. Aller G. Ellis, the Foundation's representative at Siriraj

Alice Fitzgerald was an internationally recognized expert in nursing and administration when she arrived in Siam in 1924 to survey nursing education programs. After preparing her report, she returned to Bangkok in 1926 to launch a nursing school at Siriraj Hospital. (New York World-Telegram & Sun. Rockefeller Archive Center.)



H.R.H. Prince Bhanurangsi opened the new children's ward at Siriraj Hospital in Bangkok, February 4, 1927. The new facility represented one part of a joint effort by the Rockefeller Foundation and the Thai government to expand and improve facilities at Siriraj. (Rockefeller Archive Center.)

Hospital, to launch a five-year program for nurses. The plan was approved by the King in August and submitted to the Rockefeller Foundation soon afterward as a formal request for support. Over the next several years, as the program developed, the Prince played a key role in guiding Thai and Foundation officials as they worked together. He also made personal contributions to support programs and outstanding students, and enlisted contributions from his family as a way to expand support for scholarships.

Prince Mahidol worked outside of Bangkok as well. In view of his high status as heir to the throne, such trips took much time to organize, since he was expected to attend formal meetings, take part in inspections, appear at receptions, and give speeches. He often had to become involved in the details of these time-consuming arrangements. Travel also required that he be accompanied by a large entourage of officials and staff. In view of all these considerations, the Prince did not accept invitations lightly. One that he did accept was an invitation to dedicate a new hospital—the McCormick Hospital—which had been constructed by the American Presbyterian

Mission in Chiang Mai. The Prince knew of the medical work of the missionaries and wanted to show his approval of their efforts by taking part in the dedication ceremonies. While in Chiang Mai in January 1925, he also opened a new municipal hospital and health center sponsored by Siam's Red Cross.

Returning to Bangkok, the Prince faced an increasingly intense debate about nursing education. One major issue was the housing of nurses while in training. The Prince solved the problem by purchasing a nearby Presbyterian school, which was turned into a residence for the nurses and leased back to the hospital. He also advanced his own personal funds to renovate the nursing school facilities and to build a residence for Alice Fitzgerald, the "Lady Superintendent" of nursing who had agreed to lead the nursing training program. In addition, the Prince created a reserve fund for maintenance.

Important as all these activities were, the Prince ultimately concluded that he did not want a career as an administrator. The relentless cycle of problem solving, often of minor issues, proved tiring and at times frustrating. While he never lost sight of large issues related to

After earning his medical degree from Harvard University, Prince Mahidol chose to continue his medical training at McCormick Hospital in Chiang Mai. In 1924, staff from McCormick posed outside the hospital's new operating room. (Rockefeller Archive Center.)



improving health in Thailand through better training of doctors and nurses, he also discovered his own interest in research and teaching. He had carved out time to do research on malaria, and he taught vertebrate anatomy to pre-medical students as part of the course on biology at the university. He relished opportunities to speak publicly about his work, contrasting these speeches with the general remarks he was obliged to make at many different formal public events. In December 1924, for example, he was asked by the Ministry of Public Health to lecture on “practical sanitation” to visiting public health

Dr. Aller G. Ellis, an American physician with the Rockefeller Foundation's International Health Division, served as dean of the medical school and director of Siriraj Hospital in the 1920s. (Rockefeller Archive Center.)



officials from all over Thailand. He also took the visiting administrators on a tour of new sanitation facilities in Bangkok. Subsequently, the Prince wrote an article on the subject in a health bulletin published by the Ministry.

In 1925, many of the projects he had been heavily involved with were coming to fruition. Designs to his liking had been approved for new buildings, and new anatomy and physiology laboratories were under construction. Tough decisions had been made on medical education and the administration of the hospital. Alice Fitzgerald had been hired to head the nursing school and had succeeded in raising the number of applicants from thirty in 1920 to seventy-five by 1925.

These achievements and his experience as an administrator reinforced an idea that the Prince had contemplated for some time. Indeed, since receiving his certificate in public health at Harvard in 1921 he had often thought about returning to school to complete a medical degree. He had considered studying in London or Edinburgh, but decided to enroll at Harvard.

While he thought himself personally suited for the study of medicine, he also saw the degree as helping him in his future efforts to improve public health by bringing scientific medicine to Thailand. As he wrote to Dr. Ellis in a letter of

November 23, 1925, “It is most desirable for me to get a medical qualification, should I resume my connection again with the medical school.” The Prince’s move to Massachusetts would also facilitate his communication and collaboration with leaders at the Rockefeller Foundation.

Early in 1926 the Prince, his wife, and growing family settled in Boston. Prince Ananda had been born in Heidelberg in September 1925, while Prince Mahidol was being treated for his kidney condition. Prince Bhumibol was born in Cambridge, Massachusetts, in 1927. While the Prince applied himself with great enthusiasm to his medical studies, he and his wife took an interest in other Thai students in the area. Indeed, their home in the leafy Brookline area of Boston became known as the Brookline Palace. While the focus was on Thai students, others from foreign countries also benefited from Prince Mahidol’s generosity and hospitality. He enjoyed the life of a medical student, albeit one in special circumstances, and sought not to draw attention to himself and his family, preferring to be called “Mr.” Mahidol while in the United States rather than H.R.H Prince Mahidol.

Despite being far from home, he kept up with events at the university and hospital in Bangkok. On several occasions officials from the Rockefeller Foundation came to visit with him about the IHB’s work in Thailand. They discussed the education and progress of various fellows. They also talked about the education and training of various individuals who might become dean of the medical school. The Prince expressed his belief that Americans Dr. Aller G. Ellis, Director of Studies, and Alice Fitzgerald, the head of the nursing school, were crucial to the continued development of medical and nursing education in Siam.

Prince Mahidol graduated from Harvard in 1928 with an M.D. degree, *cum laude* and as a member of Phi Beta Kappa. But he continued to be troubled with health problems. He had to have an appendix operation immediately after completing his final round of examinations. To recover, he traveled in Europe for some rest and relaxation.

When he returned to Thailand in late 1928, the Prince focused on expanding the scholarship program for those interested in medicine, public health, and nursing. He also addressed more forcefully an issue that had interested him before: medical research focused on Thailand. In a speech delivered on the subject before the Medical Society of Siam he observed that it was one of the most pressing issues for the country. His own interest in research had been inspired by studies of children’s diseases that he had conducted toward the end of his medical studies at Harvard. Had it not been for his health, he would have spent six months after graduation advancing his studies of the subject.

While he reentered the life of his country, which included duties related to his status as heir to the throne, he also sought a post as a medical intern. Such a lowly position was necessary so that he could be considered a full-fledged medical doctor. Finding an appointment proved very difficult. Because of his high standing he was not allowed to be an intern at a government-supported hospital, which ruled out his obvious first choice, Siriraj Hospital. First in line to the throne, the Prince found his situation was further complicated by the presence of his attendants. Ultimately he selected McCormick Hospital in Chiang Mai, which was run by American missionaries. His retinue waited outside wards while the Prince attended his patients.

But the Prince's time at McCormick Hospital was cut short by a worsening of his renal disease. Forced to return to Bangkok, he prepared a will that provided substantial sums (worth about a million dollars in today's exchange markets) for the hospital and medical school. Income from his bequest would provide scholarships for doctors, nurses, and pharmacists studying in the medical school or affiliated with the hospital who wanted to study abroad. Soon after the will was signed, Prince Mahidol died on September 24, 1929.

The Prince's death proved a great blow to those interested in advancing medical training, practice, and research in Thailand, including the Rockefeller Foundation. Aware of his condition, the Prince had focused on what he wanted to impress upon his government and citizens. His will reflected his generosity, but it also encapsulated his conviction, long held, that the best way to improve public health and medicine in Thailand was to ensure that the country had a well-trained cadre of medical professionals. He sought to expand training opportunities within Thailand, but also strongly supported medical and nursing education abroad. Those so educated, he hoped, would return to Thailand to join the faculties that in the future would train an indigenous medical and nursing profession. From the perspective of the twenty-first century, the Prince pioneered what we would today recognize as institutional capacity building in public health and medicine.

AFTER THE DEATH OF PRINCE MAHIDOL

Among the Americans working in Thailand under the auspices of the Rockefeller Foundation, none felt the loss of Prince Mahidol more strongly than Dr. Ellis. The two men had developed a mutual respect and friendship that crossed cultural boundaries and transcended their status and roles. Their collaboration highlighted the importance of personal relationships in the challenging work of development.

Ellis had come to Thailand in 1919 to serve as head of the pathology department at Siriraj Hospital. There he met Prince Mahidol for the first time in 1920. Because of his previous experience in Thailand, the Rockefeller Foundation's International Health Board asked Ellis to return to Siam in 1923 as a professor of pathology and director of studies. Turning down a professorship and chair of the pathology department at the Jefferson Medical College in Philadelphia, Ellis agreed to return to Thailand in large part because of his high regard for the Prince.

In addition to his official responsibilities, Ellis became deeply involved in the work of the hospital and medical education. From 1926 to 1928 he served as dean of the Faculty of Medicine and as director of the hospital. He was heavily engaged in the building program and in reforming the curriculum, improving the nursing program, and establishing budgeting practices.

To support improved medical training in Thailand, the Rockefeller Foundation worked with the Ministry of Education to strengthen undergraduate education. In 1923, the first secondary students were admitted to Chulalongkorn University to pursue a pre-med curriculum focused on Chemistry, Biology, and Physics. (Rockefeller Archive Center.)





With support from Prince Mahidol and the Rockefeller Foundation, the curriculum at the School of Nurses and Midwives (pictured here) was revised in 1925. Students studied nursing for three years and midwifery for six months before graduating. (Rockefeller Archive Center.)

Ellis prided himself on being a hardheaded, realistic administrator. He believed that neither the Thai government nor the Rockefeller Foundation fully understood the implications of the agreements they had signed to develop modern medical training and practice in Thailand. Part of the problem was exaggerated hopes, especially in Thailand, that change would come quickly. Ellis knew that it would take time to reach the goals that each party to the agreement hoped to achieve. He also thought that progress would take even longer if there was not a business-like relationship between them. In many ways, Ellis saw himself as an administrator whose role was to work as an honest broker between the government and the Foundation.

After leaving the post of dean, Ellis rejoined the faculty. Later he headed the nursing school and for a time served as rector of Chulalongkorn University. Whatever his post, Ellis continued to be deeply involved in issues because of his membership on a medical council that advised the Minister of the Interior on issues affecting healing. He represented the Faculty of Medicine and served as part of a group of about eight physicians—the makeup of the committee was not static—who were charged by legislation passed in 1923 to advance medicine and related activities (such as nursing, midwifery, dentistry, and pharmacy) in the country. Over the years of his work in Thailand he developed close relationships with key officials in the Ministry of Education and the Ministry of Public Health.

Ellis was personally and professionally dismayed by Prince Mahidol's death. No one could match the Prince in influence and prestige. Equally important, the Prince and Ellis agreed on fundamental goals, despite their differing backgrounds, status, and personalities. Ellis had shouldered some of the Prince's responsibilities at Chulalongkorn University and Siriraj Hospital after the Prince left in 1925 to finish his medical studies at Harvard. While the

university and hospital were much improved by then, the Prince's presence was sorely missed, and Ellis worked hard to keep his objectives alive.

The years after Prince Mahidol's death were filled with troublesome developments. Ellis was a man of strong opinions, and there were many controversial issues in the early 1930s. The collapse of the international economy early in the decade gave him new cause for alarm. The worldwide economic depression made it virtually certain that the Thai government would not be able to pay its full share of the budget, and Ellis feared the breakdown of the agreements between Thailand and the Foundation. Nevertheless, the Thai government and the Foundation remained committed to the program.

A dramatic change in government in 1932 resulted in the creation of a constitutional monarchy to replace the absolute monarchy that had governed Thailand for decades. After a bloodless coup led by a relatively small group of academics, intellectuals, government workers, and members of the military, there was general agreement that the country needed to remain a monarchy. Political instability continued for some time, however, heightened by King Rama VII's abdication in 1935 and the National Assembly's subsequent decision to award the crown to Prince Ananda Mahidol, who was nine years old and living in Switzerland.

Despite continuing anxiety over the uncertain political situation, Ellis concluded that the new government was not about to turn its back on the accomplishments in medicine that had been achieved. In fact, the country's new leaders desired to make a good impression on the people and saw advocating improving medicine as a good way to gain public support. The partnership with the Rockefeller Foundation would continue.

Ellis understood that great cultural differences made collaboration between the American representatives of the Rockefeller Foundation and the people of Siam difficult. Reflecting a common western perspective of the time, he noted in 1935 that "The methods here are Oriental and differ widely from ours." But after working more than a dozen years in Thailand, he had a greater understanding of the people who were now his colleagues. So the hard-nosed and, at times, prejudiced administrator could observe that "it has been my uniform policy to work out, for school and hospital, a routine of which the details include many local methods, in the hope that they will continue to employ them after the visiting staff leave and thus attain some degree of the principles we have endeavored to impart."

Ellis and others, both American and Thai, worried about what might happen after the cooperative agreements between the Rockefeller Foundation and the government of Siam ended in 1935. Without the agreements,

bureaucratic crosscurrents and parochial interests would again hold sway at the university and hospital.

Even so, there was little doubt that Ellis would be able to hold his own. Ellis seemed to enjoy the give and take of bureaucratic combat. Where Prince Mahidol had tired of administrative tasks, Ellis never did. But Ellis was also a pragmatist. From the beginning of his career he appreciated that many things could not be changed. He accepted that the people in Thailand with whom he worked might have different ways in approaching problems.

When the agreements did come to an end in 1935, Ellis thought that much had been accomplished. There had been great advancements in the medical and nursing schools, the university, and the hospital. Continuing attention to training professionals who would carry on the work of education, at both the medical and nursing levels, reflected the success of work begun by the Prince, Ellis and others. Ellis was pleased that Thai physicians were replacing the westerners brought in at the beginning of the agreements to head major departments in the medical school.

Ellis hoped the changes that had taken place at Siriraj Hospital would serve as a model of hospital care to be emulated throughout the country. In addition, he anticipated that the government would build up-to-date hospitals in rural Thailand, facilities that would serve as centers of a state-run system of medical treatment. His greatest expectation was that these new hospitals would be staffed by doctors and nurses trained in Bangkok at Chulalongkorn University and Siriraj Hospital.

Ellis resisted a movement in Thailand to turn out doctors with only two years of medical education. Although he understood why the government, in the midst of an international economic slowdown, might want a much less expensive program to send doctors out to the rural parts of the country, Ellis feared that graduates without a full medical education would not be much better than the old practitioners who dominated care in those areas. He could understand why many Thai officials and leaders in the press would not want to openly confront the old practitioners. They had a long history and were culturally very much in tune with many of the people they served in the countryside. But Ellis was disappointed that Presbyterian missionaries also approved the idea of what he called "second-grade doctors." He acted as if the missionaries were traitors to the cause of modern medicine in Thailand. He found some comfort that many of his Thai medical colleagues—some trained in the West—agreed with him.

When the agreements did come to an end in 1935, Ellis thought that much had been accomplished.



The new curriculum developed for the Faculty of Medicine at Chulalongkorn University emphasized practical science. In the Laboratory of Bacteriology in 1930, students performed experiments designed to teach them basic concepts related to the transmission and development of disease. (Rockefeller Archive Center.)

Ellis seemed blind to the idea that these two-year doctors would be better than the old healers, and that with time, working among the rural population, they might create an appreciation of modern medicine. It seemed to make more sense to let the old healers ultimately be supplemented by those with some training in the ways of modern medicine. It certainly was a better solution than forcibly replacing them by government decree, which would have been one approach to ensure that only qualified doctors be active in the countryside.

In retrospect, what Ellis and his supporters could not see in 1935 was that the cooperative arrangements between the Thai people and the Rockefeller Foundation laid the groundwork for the advances in medicine that were to come in Thailand during the later 1930s, the 1940s, and the post-World War II period. Between 1917 and 1933 the Rockefeller Foundation had invested \$199,595 in public health and \$678,640 in medical programs in Thailand (equal to more than \$3,587,462 and \$12,197,675 in 2012 dollars). In addition, Foundation funding enabled sixty-four Thai fellows to receive training and education. By the time Ellis retired and returned to the United States in 1938, these contributions had helped the Thai people and their government increase human and organizational capabilities in the fields of medicine and public health.

Modern students of economic and social development prize the enhancement of capabilities as essential to the process of increasing the well-being of a community or a nation. Establishing capabilities, while being sensitive to a country's culture, made such advancement possible. Building indigenous capabilities through programs that were not permanent also made it less likely that Thailand would become dependent on donors.

With the end of the collaborative agreements, the Rockefeller Foundation shifted its attention to other parts of the world. Despite the ravages of World War II, however, Thailand continued to develop. Anchored in the investments made during the earlier part of the century, Thailand emerged in the post-war era as a leader in Southeast Asia in the delivery of medical care, in medical research, and in medical education. The Faculty of Medicine was recast in 1943 as a separate institution: the University of Medical Sciences, which was later renamed Mahidol University to honor the Prince. In the late 1950s, the Rockefeller Foundation returned to help the cause of medicine in Thailand by providing new support for work at Siriraj Hospital. These commitments became a prelude to a new era of Foundation involvement in Thailand, but this time the focus would be on agriculture as a critical path to continued development.



BUILDING ON A HISTORY OF ACCOMPLISHMENT AT MAHIDOL UNIVERSITY

The revolution in medical and nursing education that began with the partnership between Thailand and the Rockefeller Foundation early in the twentieth century continues today. At the Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand's largest and oldest medical school, future physicians pursue various specialized degrees.

The Rockefeller Foundation continues to invest in developing curriculum focused on the most effective strategies for public health and individual wellness. A multi-year grant to the Faculty of Tropical Medicine under the Foundation's Transforming Health Systems initiative, for example, supports the work of the Center for Biomedical and Public Health Informatics.

The Foundation has also provided a capacity building grant to the Institute for Population and Social Research at Mahidol to strengthen the institute's collaboration with the Global Health Diplomacy Network in Southeast Asia.

Celebrating and building on the rich history of the partnership between Mahidol University and the Rockefeller Foundation, the annual Prince Mahidol Award Conference, supported by both institutions, highlights best practices in the effort to strengthen health systems.



THAILAND AND THE GREEN REVOLUTION

Rice has long been at the center of Thai culture. In the fertile flood plains and deltas as well as upland terraces of modern day Thailand, people have cultivated varieties of rice for nearly 10,000 years. For centuries, Thai households have been organized around rice production. Rice accompanied every meal and most ceremonies and celebrations. Farmers gave thanks to Mae Phosop, the Rice Mother. Greeting one another, neighbors called out “khin khao rue yang,” meaning literally “have you eaten rice yet?”

Rice has also been extremely important to Thailand’s export economy since the nineteenth century. After signing the Bowring Treaty with Great Britain in 1855, which some historians have characterized as colonization through trade, Thailand’s exports to western countries grew dramatically, supported by major public investments in roads and canals that enabled the conversion of large areas of land into rice production. This expansion of rice production enabled dramatic increases in exports, from 10,000 tons a year in the 1860s to half a million tons in the 1890s and over one million tons by the 1920s. Most of these exports were shipped to Singapore and Hong Kong en route to China and other Asian nations. After World War I, however, the Thai population began to grow much more quickly, increasing the demand for rice and other foodstuffs at home. When World War II disrupted rice production, the domestic food supply and export revenues dropped sharply. In the postwar years, the country faced a significant challenge to increase



rice production to keep pace with population growth, which peaked at over 3 percent per year, while meeting the need for export revenues to fuel economic prosperity.

Rockefeller Foundation officials and Thai leaders came together in the 1950s to increase the production of rice and other food crops. The effort was part of the Foundation’s global initiative that would become known as a green revolution to conquer hunger in the developing world. Combining scientific research with an increased emphasis on education and technology in the field, this new initiative produced remarkable results. Thus the Foundation contributed to the ongoing building of human and organizational capacities in Thailand and to the development of trained scientists, researchers, and technicians, who became fully enmeshed in the scientific networks that propelled the first Green Revolution in crop breeding and a second Green Revolution in rice biotechnology.

Women winnowing rice at Kasetsart University’s Suwan Farm in the 1970s. As part of its effort to promote a Green Revolution in Asia, the Rockefeller Foundation worked with the Thailand Department of Agriculture’s Rice Improvement Program and Kasetsart University to develop hardier and more productive varieties of rice. (Rockefeller Archive Center.)

Support for what became the Green Revolution started cautiously at the Rockefeller Foundation, but the basic elements of the program were rooted in years of practice. Even before the Foundation was created in 1913, the Rockefeller-funded General Education Board (GEB) combined support for agricultural research with community education programs to teach farmers in the United States ways to increase their yields. In China in the 1930s, the Foundation funded a rural reconstruction program that also included education and research programs to increase agricultural productivity. This history led one of the Foundation's staff members and the U.S. ambassador to Mexico in the late 1930s to propose a Foundation initiative to help relieve Mexico's growing food crisis. In 1940, these conversations came to fruition after Henry Wallace, soon to be vice president of the United States, visited Mexico.

An agricultural specialist himself, Wallace was dismayed at what he found. Large numbers of the population eked out only enough food for a barely sufficient diet. Over half of the wheat consumed in Mexico was imported, as was a significant proportion of maize. Convinced that something needed to be done, Wallace pressed the United States Congress to help. When Wallace's entreaties failed in Washington, he found a more receptive audience at the Rockefeller Foundation, where this topic had been under discussion for years.

Rockefeller Foundation president Raymond B. Fosdick and his colleagues believed that there was a close relationship between malnutrition and disease. Starting in 1935, the Foundation had begun making grants to study this relationship, as well as nutrition's influence on human behavior and well-being. Laboratory projects focusing on atabrine, protein, calcium, and riboflavin led to the first nutritional public health grant, to the Provincial Bureau of Health in Quebec, Canada. This work sparked a growing interest in the systemic effects of nutrition on poverty, education, and health, and set the stage for an innovative approach to development.

The onset of World War II opened the door to new initiatives within the Foundation. Forced to abandon many of its projects in Europe, the Foundation was looking for new ways to fulfill its mission to promote the well-being of mankind in the poor regions that were less affected by the war. After Wallace's visit, the Mexican government extended an invitation to the Rockefeller Foundation to study the agricultural situation in Mexico and develop a plan. As the Foundation's trustees observed, they saw the new project "as a natural outgrowth of the [Foundation's] interest in public health and the biological sciences."



Launched in 1943, the joint Mexican Agricultural Program (MAP) was run in conjunction with the Mexican Ministry of Agriculture. The Foundation initially provided \$20,000 for a survey and almost \$200,000 for equipment and construction costs. From the beginning, the Foundation was seriously involved in the operational aspects of the Mexico project. Foundation officials, convinced of the magnitude and urgency of the problems in Mexico, took a decidedly pragmatic approach to the challenges. They wanted initiatives that worked to improve the long-term output of Mexico's basic foods. They needed "buy in" from Mexican officials who would be responsible for the program when the Foundation eventually scaled back its own operational staff and turned the project over to local agronomists. Foundation policy by this time accepted the idea that its goal was to "help the Mexicans help themselves," ultimately ensuring that they did not become dependent on the outside funds provided for the program. Foundation officials also thought big. Their goals included the extension of what was learned in Mexico to the rest of Latin America, and ultimately to the world. This applied to similar country programs in Colombia, Chile, and India.

J. George Harrar, who would later become president of the Rockefeller Foundation, was assigned to run the Mexican Agricultural Program. Harrar assembled a talented team of scientists, technicians, and geneticists who developed distinctive, high-yielding wheat and corn crops that grew well in differing

As corn production increased in Thailand, the government issued stamps in the early 1970s to celebrate this important new food crop. (Rockefeller Archive Center.)



climates. The team included Norman Borlaug, who would win a Nobel Peace Prize in 1970 for his research on behalf of the Rockefeller Foundation. In little over a decade, Mexico became self-sufficient in wheat and maize.

These extraordinary achievements received increasing attention among scientists and other professional agriculturalists in the 1950s. Greater public awareness of what became known as the Green Revolution grew as anxieties increased about a population “explosion” in the developing world, which might result in catastrophic famines. Stoking these concerns was Paul R. Ehrlich, a famed evolutionary biologist at Stanford University, who received much attention for predictions in the 1960s that famine would kill hundreds of millions of people in the decades of the 1970s and 1980s.

Alarm over the possibility of famine in India and Pakistan brought the Green Revolution to Asia. As early as the 1950s, the Rockefeller Foundation began discussing an effort to increase agricultural production in the Far East. The board considered a “rice proposal” at its fall meeting in 1954. Trustee Chester Bowles, who had recently completed a two-year stint as U.S. ambassador to India, wrote Dean Rusk to support such an initiative. From his own point of view, he felt it would benefit the people of Asia enormously and would help to support the fight against Communism. Bowles suggested that the center should be in India because of its vital importance to the region.

Borlaug launched a campaign in the early 1960s to ward off a catastrophic famine. He had to convince government officials to make new varieties of wheat from Mexico available to farmers in South Asia. Two years of field

demonstrations and lobbying by Borlaug finally convinced the Indian and Pakistani governments to accept his advice, despite the opposition of some of their own agriculturalists. Tons of seeds were shipped in and planted. With increased use of fertilizers and better irrigation made possible by the drilling of thousands of wells, crop yields in India and Pakistan increased even more quickly than they had in Mexico.

Despite the achievements in India and Pakistan, debates continued over how best to ensure that famine at some time would not kill millions of people in the developing world. Ehrlich remained skeptical that “crash programs” like Borlaug’s would solve the long-term problem. Meanwhile, other agricultural specialists became convinced that the scope of the Green Revolution needed to be expanded. Indeed, what Borlaug had done with wheat attracted the attention of researchers who specialized in other crops.

For many researchers, politicians, and policy makers, the Green Revolution became defined by rice. Rice is the most important single foodstuff in the world. It is after all the foundation of the food supply in Asia, and the essential staple of millions of poor peasants. In Thailand, 70 percent of the country’s arable land (28 percent of total land) was devoted to rice production.

Enhancing Asian rice output would be a difficult task. There were many varieties, and the conditions under which they were grown varied in different regions of the world. Researchers had to work on creating rice breeds adaptable to local growing conditions and resistant to local plant pests and diseases that damaged crops. Their goal was to bring about hardy and nutritious harvests in countries as diverse as Thailand, India, Pakistan, Cambodia, Laos, and the Philippines. In Thailand especially, they found eager and experienced partners.

THAILAND AND THE GREEN REVOLUTION

Thailand was well positioned to benefit from the Green Revolution’s attention to rice. Over the centuries, a culture based on long experience with rice growing had stockpiled a deep store of knowledge about the conditions and practices most conducive to its production. Rice farmers had learned to adapt to subtle as well as major changes in environmental conditions, tastes, and markets.

At the end of the nineteenth century, the Thai government, building on the country’s rich agricultural heritage, began to assist farmers in honing their knowledge of and skills in rice growing. The government improved systems of irrigation and built roads to support agriculture. It also promoted agricultural education for all students, from primary schools to vocational institutions and



specialized universities that enhanced farmers' skills and knowledge. In the parlance of the contemporary field of development studies, Thai officials engaged in a many-decades-long campaign of capacity building, thereby strengthening the country's "human capital" employed in agriculture.

Interest in agricultural education in Thailand was nothing new, especially in a country where agriculture remained a key part of the economy. In 1898, King Chulalongkorn (Rama V), as part of a reorganization of government administration, created a Ministry of Education, which included instruction about agriculture as part of its mandate. In the years following, the student population grew. In 1921, education became mandatory through the primary level. Primary schools included teaching about farming in the curriculum. Children learned to garden and thus mastered the basic principles of agriculture as well as a way of life. Teachers also studied agriculture, and from 1914 to 1923 a teacher training school provided a two-year certificate program in agricultural subjects. By the end of the 1920s, because of the specialized education of teachers, Thai students in primary and secondary schools were provided technical-school levels of training in agriculture.

In Thailand and the Philippines, researchers supported by the Rockefeller Foundation focused on developing rice varieties that could withstand deep flooding. (Rockefeller Archive Center.)

Advanced education in agriculture had begun in 1909 in the School of the Ministry of Agriculture, with the introduction of a college-level course of study in agricultural subjects. It merged with the Civil Service School in 1913 under the auspices of the Ministry of Public Instruction and Religion. In the mid-1930s, because of financial constraints resulting from the worldwide depression, there was much ferment about the future of agricultural education. Officials had to decide whether to merge or close schools. In 1935, mergers led to the creation in Chiang Mai of the College of Agriculture, which was a division of the Department of Agriculture and Fisheries. In mid-1938, the Ministry of Agriculture set up the Central Agriculture Station in Bangkok and moved the College of Agriculture from Chiang Mai to Bangkok. At that time the college offered a three-year certificate program.

The year 1943 proved to be a turning point in advanced agricultural education in Thailand. Legislation was passed in the middle of World War II to establish Kasetsart University, which was to be devoted to university-level agricultural studies and research. At the same time, the Thai government funded the building of the Huntra Rice Experiment Station. Over the next two decades, the station would become a leader in research on deep-water rice and play a key part, with the Rockefeller Foundation and other organizations, in revolutionizing the cultivation of rice in Southeast Asia.

INTERNATIONAL RICE RESEARCH INSTITUTE

International collaboration began in 1960. Inspired by the advances in Mexico and Latin America, the Rockefeller Foundation, joined by the Ford Foundation and the government of the Philippines, established the International Rice Research Institute (IRRI) in the Philippines. IRRI's goal was to develop breeding lines that could be distributed over all of Asia.

Thailand, as a major producer and exporter of rice, was involved in the Institute from its inception. Thai Prince Chakrabandhu, who had advanced academic training in agriculture and was the vice rector of Kasetsart University, was a founding member of IRRI's Board of Trustees. In 1966, IRRI opened its Thai office under the leadership of Ben R. Jackson, who had worked for sixteen years in Bangkok and made numerous contributions to improved rice breeding. Jackson was one of several Rockefeller Foundation scientists seconded to IRRI. Official interest in the work of IRRI has been acknowledged at the highest levels of the Thai Royal House. Her Royal Highness Princess Maha Chakri Sirindhorn, for example, opened the sixth International Rice Genetics Symposium in Manila in 2009. She also formally launched IRRI's 50th anniversary at the Institute's headquarters in the Philippines.

Like the earlier efforts by the Mexican Agriculture Program to increase wheat production, IRRI launched a program of research and development to improve rice production. Chief among the concerns was development of rice plants that could grow even when they were submerged due to deep flooding. Other varieties of rice were bred to be disease resistant. After much effort, scientists crossbred thirty-eight different kinds of rice to produce a particularly high-yield, short-stem breeding line that became popularly known as “miracle rice.” The new rice strain was named “IR8.”

Seeds of “miracle rice” produced in the Philippines and shipped to South Asia was ready for planting in 1966 in India and Pakistan. As a result of this work and earlier efforts to introduce short-stem wheat, harvests increased and the threat of famine receded in these two countries. Speaking in 1968, William Gaud, director of USAID, marveled that over the previous five years Pakistan had almost become self-sufficient in food, and India was only a few years away from food independence. These stunning initial results were followed by the development of IR36, a progeny of IR8 with disease and pest-resistance and improved quality. By 2000, well over half of the rice grown in the world was a product of research on rice breeding conducted and sponsored by IRRI.

Tightly connected to IRRI’s efforts were affiliated national institutes and centers in member countries. Advances in Green Revolution rice often came from these centers. Because of Thailand’s expertise in deep-water rice breeding through the work of the Huntra Rice Experiment Stations, IRRI agreed in 1993 to transfer all of its deep-water rice breeding undertakings for Southeast Asia to Thailand. A large number of the country’s rice researchers were at one time scholars associated with IRRI, and strong ties with Thailand grew closer over the years. In 2007, for example, Thailand’s Ministry of Agriculture and Cooperatives and the IRRI agreed to strengthen their collaboration in researching rice.

Focusing on deep-water rice cultivation is only one example of the mutual benefits resulting from the IRRI network of specialists working in different countries. Thailand also benefited from new techniques of rice growing, the use of fertilizer, and integrated pest management. As a result, it was possible to have two or three crops of rice per year, including so-called off-season or dry-season crops. Substantial public investment in



Prince Chakrabandhu (center) was a founding member of the board of trustees of the International Rice Research Institute. He posed for this picture with Thai farmers and Rockefeller Foundation staff members in the early 1960s. (Rockefeller Archive Center.)



irrigation was essential to making harvests possible in the dry season. Public investment also played a key role in solving another historical problem, the availability of labor to gather rice at its peak. Quality deteriorated the longer the rice was not harvested. The need for field workers during the harvest season was reduced by mechanization, however, which required government assistance to underwrite financing of the equipment. Even so, Thailand did not abandon long-practiced methods of growing rice. Farmers continued to use trial and error to increase output. As a result, agriculture in Thailand was a combination of the new and the old, and the old modified by the new.

An equally important consequence of the Green Revolution for Thailand was an increase in rice exports. Early in the twentieth century, Thailand was already exporting one million tons of rice per year. Exports continued to grow, making Thailand the largest single exporter of rice in the world, while at the same time Thai rice farmers were able to meet the needs of the country’s population as it quadrupled during the twentieth century. Government

Dwight C. Finrock, a Rockefeller Foundation staff member, assessed rice fields used for testing fertilizer at the Suwan farm near Pak Chong in 1967. (Neil MacLellan, Rockefeller Archive Center.)

policy played an important role in these developments. Economists have focused on the significant reduction of government control of the rice trade, especially the elimination of the rice export tax. Income from overseas sales contributed to the growth of middle-class consumption patterns among wealthier farmers. Since much of the spending was for consumer goods and services produced in Thailand, the overall effect was to increase the country's GDP.

Nevertheless, the Green Revolution over time produced a number of critics. Negative long-term effects from the increasing use of chemical fertilizers and pesticides that replaced commonly accepted natural fertilizers like animal manure troubled the critics. Particularly alarming to some scientists was the possibility that artificial fertilizers and pesticides would remain for long periods of time in the soil and water, polluting the environment and posing long-term dangers to humans and animals.

Social scientists also weighed in on the debate over the effects of the Green Revolution. New growing techniques and the adoption of agricultural machinery, they argued, drove up costs for poorer farmers. Wealthy agriculturalists and middlemen benefited the most from new technologies and new seeds, while poor rural farm families were sometimes driven into urban slums. Western governments were also accused of politicizing the Green Revolution, using it as a weapon in the Cold War campaign against communism. Politicians and some journalists linked advances in producing food to private corporations, which were accused of being more interested in profits than the end of hunger and improvement in nutrition. Even the Foundation's own leadership acknowledged that a "second phase" was needed that would look at the Green Revolution's effects on nutrition, family size, jobs, rural-urban migration, employment, land reform, distribution of income, and cultural values. "Science and technology without moral ordering of their priorities and full anticipation of their effects exists in a dehumanized, amoral void," proclaimed Rockefeller Foundation president John H. Knowles in 1972.

Not surprisingly, counter arguments have surfaced during the debate. Environmental defenders of the Green Revolution, for example, point out that by increasing agricultural productivity and output, there has been a reduced need for clearing more and more land, which has led to deforestation in places where Green Revolution techniques did not take hold. The debate in Thailand and throughout the world is not over; it endures even as deforestation continues to be a major international ecological issue.

Shortly after being appointed president of the Rockefeller Foundation in 1980, Dr. Richard Lyman visited Thailand. Honoring the long history of the Foundation's relationship with Thailand, King Bhumibol Adulyadej received Lyman and his wife Jing. (Rockefeller Archive Center.)



While the first rounds of the debate over the environmental effects of the Green Revolution were underway, advances in biology, many supported by the Rockefeller Foundation’s discovery research program in molecular biology led by Warren Weaver, were about to provide new techniques that added entirely novel approaches to improving agricultural production. These scientific developments led to what has been called the “second” Green Revolution, based on advances in biotechnology. The Rockefeller Foundation, IRRI, and Thailand played important complementary roles in these developments.

Biological study itself went through a revolution in the 1970s. Increasing attention to microbiology led to intense scrutiny of biological phenomena at the cellular and molecular levels. Knowledge of life at this level changed the understanding of basic biological processes. Very rapidly, by the later 1980s, the field had developed sophisticated tools to alter the genetics and biochemistry of cells, and thus biological processes. Improving crops was one of the most obvious places for these tools to be employed.

Advances in molecular and cellular biology that allowed for a greater understanding of DNA became the cornerstone of the second great wave of the Green Revolution. Mastering rice’s genome—its genetic makeup—led to the tools that significantly strengthened conventional rice breeding and made genetic engineering possible. Because Thailand had been involved from the beginning with the Foundation’s support of rice research, it became part of the most recent aspect of the Green Revolution—biotechnology and genetic engineering. Thai scientists working through local universities and research institutes established one of the key nodes in the Foundation’s network. The Rockefeller Foundation’s work in this arena, however, was influenced by changes taking place within the Foundation as new leadership stepped to the helm.

The beginnings of the biotech revolution were underway when Richard W. Lyman became president of the Foundation in 1980. He determined that the Rockefeller Foundation needed to change the way it did business. He had been president of Stanford University (1970-1980) where he oversaw a great increase in its endowment, much of it devoted to changes in the sciences, especially biotech and computer science. Because of his experience at Stanford, Lyman understood complex organizations. Early in his tenure at the Foundation, Lyman posed an essential question. The Foundation still had program staff in several countries, and some program officers were leading the international centers it supported—IRRI, CIMMYT (the International



Maize and Wheat Improvement Center), and CIAT (International Center for Tropical Agriculture). While Lyman thought the centers had been an important achievement of the Foundation, he asked, “Why do we need to continue to have our own staff [in these areas] when those centers now exist.”

To help him answer that question he appointed a small external advisory committee. The group of three included top administrators at the University of Wisconsin and Texas A&M University along with Robert S. McNamara, President of the World Bank. The advisory committee produced a report, “A Review of the Rockefeller Foundation Conquest of Hunger Program, August 1982,” which agreed with Lyman about the need for new directions. They thought it was no longer necessary that

Gary Toenniessen, a microbiologist, led the development of the Rockefeller Foundation’s Rice Biotechnology Program. Using new techniques developed in molecular biology, the program sought to make more resilient and nutritious strains of rice available to poor farmers and consumers and to expand rice biotechnology research in Asia. (Rockefeller Archive Center.)

“expatriate scientists go out and actually do research.” Instead, they said, the Foundation should concentrate its support of agriculture on research work conducted at international centers and on strengthening national programs at universities and research institutes in countries the Foundation was interested in. Encouraging talent in the developing world to conduct research and apply it to the needs of their own countries, Lyman concluded, should be the Foundation’s goal. Consequently, the Foundation phased out many of its operational activities. Lyman believed that foundations should not be operational. He thought they should provide funds so that others “could get the job done.”

Of course, some Foundation officers assumed that empowering others to achieve on their own was what they had been doing. Lyman concluded, however, that the Foundation had to narrow and sharpen its focus. Following the recommendations of the external advisory committee, he reasoned that the Foundation should devote its energies to two major initiatives. The first was to ensure that advances in cellular and molecular biology be supported and used to improve tropical crops, the staples of the poor in the developing world. The second initiative was to create a program for Africa.

While the Africa program reflected an important change in emphasis and direction for the Foundation, it was the initiative in cellular and molecular biology that would have far-reaching effects on Thailand and the production of rice. At the Rockefeller Foundation, microbiologist Gary Toenniessen was tapped to take responsibility for applying the new techniques of his discipline to improving crops. Toenniessen was the right man at the right place at the right time. In 1971, when he joined the Foundation, he had been part of the

“It was a wide-open opportunity.”

Gary Toenniessen

first small wave of new PhDs in biology who specialized in microbiology and also molecular biology. Assigned to direct the Rice Biotechnology Program, Toenniessen traveled to universities and research institutes all over the world to determine what was being done to advance the use of

biotechnology in agriculture. Aside from some Japanese scientists working on rice molecular biology, there was a dearth of serious activity focused on rice. “So,” as Toenniessen concluded, “it was a wide-open opportunity for the Foundation to lead the effort to create a significant biotechnology research program for the most important food crop in the world.”

Still, before asking the Trustees for the funds necessary to begin a full-sized program to support biotechnology research on rice, there was more analysis to do. At the instruction of the Foundation’s new director of agriculture, Alva A. App, Toenniessen conducted a thorough review of areas

in which biotechnology could make the greatest difference. He studied the eight top tropical crops to determine which would most benefit from using the new tools of biotechnology. Rice was clearly the most likely to benefit. The Foundation had long collaborated with an international cadre of rice scientists who had already created the strong breeding programs necessary to provide a basis for applying the new tools to rice improvement.

In 1984, Foundation trustees approved a long-term commitment of at least 15 years to applying biotechnology to increase rice productivity and output. They were also advised that roughly \$80 million would need to be committed to the initiative. By the time the program was phased out in 2001, the Foundation had actually spent close to \$120 million. The approved program consisted of three main components. The first was a solid directive to construct an entirely new research and applied field of science—rice biotechnology. There were no rice molecular biology research programs at the time in the United States, Canada, or Europe, or at premier rice research institutes like IRRI. To fashion the tools to make a new technology practicable required genetics—mapping the rice genome at the DNA level; determining the relationship between rice and its common pathogens at the molecular level; and developing tools for introducing new genes into the rice genome.

As daunting as the task of genetic mapping was, an equally complex problem was to find the traits that scientists would want to introduce into rice—the second component of the program—once the tools were available to do so. In prioritizing traits, Robert Herdt, one-time head of the economics department at IRRI, was hired to adapt the concept of opportunity costs common to economic analysis. What yield would be foregone by choosing one trait over another? Or by selecting a trait over one that did not exist but that would have contributed to a greater yield if it did exist? By imagining the nature of a trait that did not exist, scientists might conclude that their priority was to work on creating the non-existent trait.

The third component had its challenges too: building scientific capacity in research institutions in Asia. In determining where to focus resources, the Foundation selected countries that already had strong programs focused on rice productivity. The goal was to train researchers and scientists in countries like Thailand, India, China, and the Philippines to use and develop on their own the tools of biotechnology. Toward that end the Foundation sponsored almost 400 fellowships for Asian scientists for advanced study of cell and molecular biology in the United States, Europe, Australia, and Japan. Again, Thailand played an important role when the Foundation hired John O’Toole, also an IRRI alumnus, to lead the capacity building component of the program from an office based in Bangkok.

Farmers in northern Thailand outside Mukdahan. (Patrick de Noirmont. The Rockefeller Foundation.)



IRRI played another important role, using Foundation funds to support 191 scholars—73 at the Master's level, 30 at the PhD level, 86 technicians (on-the-job trainees), and two interns. However, most of the PhD scholars were sent to premier research programs in the USA, Europe, and Australia, where they themselves invented tools that could be applied to the needs of rice technology in their home countries. Foundation funding continued once these scientists returned to their home institutions, where they continued developing the molecular techniques and tools that promoted increased rice output. As Toenniessen observed, "Over time, the funds that were going into tool development and into work on the traits shifted from the West—the U.S. and Europe—to the Asian countries, particularly China, India, the Philippines and Thailand, where they began developing real capacity [on their own]." When colleagues at institutions and corporations not supported by the Foundation increasingly turned to these scientists in Asia for their knowledge of the underlying science and its application to increasing rice output, one of the goals of the program was realized—to develop the capacity for fundamental research in rice biotechnology in Asia.

The two Green Revolutions have had profound impacts on rice output in Thailand. In the early 1970s, the country exported just over one million tons of rice per year. That was not much more than it had exported in the early 1920s, because population increases consumed most of the increases in production. By 2010-11, however, dramatic increases in yields, combined with slowing population growth, allowed Thailand to export close to 10 million tons a year. In turn, higher incomes from farming and greater food consumption at lower cost have contributed to poverty reduction, along with better access to medicine, clean water, and education. Between 1990 and 2002, poverty in Thailand declined from 27 percent of the population to 9.8.

Current biotech research on both theoretical and applied issues of rice agriculture continues apace in Thailand. Many of these efforts represent ongoing long-term projects. Almost all are part of joint efforts with IRRI or related organizations, such as the Consortium for Unfavorable Rice Environments (CURE). One important ongoing initiative is the improvement of rice varieties to address special needs; a major focus is developing rice that is highly tolerant of stress from drought or drowning. Research is also focused on the creation of varieties that are free of chalky-starch, including tools to detect its buildup. Pest management is another important issue. The Thai government has worked to end the misuse of commonly available pesticides after IRRI research discovered that such misuse contributes to outbreaks of the brown plant hopper, a particularly destructive insect. In 2011 this insect infested about 30 percent of Thailand's rice paddies. IRRI, working with Thai officials,

has promoted ecological engineering to enhance biodiversity on rice farms as another strategy to limit pests. Also valuable, of course, has been finding pest-resistant varieties of rice. This effort has been helped by IRRI's International Rice Genebank, which has conserved over 6,000 Thai rice types within its collection of over 100,000. These diverse types can be used to breed rice with special characteristics. Thailand and the IRRI are also working on "post-harvest" issues. One strategy in particular is as simple as storing rice in air-tight, refillable plastic bags to protect the harvests from moisture and vermin.

The Thai Rice Knowledge Bank—again, developed in partnership with IRRI—has become a storehouse of best-practice rice management techniques best suited for Thai conditions. Through Thailand's agricultural extension service, these practices have led to lower costs and increased efficiency for farmers willing to take advantage of them. In a similar effort, farmers in Northern Thailand have benefited commercially by adopting environmentally friendly farming techniques and rice varieties best suited for their region. These efforts were part of a collaboration supported by the Challenge Program on Water and Food (CPWF).

Clearly, partnership with the Foundation, as well as with IRRI and related organizations, has proved beneficial to Thailand and its rice economy. Some of the benefits derive from belonging to an extensive, vibrant network of specialists committed to understanding rice and solving problems. The partnership is also useful for alerting Thailand and the rest of the biotech rice network to emerging problems. John O'Toole, for example, a Foundation official who spent years in Thailand, presented a wide-ranging analysis of the challenges to water management and rice production in the future, following receipt of the 2004 Golden Sickle Award for his 30 years of rice research.

Being networked into the world of rice research has not been without its skeptics. From the earliest days of Thailand's membership in IRRI, which began in 1966, there have been questions of outside influence on Thailand. New agricultural practices have challenged traditional ways of life and centuries-old practices of rice cultivation. As a result, these new practices have figured in political debates about the loss of Thailand's culture and its past. Skeptics objected to the real or imagined influence of large foreign corporate interests in Thai agriculture. Others criticized the increased political role of rice breeders and their allies in government. At the end of these debates, the parliament approved the regulation of foreign and domestic corporate interests. Still, concerns related to the disruptive threats to traditional ways of life continued. To address these concerns and to help households cope with change, in 2000 the Rockefeller Foundation and IRRI took the lead in establishing the Asia Rice Foundation as a vehicle for

helping to document and preserve the cultural aspects of rice production and consumption in Asia.

In addition to its work with Thailand on the second Green Revolution, over the last half century the Rockefeller Foundation has continued to collaborate with Thailand as the country worked to build an educational and research infrastructure that included many vocational schools and universities. With the support of Rockefeller Foundation scholarships, a generation of scientists was trained in the United States and Europe. When they returned to Thailand to pursue their careers, some became major researchers and often the leaders in universities and specialized Thai research institutes. They have advanced basic and applied knowledge that became fully integrated into the networks that produced what has been called the Second Green Revolution, based on microbiology, cellular biology, and genetic engineering. Today, Thai research scientists are often partners in continuing labors to produce larger quantities of food in an environmentally safe manner. They are also creating the tools and methodologies in microbiology, genetic engineering, and the management of water resources to further advance the Green Revolution.

Overall, the Foundation and its Thai partners worked to build human capabilities and organizational capacity. By integrating Thai researchers into a worldwide network of knowledge about the basic science of rice and the best practices, the partnership helped to address practical problems in agriculture. In human terms, this meant the opportunity for education at premier universities across the world for the most promising and talented Thai scientists. Most of those trained abroad came home to join, build, and often lead the institutions that would teach future generations of Thai students in an area of science that directly benefited their country's premier agricultural activity—rice production. Perhaps most important, Thai scientists gained knowledge of and expertise in the expanding world of biotechnological technique, based on an understanding of molecular and cellular biology. As a result, Thailand gained the human talent that could apply its knowledge to areas other than agriculture, such as medicine.

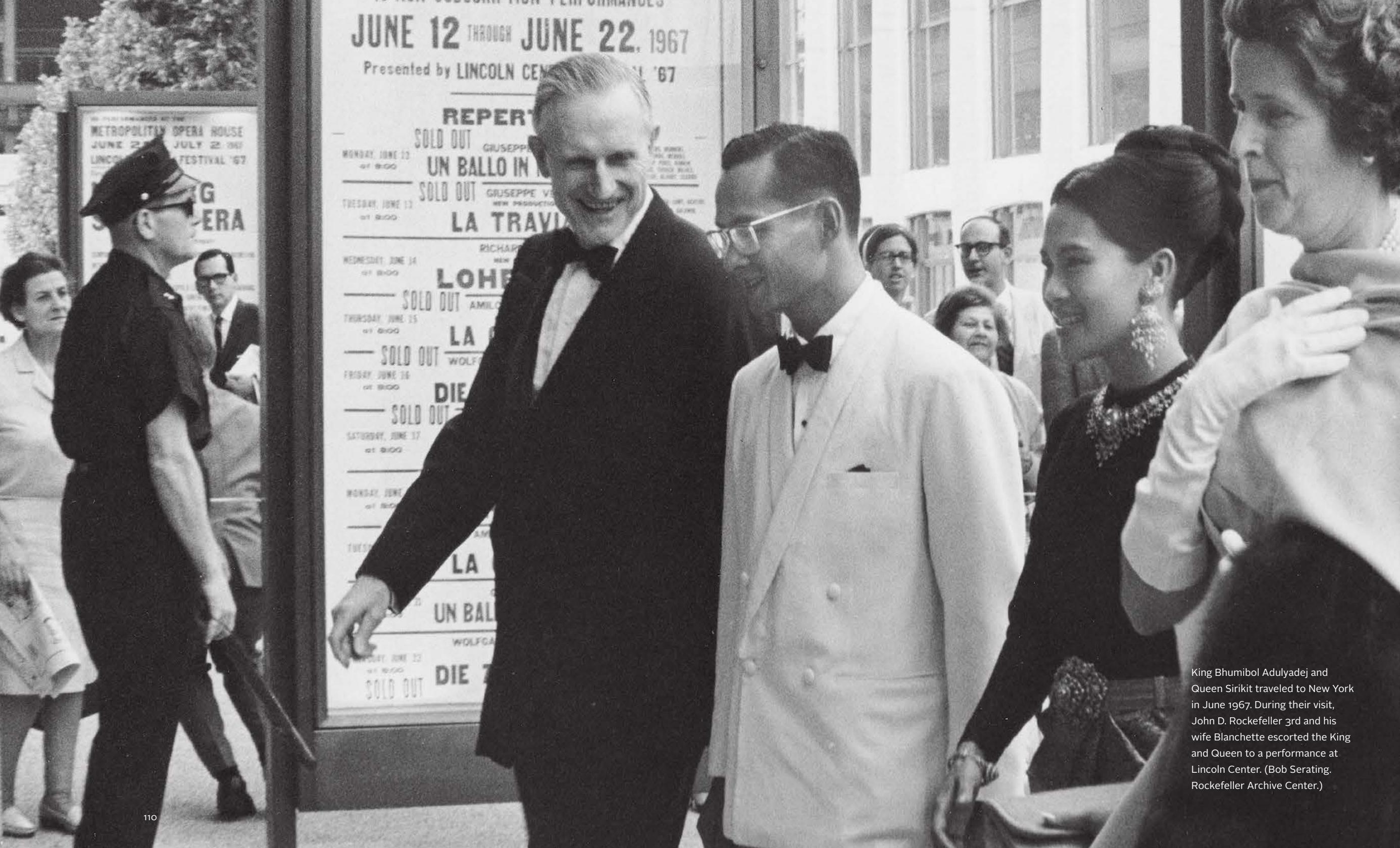
Capability and capacity building are a matter of transferring knowledge and technique to others who in turn can make use of it while conveying it to future generations. It is a matter of skills expanded and transferred from generation to generation through communities of specialists and researchers who are intrigued by complex questions and have the training to tackle them as well as a worldwide network to assist them. Most important, the diffusion of knowledge to promote and sustain development depends on institutions that can train the next generation for the challenges ahead.



INNOVATIONS IN RICE DEVELOPMENT ANCHORED IN A RESEARCH TRADITION

Given the importance of rice to the people and the economy, it's not surprising that Thailand plays a vital part in the ongoing work of the International Rice Research Institute (IRRI). Beginning in 1993, Thailand took the lead in IRRI's deepwater rice-breeding program for Southeast Asia. Recent collaborative achievements include the development of the Thai Rice Knowledge Bank; the establishment of the International Rice Genebank for the protection of rice biodiversity; and the creation of the Consortium of Unfavorable Rice Environments, which seeks to use selectively bred rice to alleviate hardships borne by poor farmers as a result of environmental circumstances.

These institutional innovations have sparked new research initiatives. In the area of varietal improvement, the institute worked on stress-tolerant rice for poor Thai farmers. In an effort to develop chalk-free varieties, research focused on new diagnostic tools. IRRI also launched an initiative with Thailand to promote the use of hermetic bags that preserve germination conditions while protecting rice from pests and moisture. In the area of crop management, a resource management study was conducted to determine new methods for raising water productivity and conserving resources in the Mekong and Red River basins. Additionally, as part of Phase IV of the Irrigated Rice Research Consortium, IRRI is conducting the transfer of technologies for weed management on direct-seeded farms. It is also developing ecologically engineered methods of pest management.



JUNE 12 THROUGH JUNE 22, 1967

Presented by LINCOLN CENTER

REPERTORY

MONDAY, JUNE 12
SOLD OUT
GIUSEPPE VERDI
UN BALLO IN MASCHERA

TUESDAY, JUNE 13
SOLD OUT
GIUSEPPE VERDI
LA TRAVIATA

WEDNESDAY, JUNE 14
SOLD OUT
RICHARD WAGNER
LOHENGRIN

THURSDAY, JUNE 15
SOLD OUT
AMILCO CARLOTTA
LA TRAVIATA

FRIDAY, JUNE 16
SOLD OUT
WOLFGANG AMADEUS MOZART
DIE ZAUBERFLÖTE

SATURDAY, JUNE 17
SOLD OUT

MONDAY, JUNE 19
SOLD OUT

TUESDAY, JUNE 20
SOLD OUT
LA TRAVIATA

WEDNESDAY, JUNE 21
SOLD OUT
UN BALLO IN MASCHERA

THURSDAY, JUNE 22
SOLD OUT
DIE ZAUBERFLÖTE

King Bhumibol Adulyadej and Queen Sirikit traveled to New York in June 1967. During their visit, John D. Rockefeller 3rd and his wife Blanchette escorted the King and Queen to a performance at Lincoln Center. (Bob Serating, Rockefeller Archive Center.)

EDUCATION FOR DEVELOPMENT

In 1963, the Rockefeller Foundation launched an ambitious program to advance higher education in a selected group of developing countries, including Thailand. As with other Foundation programs at the time, the University Development Program (UDP), later known as Education for Development Program (EDP), was international in scope and well-funded. Over the course of 16 years, the Foundation invested \$125 million in this initiative.

Foundation officials aimed high. They sought to create higher-education institutions in the developing world that would provide expert local human capital to help tackle the numerous long-term problems plaguing countries trying to develop economically and socially. Many of the countries selected for the program lacked the home-grown engineering, agricultural, medical, economic, and management talent needed to solve development problems. With the UDP, the Rockefeller Foundation sought to create self-sustaining institutions to train future generations of specialists and scholars who could engage long-term in helping to address problems that faced the developing world.

Thailand was on the list of potential countries for this program from the beginning. Memories of the excellent past working relations that the Foundation had experienced with the Thai government and its people factored into the decision. Richmond Anderson, the associate director of Medical and Natural Sciences, commented that, “Thailand is a geographically, culturally and scientifically strategic country in Southeast Asia where foreign

and particularly American aid seems to be welcomed.” There were also strong personal connections between members of the Thai academic world, government officials, and the Foundation. Early in his career, Phra Bamras Naradura (Dr. Long Vejjajiva), Minister of Public Health (1959-1969), had been a Thai representative working on the Foundation’s campaign to eradicate hookworm. Dr. Jajaval Osathanondh, the vice rector of the University of Medical Sciences (renamed Mahidol University in 1969 by a proclamation of His Majesty King Bhumibol), had been a student at Siriraj Medical School when the Foundation and Thailand began efforts to advance that institution in the 1920s.

Foundation officials also knew that in Thailand there were already well-established, long-lived universities that could become research institutions with the kind of assistance contemplated by the Foundation. In addition, what the Foundation had in mind meshed with objectives the Thai government itself had established for universities in its 1963 five-year plan for education. Ultimately, Thailand would be the focus of the Rockefeller Foundation’s largest UDP program. At its peak, the Foundation had 35 staffers stationed in Bangkok, and between 1963 and the end of 1977 the Foundation would invest \$24.3 million.

Rockefeller Foundation president J. George Harrar spearheaded the UDP/EDP. He believed strongly in the power of education. He had witnessed the advantages of expert knowledge in other major programs initiated during his tenure as president, including the creation of the International Rice Research Institute. But Harrar did not undertake the promotion of universities naively. In every developing country there were challenges. In Bangkok, for example, Harrar understood that major institutions often did not collaborate with one another. Each had champions among their alumni as well as backers in different parts of the government, leading to a fragmented policy environment. Harrar hoped that the UDP would produce either one major university or a close alliance among the leading institutions in Bangkok. This hope was shared by some Thai government officials in Bangkok where the subject had emerged as part of the planning process for higher education during the early 1960s. In the end, though, combining universities was not politically possible and the Foundation found it easier to focus most of its efforts on three institutions.

In Thailand, the Foundation’s UDP proved to be a catalyst for change at the institutions selected to take part in the program. Foundation support to Mahidol, Kasetsart, and Thammasat Universities aided agendas for educational change already contemplated by Thai educational and government leaders. In each of the universities benefiting from the UDP program, Foundation

representatives became partners with their Thai colleagues, who understood local priorities and established the goals used to secure Foundation funding.

The UDP, however, produced unintended consequences both for Thai higher education and for the Foundation itself. Over time, critics raised questions about elitism in the program at Mahidol. They also criticized the efforts at Kasetsart for failing to serve the practical needs of poor farmers. Economics, as taught at Thammasat, faced charges of being out of touch or too theoretical. Overall, the Foundation was reproached for promoting ideas of development that did little to immediately address the pressing needs of poverty, disease, and pollution.

Foundation officials both in New York and Thailand took these critiques to heart. They were the genesis of the shift in the name of the program from University Development to Education for Development. As a result, programs were initiated and supported, albeit modestly at first, that addressed new public health issues (nutrition and rural health) and the problems of a rapidly growing population. In sum, then, one of the key consequences of establishing the UDP/EDP was to deepen the Foundation's understanding of the challenges of development and eventually, beginning in the mid-1970s, to prompt a reorientation toward current problems and a more local approach to the difficulties of development.

GIVING SHAPE TO IDEAS

A number of factors influenced the Rockefeller Foundation's decision to launch the UDP program in Thailand in April 1963. The country enjoyed a unique position in the region, having been an independent kingdom for a millennium. According to one Foundation staffer, "It is a civilization of high refinement . . . and has a network of institutions of considerable intricacy and effectiveness in answering the needs of traditional society." Thailand's relative political stability in the postwar era, albeit under the rule of a strong military regime, had given rise to a technocratic elite focused on economic growth. The government had made significant investments in education and development. According to the Foundation's program officer, "we found strong leaders in medicine, economics, and agriculture."

Originally, the Foundation thought that the UDP program in general should encourage coordination and mergers among institutions of higher education in developing countries. In Thailand, however, there were already sound universities in existence. As a result, Thai and Foundation officials settled on promoting programs in the three universities mentioned above, which were all located in Bangkok. Each one—Kasetsart, University of

Medical Sciences, and Thammasat—already had one strong program or area of focus that the Foundation and Thai officials agreed should be promoted and enhanced. In a sense, this continued the Foundation's tradition of what Wickliffe Rose once called "making the peaks higher," or building on excellence. The three areas of specialty were medicine (the University of Medical Sciences/Mahidol University), agriculture (Kasetsart University), and economics (Thammasat University). A fourth university, Chulalongkorn, was prestigious and had a roster of distinguished alumni and a varied array of courses of study, but it lacked any one curriculum with the depth of specialization in a subject area found in the other three institutions.

Medicine and the promotion of the medical sciences presented the most compelling case for immediate attention. James S. Dinning, professor and chairman of the biochemistry department at the University of Arkansas, was chosen to represent the Foundation as liaison in Bangkok to the University Development Program. He arrived in September 1963 and remained in his post until 1978. By then the program was being phased out as part of what had become standard policy, in that the Foundation provided funding for only a predetermined length of time. But Dinning had proven to be a key figure, taking a leading role in working with Thai university officials at the three selected institutions.

In the five-year plan that Thai planners had only recently announced when Dinning arrived, they emphasized the need for more medical training. Foundation officials agreed on the need to focus first on medicine. Initially, the government's plan looked toward expanding three already-existing medical schools—two in Bangkok and one in Chiang Mai—while opening another medical school in Bangkok and two others at the regional universities, Khon Kaen and Prince of Songkla.

General Netr Khemayodhin, Undersecretary to the Prime Minister, met with the Rockefeller Foundation's Dr. James S. Dinning and others in 1967 to discuss proposals for combined graduate programs in Thailand. (Ted Spiegel. Rockefeller Archive Center.)

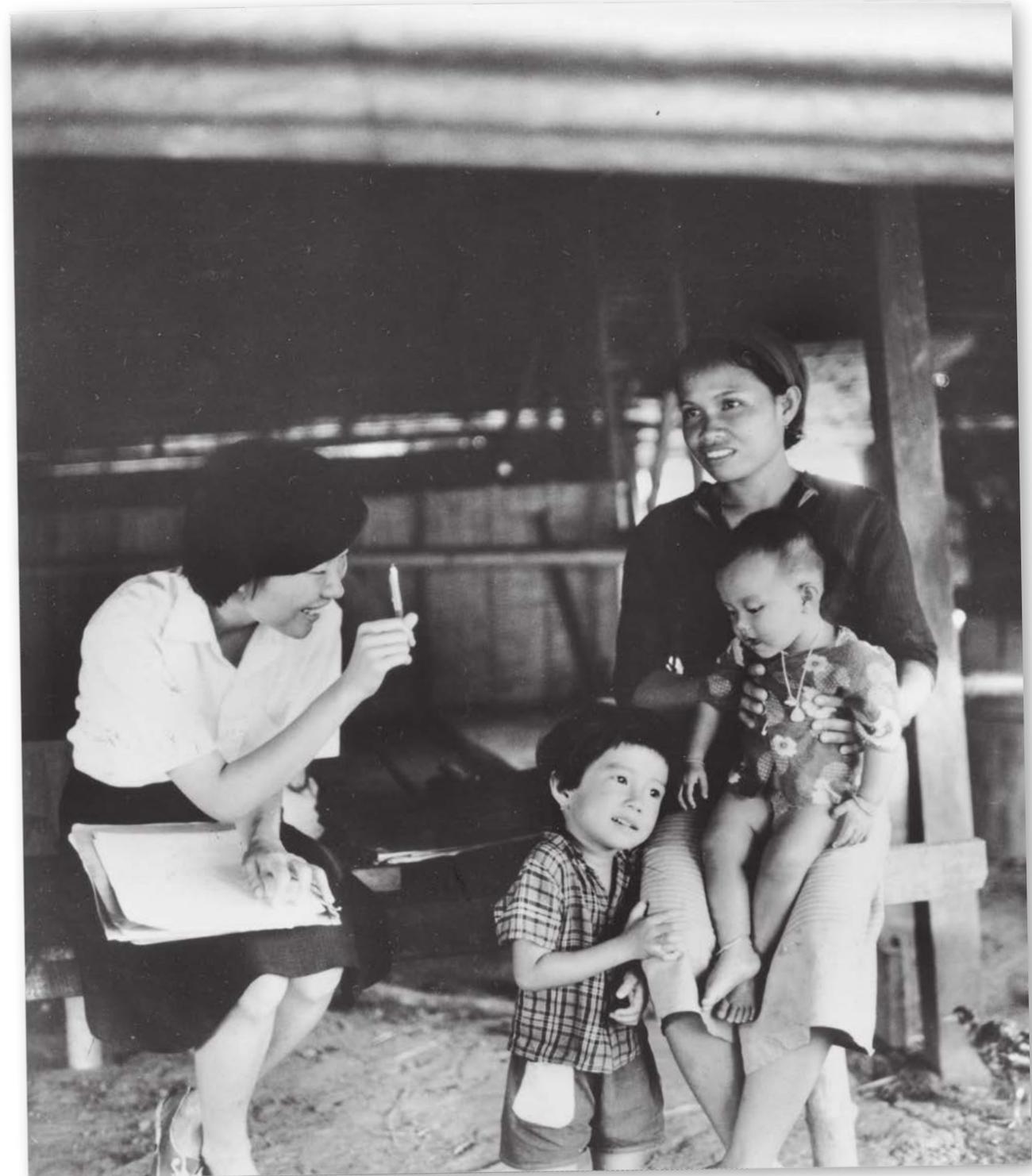


Thai planning for the expansion of medical training was based on compelling statistics. In 1963, there were only 3,800 physicians in a country roughly the size of France, with a population of 31 million and a per capita income of \$100. The country's three existing medical schools produced only about 250 doctors each year. Most of the population—from 80 to 85 percent—was rural, but about 70 percent of the physicians were in Bangkok. While overall there was about one medical doctor for every 8,000 people nationwide, the fact was that medical care was much more available in Bangkok than in any rural area. With the country's population increasing by about 3.3 percent a year, Thai officials calculated that for every new doctor graduating each year, there was likely a population increase of 4,000 people needing access to medical care.

Dinning explored the issue of a shortage of medical doctors in great depth with government and university officials, including General Netr Khemayodhin, who was in charge of universities in Thailand as an Under Secretary to the Prime Minister. At Mahidol University (still called the University of Medical Sciences at the time), Dinning worked closely with the rector, Dr. Jajaval Osathanondh; the graduate school dean, Dr. Swasdi Skulthai; and the dean of the Faculty of Medical Science, Dr. Stang Mongkolsuk. All four agreed that the root obstacle to increasing the rate of graduation of medical doctors was an insufficient number of adequately trained scientists to provide pre-clinical training to would-be doctors. In contrast, there were a good number of clinicians for the clinical preparation of doctors, many of whom had received post-graduate education in England and the United States.

Together, after about a year of deliberations, Dinning and his Thai colleagues shaped a program to address Thailand's need for more medical doctors. They determined that the Foundation's greatest contribution would be to support a program promoting the study of basic medical sciences from the introductory to the graduate level. Graduates of the program would move on after receiving their degrees to serve as faculty members in pre-clinical curriculums in newly established medical schools, and to upgrade offerings in already established medical schools. Additional graduates would teach in the basic life science courses at other universities in Thailand. Teaching would be in English, and students from other Southeast Asian countries would be welcomed in the program.

In 1968, in an innovative effort to increase the emphasis on community health programs, the Rockefeller Foundation and the Ramathibodi Faculty of Medicine launched a summer field research project. Students traveled along the klongs (canals) to visit rural families and collect basic epidemiological and public health data. The effort led to the establishment of a rural teaching facility 37 miles outside of Bangkok. (Joe D. Wray. Rockefeller Archive Center.)



Mahidol University received approval from the Foundation as the locus of the program to train students in basic medical sciences. To Dinning and the others it had several advantages over Chulalongkorn University and Siriraj Medical School. Neither of these other institutions had well-qualified faculty members (holding a Ph.D. in their field) to train students in the basic “classical” pre-medical science courses of study. As Dinning observed in a letter to the Foundation’s associate director of Medical and Natural Sciences in October 1964, “In these departments there is essentially no research and certainly no experimental type of research as is essential to the training of graduate students.”

Other reasons to select Mahidol University were clear to Dinning. The university had “no ingrained traditions which are contrary to modern graduate training and research efforts.” The faculty was also “probably the best of any of the institutions in Thailand. The Faculty is known to get the best students who take the university entrance examinations.” Dinning recommended abolishing the dividing line between pre-clinical and pre-medical sciences so that students would receive a four-year course of study in the basic biological sciences. These recommendations received the enthusiastic endorsement of Mahidol’s faculty, in large part because they aligned with the country’s recent education plan that called for expanding medical education.

In sum, the program at Mahidol University would establish six high-quality life science departments—biology, chemistry, anatomy, biochemistry, microbiology, and physiology—to train graduate students working toward a Ph.D. The faculty in these departments was also to be responsible for training pre-clinical students destined for medical study in the basic life sciences. An agreement was reached in June 1964, and a memorandum of understanding was signed in October between Foundation president J. George Harrar and General Netr Khemayodhin, Under Secretary, Office of the Prime Minister. It created a Medical-Graduate School in Mahidol University to promote, among other responsibilities, “graduate training in all the basic medical sciences.”

Over the years the UDP existed in Thailand (1963-1978), almost half of the funds the Foundation made available (\$13.8 million out of \$25.8 million) went to Mahidol University. About 85 percent of the \$13.8 million went to the Faculty of Science. Integral to the program at Mahidol was the government’s decision in 1964 to construct another medical school in Bangkok, the Ramathibodi Faculty of Medicine. Slated to be located in a teaching hospital erected next to Mahidol University, the institution planned to admit students for clinical training after their pre-clinical education in the



life sciences next door. Because of the close proximity of the two institutions, Thai officials requested assistance from the Foundation. The Foundation agreed to provide funds to help plan the new hospital, shape the medical curriculum, and establish a community health program. Funding for the latter was modest. It included support for three consultants on community health issues and the construction of a community health center 36 miles from Bangkok to provide experience in the field for medical students. Funds were also available for the training of students in the nursing school that was created as part of the new medical school.

During the first two years of the program (1963-1965), Dinning worked closely with Dr. Stang, the dean of the Faculty of Medical Science, and Dr. Swadi, dean of the graduate school. Together they prepared an overall development plan that laid out several objectives. Mahidol University

King Bhumibol Adulyadej presided over the dedication of the new University Medical Science Building in Bangkok in February 1965. Dr. James S. Dinning (left) represented the Rockefeller Foundation. Dr. Jajaval Osathanondha, the Rector of the University of Medical Sciences (second from left), posed with the King (second from right) and Dr. Stang Mongkolsuk. (Rockefeller Archive Center.)

would have the capability to offer an M.S. and Ph.D. in the life sciences to students from Thailand, as well as those drawn from elsewhere in Southeast Asia. The program would also offer graduate courses in the life sciences to students enrolled in programs in other universities in Bangkok. Eventually, the planners aspired to create programs of post-doctoral study for Southeast Asian students.

During the planning, Dinning, Stang, and Swasdi consulted with other university administrators and government officials about their emerging plans. Helpful and supportive in the course of planning was, among others, Dr. Jajaval, the university's rector as well as its chief executive officer. In the Office of the Prime Minister, General Netr Khemayodhin proved supportive and helpful, as did Bunchana Attakor, the deputy minister for National Development. Knowledgeable about government practice and policy, these men smoothed the way in dealing with other parts of the government with an interest in education.

At Mahidol University in the 1970s the Foundation provided support for teaching and research in the Faculty of Science and Ramathibodi Hospital Faculty of Medicine. (Rockefeller Archive Center.)



The first step for Dinning, Stang, and Swasdi in 1964-1965 was to select promising Thai students of the sciences for overseas graduate study. At that time, there were only five faculty members with Ph.D.s in the chemistry department and only one in biology at Mahidol University. There were none in the new fields of biochemistry or microbiology, subjects increasingly important to the study of medicine. There was only one Ph.D. in the departments of anatomy, pharmacology, and physiology. Dean Stang took the lead in identifying promising students, many of whom he had followed since their undergraduate days.

As the process of selecting students to compete for Rockefeller scholarships got underway, the planners worked to identify and select visiting professors to enhance the teaching staff in the life sciences until new Thai Ph.D.s could fill these spots. Between 1965 and 1967, while the planners recruited overseas visitors, they continued to equip laboratories and work on curriculum. They also retained Rockefeller Foundation experts in the life sciences to take part in teaching, to supplement the visiting professors during the years from early 1967 to early 1970. These special Rockefeller staff appointments and visiting professors were phased out as Thai students returned in the early 1970s. By then, Rockefeller department chairmen were also being replaced.

By the late 1970s the program had proved a great success. Over the course of the program, 30 Thai students were recruited for study in the United States. Twenty-seven, or 90 percent, succeeded in earning a Ph.D. Students earned their degrees in some of the most distinguished programs in life sciences in the United States, including those at the University of California, Berkeley, UCLA, M.I.T., and the Universities of Pennsylvania and Wisconsin. Of the 30 students selected for the program, 24 returned to Thailand to teach and do research. Twenty-one of them joined the Faculty of Science at Mahidol University. Later, seven of the original thirty were selected to continue and advance their education and expertise in overseas post-doctoral programs.

Contributing to the success in creating and running the program to promote the life sciences at Mahidol was the esprit de corps that Dinning and his Thai colleagues developed. They met frequently to discuss the program. A tour of U.S. medical schools that Dinning arranged helped to deepen their good working relationships. In April 1965, he and Drs. Stang and Jajaval visited Albert Einstein College of Medicine, Johns Hopkins, University of Florida, Western Reserve, UCLA, USC, and Stanford. Not only did these trips forge bonds of friendship and collegiality that echoed the working relationships established by Thai officials and Foundation program officers in the 1920s, cultural differences shaped by nationality were diminished by a common commitment to advancing scientific knowledge.

Similar patterns of close collaboration developed at the other two universities (Kasetsart and Thammasat) selected for the UDP program in Thailand. President Harrar and his colleagues chose Kasetsart University (KU) for the work it could do in the areas of hunger and rapid population growth, a focus at the Foundation since the early 1950s. Thailand was predominantly an agricultural country, and committing resources to the only university devoted to agriculture in Thailand proved an easy decision to make. Engaging with Kasetsart appeared to be a guaranteed way of advancing the work of farmers and improving their lives while promoting development. In the end, Foundation funding was put to good use and benefited Kasetsart University, according to an assessment commissioned by the Foundation in 1979.

Even so, the UDP effort at Kasetsart proved considerably more complex than at Mahidol University, where goals were highly focused and only a small number of leaders were responsible for achieving them. At Kasetsart there was more than one goal for the use of Foundation money and numerous officials and agricultural specialists from the Foundation and KU to work with. Historically, the university had strong relations to the Ministry of Agriculture, which added another dimension to decision making. Other funders were also involved, including the World Bank, the United States Agency for International Development (USAID), the Ford Foundation, and Japanese and Dutch development agencies. Fortunately there were strong Thai leaders at the university who generally kept the various interests working together for the longer-term benefit of the institution. There was also sturdy leadership from Foundation officials assigned to the UDP who, as at Mahidol, enjoyed collegial relationships with their Thai colleagues.

Kasetsart University was a relatively new institution, although its roots trace back to the beginning of the twentieth century. Programs in silk culture and fisheries had been joined together over the years. The new university was established in 1943 by combining the College of Agriculture and the School of Forestry, creating two additional faculties: Cooperative Science (Economics and Business Administration) and Fisheries. By 1970 there were nine faculties: Agriculture, Economics and Business Administration, Engineering, Education, Fisheries, Forestry, Science and Arts, Veterinary Science, and a graduate school. The latter took responsibility for the graduate programs in each of the separate faculties. At the end of the UDP in Thailand in 1978, Kasetsart had a student body of 7,000 students.

Initially, the Foundation saw the UDP at Kasetsart being directed to those departments doing the most work on increasing the production of food. As time went on, the emphasis expanded to the university more broadly. Of most concern to university and Foundation officials was the role of the Ministry of Agriculture. Until 1958, the university concentrated on training students to enter careers in the Ministry of Agriculture. As a result, it was administratively part of the agency. In devising larger goals for the university—beyond training future employees for the Ministry—the government separated the two in 1958, which led to some resentment. Some Ministry officials believed that the university competed with the agency by duplicating its research and farm extension initiatives. As a result, funds and facilities for research at the university were no longer as readily available from the Ministry, which had been virtually the sole source of such assistance in the past. Hence the keen interest at Kasetsart in working with the Foundation's UDP.

Officials at Kasetsart were optimistic about working with the Foundation based on productive past experiences with other American institutions. In the 1950s, the university had joint programs with Oregon State College (later University) and the University of Hawaii, both of which left a legacy of goodwill in Thailand. Between 1954 and 1960, under the auspices of the United States Agency for International Development (USAID), Kasetsart and Oregon State created a joint program to improve physical facilities at the university; enhance the course of study; train teaching staff; and improve research in agriculture. This program provided for twenty visiting faculty appointments from OSU for up to two years at Kasetsart. The program also supported sixty fellowships for advanced study in agricultural subjects in American universities. While the majority of these fellows received M.S. degrees, some completed Ph.D.s. Almost all returned to Thailand, where they found teaching and administrative positions in universities and government departments. Meanwhile, the University of Hawaii, under a contract from USAID, focused on encouraging applied research. Eighteen faculty members and support staff came to Kasetsart to work with faculty on applied research projects. Ten Thai students received fellowships to attend American universities, where they worked on Master's degrees in agricultural subjects. Most of the graduates of this program also returned to Thailand after foreign study.

Despite the tensions between the Ministry and Kasetsart, the Foundation enjoyed a warm relationship with the Ministry. In the 1950s, the Foundation had provided funding for research and scholarships at the Ministry and the University. Joint funding for projects continued into the 1960s. Indeed, one such grant was authorized at about the time Thailand and the Foundation signed the memorandum of understanding in April 1963 for the UDP.



Dr. E.C. Stakman, an early leader in the Green Revolution, discusses root rot problems in 1973 at Kasetsart University with trainees from Thailand, India, Pakistan, and Afghanistan. The trainees were participating in the Inter-Asian Corn Program. (Rockefeller Archive Center.)



Under the UDP, the first efforts at Kasetsart were designed to support applied research programs to increase the production of rice, corn, and sorghum. For each crop there were already programs underway. In some instances, the Foundation was the source of funding through another program. Research on corn was funded by the Foundation's Inter-Asian Corn Program (IACP). Interest in rice overlapped with the work of the International Rice Research Institute (IRRI). Many agricultural specialists held out hope for increased production of sorghum as a food source in Asia, and the Foundation collaborated with the university and the Ministry in efforts to enhance sorghum.

Among the most important of the Foundation's achievements in Thailand through the UDP was building the premier agricultural field research and training installation in Southeast Asia. Led by a Foundation agricultural specialist, Dwight Finfrock, the Kasetsart facility was located on 300 acres about 100 miles northeast of Bangkok. It was named the National Corn and

As part of the University Development Program, the Rockefeller Foundation helped Kasetsart University launch the National Corn and Sorghum Research and Training Center, also known as Farm Suwan. (Rockefeller Archive Center.)

Sorghum Research and Training Center, or more popularly "Farm Suwan." Researchers at Farm Suwan specialized in corn and sorghum breeding and testing. Later, they expanded their research to focus on diseases affecting these crops. Specialists researching the breeding, care, and diseases of livestock were also housed there.

The training program at Farm Suwan was open to Kasetsart undergraduates and graduate students, but it also became the locus for an international training center connected to the Inter-Asian Corn Program. Over eight years, six- to twelve-month training programs served more than 200 agricultural scientists, including 66 Thais. The farm's importance attracted financial support from the Ford Foundation, USAID, the Overseas National Foundation of Japan, and the government of the Netherlands. Its participants fanned out over Southeast Asia, influencing agricultural research in the countries of the region.

As at Mahidol, one of the key contributions of the UDP at Kasetsart University was the research fellowship program. Between 1964 and 1978, 66 graduate students and faculty undertook advanced study in 29 overseas universities, where 54 of them received Ph.D.s. During the same period, 20 members of the Ministry of Agriculture received Foundation

In 1966, researchers associated with Suwan began a maize breeding program. When a disease known as downy mildew threatened maize production in Thailand, Rockefeller Foundation scientists associated with the Inter-Asian Corn Program worked with Thai scientists in the National Corn and Sorghum Program to develop Suwan-1. Resistant to downy mildew, this was the first official maize variety developed in Thailand. (Rockefeller Archive Center.)



Dr. Sujin Jinahyon, a corn breeder from Kasetsart University, displays two large ears produced on a single stalk of corn. Breeders selectively promoted this characteristic using a technique known as controlled mass selection. (Rockefeller Archive Center.)

sponsorship for study in 15 universities. Of those studying under the program, 17 received Ph.D.s. Funding was also made available to support outstanding students studying for the M.S. degree at the university. A total of 40 students took advantage of the program, which contributed to a growing sense of the importance of research at Kasetsart.

In a related move, the Rockefeller Foundation followed a suggestion from Kasetsart to fund a number of research professorships for current faculty. For five years, those selected were paid a supplement to their salaries, were relieved of undergraduate teaching, and received assistance to buy equipment for their research and to travel to international conferences. While the overall expenditure to assist the 15 most promising researchers was small, it helped advance their research agendas. The program was a tangible example of Kasetsart's commitment to enhancing the research profile of the university. At the graduate-student level, there was also a program to help fund superior students studying for the M.S. degree.

More complicated to administer than faculty and student research support were three initiatives for crop improvement. Foundation specialists were brought in to share their expertise on breeding and growing problems as well as the diseases of particular crops. Cooperation among other donors to promote international training added another level of intricacy. Perhaps the most important





Dr. Puey Ungpakorn, rector of Thammasat University, meeting with the University Committee. With a Ph.D. from the London School of Economics, Puey had served as Governor of the Bank of Thailand from 1959 to 1971. He played a key part in creating a role for non-governmental organizations in development outside of the Thai civil service. He became rector of the university in 1974. (Ted Spiegel. Rockefeller Archive Center.)

representatives from the Foundation were the officials assigned as agricultural project leaders. Dr. Ernest W. Sprague was the first of these officials. When he left, the Foundation appointed Dr. James H. Jensen in his place. Jensen was also serving as vice rector of the university, working with its leaders on long-term planning. He left in 1972 and was followed by Dr. John E. Johnston, succeeded in turn by Dr. William R. Young in 1975. Because of their relatively short terms, key Thai leaders at the university shouldered greater responsibility.

Three Thai individuals stand out as driving forces in turning a small agricultural college into an institution with aspirations to become a well-regarded research university. Perhaps the most charismatic was Dr. Insee Chandrastitya, who served as rector—in effect chief operating officer—during the 1960s. He retired in 1969 at age 80, but remained vigorous and involved in promoting

a large vision for Kasetsart. Another vital figure was Prince Chakrabandhu. He had close ties in the upper reaches of the Thai government and had served in important posts at both the Ministry of Agriculture and Kasetsart. During his career he headed the Ministry of Agriculture for six years, and before that he led the Rice Department at the Ministry. At the university he was the Dean of the Faculty of Agriculture and on several occasions served as Kasetsart's rector. An altogether

different personality was Dr. Prasert Na Nagara, a well-known scholar, quiet but determined, who like Dr. Chandrastitya had graduated from Cornell University. For more than a decade as vice rector—essentially the university's chief academic officer—he set the highest standards for research and followed a tough-minded approach to administration.

While each of these leaders worked closely with the Foundation, they also cultivated ties with other institutions committed to development. None proved more important than the World Bank. Kasetsart was growing during the 1960s, and its leadership determined that the institution

would soon reach a point of saturation on its current campus. Located in the crowded Bangkok area of the city, there was little room for expansion, since the university shared its campus with the Ministry of Agriculture. Rockefeller Foundation officials agreed with their partners at Kasetsart that additional space needed to be found. In the late 1960s, the Foundation arranged for tours of recently built American university campuses and funded a planner to prepare blueprints of a new campus for the university. World Bank officials also took an interest in Kasetsart's predicament, and discussions began between the bank and the university. Officials at KU involved Foundation officials in these efforts, especially James H. Jensen. World Bank officials suggested that Kasetsart should build an entirely new campus on land available about 50 miles from the Bangkok facility. The old campus would be closed once the new one was ready.

Kasetsart and Rockefeller Foundation officials expressed concern over the World Bank's proposal. It suggested that the Bank planners—graduates of European and Australian universities—were unfamiliar with the American land-grant university model that had influenced the development of Kasetsart. Experiment stations, livestock facilities, and crop growing plots, as well as facilities for extension programs, were not adequately provided for. Also, Rockefeller Foundation officials like Jensen concluded that the downtown campus should not be closed. Faculty salaries were such that most spouses needed to supplement family income by holding down jobs, and employment opportunities were more available in the city than the countryside. Jensen believed that closing the Bangkok campus would provoke a faculty rebellion. In the end, after much discussion, the downtown campus was retained, and Kasetsart focused its major research efforts on building laboratories and creating institutes at that location.

Despite the rejection of its proposal, however, the World Bank provided essential funding for the new campus. Its program, announced in 1972, included \$15.4 million for the campus, to be matched by Thai funds. When that was achieved there was about \$31 million for constructing the new facility. The Bank also provided funding for over 100 graduate students and faculty to study abroad in Ph.D. programs. These were important contributions to the evolution of Kasetsart. But it was Rockefeller Foundation officials, working closely with their Thai colleagues, who helped transform Kasetsart into a major agricultural and research institution. Foundation specialists like Jensen had the close working relations with Thai university leaders, anchored in the Foundation's unique history in Thailand, that helped make the project successful.

Much the same pattern of close Thai and Foundation collaboration emerged at Thammasat University as it had at Mahidol and Kasetsart. Key figures from the Foundation and strong leadership at Thammasat brought about significant levels of change. There was one paramount leader at Thammasat who ultimately focused and led the changes there. Dr. Puey Ungpakorn was one of the leading intellectual figures in Thailand. The Governor of the Thai Central Bank, he was praised by many citizens as the architect of Thailand's economic growth in the 1940s and 1950s. It was important national news in Thailand when he resigned his powerful post at the Central Bank in 1964 to join the Thammasat Faculty of Economics. As with the other two universities in the UDP, Thammasat was an institution at a crossroads when the UDP program began in the early 1960s.

Thammasat University traced its roots back to the 1890s. During the period of transformation that H.M. King Chulalongkorn championed at the end of the nineteenth century, a law school was established to aid the government's effort to reorganize the country's judicial system. The program was originally operated within the Ministry of Justice. For a short time in 1933, the school combined with Chulalongkorn University to become the Faculty of Law and Political Science. Following the coup that year, in the interests of promoting democracy, Pridi Phanomyong, the leader of the People's Party, drafted the act to create the University of Moral and Political Sciences, the first institution of higher education in Thailand that was open to the public. The Faculty of Law and Political Science was moved from Chulalongkorn to the new university.

In the years following, law predominated in the University of Moral and Political Sciences. Students graduating from the institution received the equivalent of an LL.B., called Thammasat Bandhit. From that base, the curriculum expanded to include graduate study for a Master's in Law and Diplomacy (1935). Four years later, the university introduced B.A. and M.A. programs in Accountancy. In the years following, students in these programs could also earn doctorates. Increasing enrollments led to a major administrative change in 1949. To decentralize the university, existing and new faculties were given more authority over the university's operations. At that time the university was organized around Faculties of Law; Commerce and Accountancy; Political Science; and Economics. As enrollments continued to increase, two new faculties were established: the Faculty of Social Administration (1954) and the Institute

A class discussion at Thammasat in 1976 is held in the shadow of the Dome Center and symbol of the university where many marches, demonstrations, and rallies of the New Democracy also had their beginnings. (Rockefeller Archive Center.)



of Public Administration (1955). A significant new tack was taken for the university in 1962 with the creation of the Faculty of Liberal Arts, after university officials expressed concern that education at Thammasat had become too specialized. To enhance their educational experience, students were to take courses in the humanities, social sciences, and natural sciences before focusing on the course work for their specialties.

When the Rockefeller Foundation was selecting universities to work with in Thailand, President Harrar envisioned assisting Thammasat University to enhance its programs in the liberal arts. With that objective in mind, in August 1964, William L. Bradley was appointed a visiting professor at Thammasat with Rockefeller support. Bradley's family had deep connections to Thailand. His great-grandfather, Dr. Dan Beach Bradley, had gone to Siam in 1835 as one of the first medical missionaries in the country. He was credited with introducing the first Thai-script printing press, starting the first Thai newspaper, and performing the first surgery in the country. He was also close to the royal family, for whom he frequently provided medical care. After the patriarch's death in 1873, William Bradley's family remained connected to Thailand. Aside from his academic background in comparative religion, he had the advantage of a close relationship with Dr. Adul Wichiencharoen, who had recently been appointed Dean of the Faculty of Liberal Arts. Indeed, Wichiencharoen specifically requested Bradley's appointment as a visiting professor, so the two could work together.

Dr. Adul had been at Thammasat since 1955. Prime Minister Sarit Thanarat appointed him Secretary General of the university in order to "shape up" the institution. Adul also had the backing of the rector, General Thanom Kitticachorn, who would become prime minister in 1963. At the time Adul took his post, there was a widespread belief that the university had become a center of radical political activity. Adul's primary mandate was to raise standards and provide administrative orderliness to an institution with a policy of open enrollments that had 40,000 students. He introduced an entrance exam calculated to reduce the numbers of students. New policies were designed to make the majority of students full time. Adul also pushed through a tuition increase that reduced the number of "unserious" students and enlarged the funds available to expand the ranks of full-time faculty.

Dr. Adul's creation of the Faculty of Liberal Arts—to broaden the outlook of students generally interested in specialized, career-oriented degrees—further changed the tenor of the university. He brought in visiting professors who taught courses in history, English language and literature, religion, and the study of other cultures. While most of the visiting faculty came from the United States, other countries were also represented. A distinguished

professor from the University of Delhi, for example, presented courses on Indian history and culture. Visiting faculty offered seminars, lectures, and discussions of research in their fields. The goal was to stimulate interest in their specialties in order to support the expansion of the liberal arts curriculum.

These efforts to promote the liberal arts proved attractive to the Rockefeller Foundation. As a result, the Foundation directed its initial funding for Thammasat toward the humanities and the social sciences. Beginning in 1964, scholarships were offered for overseas study. Ultimately, however, program support for foreign study was modest compared to the provision for scholarship funding at Mahidol and Kasetsart. By 1978, the Foundation had underwritten only 20 scholarships, although almost half of the recipients received Ph.D.s.

One of the reasons the liberal arts program waned was a loss of momentum as Adul turned to pursuits beyond the university. Appointed to a post at the United Nations, he had less energy and time to devote to Thammasat, which contributed to a decline in morale. Others were disappointed that a separate department devoted to political science had not been organized in the Political Science Faculty. But while tensions among the faculty persisted, there was one area of curriculum that received general approval at Thammasat. Students needed to be proficient in English. Even nationalists on the faculty agreed that a good working knowledge of English was a requisite for full participation in higher education. Proficiency, according to university and government education officials, was inadequate among students studying at Thai universities. At Thammasat, beginning in early 1967, the Foundation funded a University of Pittsburgh English Language Program, designed to improve English study in overseas universities. The program was housed in the Faculty of Liberal Arts and run by a team from Pittsburgh working closely with members of the Departments of Linguistics and Language. They focused on revising the curriculum, the training of teachers, improving the English skills of junior faculty, and reorganizing the teaching of English in the university.

Pittsburgh staff also partnered with the Thai government's University Development Commission (UDC) and the Ford Foundation in building an English language center to work with all Thai universities. Set up in 1968, the Central Institute of English Language (CIEL) focused on improving the teaching of English. At Thammasat, between 1968 and 1977, 148 members of the faculty took part in the programs of CIEL. From 1973 to 1976, a period of political volatility, CIEL became a target of nationalist and budgetary politics. Why, political critics asked, should the government invest so heavily in English at a very high cost to the government's UDC? These concerns did

not undermine the program over the long term. There was a consensus that the effort to improve the teaching of English, with the support of the Foundation, had “borne delayed fruit.” By the end of the 1970s, English teaching at Thammasat was better organized and more centralized. Smaller classes, better testing of proficiency, the use of literature to teach the language, and a well-equipped language laboratory produced better results.

While the English language program was a success, it did not rival the growth and prominence of the program in economics. That success can be attributed to Dr. Puey Ungpakorn, whose stature in Thai society rivaled that of almost all other Thais and Americans engaged in higher education in Thailand. He was revered as the chief architect of the postwar economic “miracle.” As Governor of the Thai Central Bank he had been the country’s chief economic policy maker, and the skillful constructor of an administrative apparatus to make that policy a reality. He joined Thammasat in 1964 because he believed that Thai universities were failing to contribute sufficiently to the country’s national life. His international stature convinced Rockefeller Foundation officials that he might do for economics at Thammasat what others had failed to do in liberal arts and political science.

Working with Foundation representatives James Dinning and William Bradley, Puey created a program to meet a number of major objectives by the end of the 1970s. First, Puey worked to improve the quality of undergraduate training, which included demanding prerequisites. He also created a graduate program (M.A. and eventually Ph.D.) oriented to issues of concern in Thailand and its region. “The objective [is],” according to a review of the program completed in 1978, “to produce economists competent to identify, interpret and solve national economic problems, whether as officials of economic agencies of the government, teachers of economics in universities, researchers, or economists in private firms.” The group also sought to make the Faculty of Economics a venue for considering economic problems and a place to discuss policy-oriented studies. Puey thought that an excellent economics department would strengthen the rest of the university. Finally, the planners emphasized the regional impact a strong program would have on Southeast Asian universities and economics programs in nearby countries.

[The Great Hall at Thammasat University was the scene of countless speeches and mass meetings between 1973 and 1976. A violent crackdown in October 1976 left many dead. Dr. Puey Ungpakorn, the rector of Thammasat University, fled into exile in London. \(Rockefeller Archive Center.\)](#)

The economics program at Thammasat had grown considerably by the late 1970s. When Puey became dean in 1964, there were only five full-time faculty and 39 part-time instructors. In 1978 there were 58 full-time faculty appointments and six part-time faculty members. Apart from the numerical growth, there were also indicators of improved quality. As at Mahidol and Kasetsart, the Foundation supported promising graduate students to study for a Ph.D. in the United States. By 1978, there had been 28 such grants to Thai students. Of that number, 24 had completed doctoral degrees. There was also support for M.A. students to study abroad. The Foundation also provided



funds for foreign visiting professors. Meanwhile, the faculty published research on applied issues including foreign trade, employment, taxation, fiscal policy, fertility, education, growth rates, and military spending. All of these efforts and accomplishments reflected the maturation of an economics department very much in step with trends in the field of economics abroad, especially the United States.

REORIENTING IN AN ERA OF CHANGE

In 1977, when the Rockefeller Foundation trustees voted to end the UDP (three years after it had been renamed the Education for Development Program), there was a clear sense that much had been accomplished at each of the three participating Thai universities. Even so, events initiated by the UDP in Thailand led to outcomes that eventually forced hard reappraisals at the Foundation, concerning the goals and methods of bringing about economic and social change.

Throughout its support of the UDP in Thailand (1964-1977), the Foundation had faced increasing criticism. There were many changes in how recipients of development assistance looked upon institutions like the Rockefeller Foundation and their efforts to promote development—not only in Thailand but in other parts of the world. Programmatic criticisms by aid recipients of what had been pursued at Mahidol, Kasetsart, and Thammasat surprised Foundation officials, especially those with close ties to and long experience in Thailand. More surprising still were complaints by students and junior faculty that the UDP had failed to address larger issues of economic and political inequality, as well as persistent problems of poverty and hunger. Some critics in and outside the universities raised fundamental questions about the basic assumptions behind development thinking.

To its credit, the Foundation remained flexible in responding to these criticisms. In the mid-1970s, the Foundation followed a new tack by providing support for an innovative program first proposed at Kasetsart University to treat rural poverty holistically. As the idea developed, KU invited Mahidol and Thammasat to take part, which they gladly accepted. The program thus joined the three universities supported by the UDP to work together on rural poverty in what was called the Mae Klong Integrated Rural Development Program (MIRDP), described later in more detail.

While the program produced exciting and positive results, it never came to full fruition. It was undercut by an ideological and political clash in Thailand between a “right wing” alarmed over what it saw as excessively rapid economic and social change and a “left wing” eager for faster-paced

fundamental changes in political and social institutions. The MIRDP, the universities taking part in the UDP, and the Foundation were caught in the middle. Exacerbating the situation, students and junior faculty at Thammasat, not necessarily all of whom were supportive of the UDP or the MIRDP, articulated harsh criticism of the situation in Thailand. Dr. Puey, who had become the director of the MIRDP, was singled out by the right wing as a radical instigator of student unrest.

Years before these events, the Foundation and Thai education officials had begun to respond to criticisms about the UDP at Mahidol, Kasetsart, and Thammasat Universities. Responsiveness to dissatisfaction with the UDP started the Rockefeller Foundation on a new path of understanding development. At first, the Foundation responded to immediate programmatic criticisms by tweaking around the edges. At Mahidol, critics referenced historic problems. The availability of medical care had been lopsided in Thailand, with most trained medical personnel found in cities, especially Bangkok. Long-standing criticisms of inadequate rural medical care, heard as early as the 1940s, surfaced in a new way in the 1970s.

At Kamphaeng Saen, a branch campus for Kasetsart University, students were closer to the rural communities they hoped to serve. On the wall behind this vehicle, a sign offers inspiration: “If you work hard, the office will prosper. If the office prospers, you will become more prosperous, too.” (Rockefeller Archive Center.)



The program at Mahidol University Medical School was designed to turn out doctors and researchers, but this approach failed to address the need for basic rural health care. Student and faculty detractors at Mahidol argued that there were more compelling ways for the university to address rural health problems. One issue of concern to students was the lack of adequate training in community health. Two of the issues that received further attention were population control and better nutrition. Making headway on these issues would help mitigate rural poverty more quickly than waiting for Mahidol University to produce more doctors who would probably remain in the cities to practice. In the face of this critique, the Rockefeller Foundation modestly helped to fund improvements in medical school instruction related to community health and to help support institutes to study population issues and nutrition, especially for children.

At Kasetsart and Thammasat, students and faculty also raised questions. At Kasetsart, the focus was on the applied aspects of agricultural research. Extension services were found wanting, which had real social as well as economic consequences. If poor farmers could not benefit directly from advances in knowledge about improved irrigation, fertilizer, seeds, and animal husbandry, they were at an inherent disadvantage compared to wealthier farmers. Without direct and regular assistance, they would become more and more uncompetitive. When they failed to support their families, they would be forced to move to overcrowded cities, exacerbating another social problem. Initially, the Foundation responded by encouraging an expansion of extension services.

Thammasat also became a locus of discontent. It already had a reputation of student activism when it joined the UDP, but the discontent of the late 1960s at the university was diffuse. Some of it resulted from the intensification of the war in Vietnam and in particular the building of American air bases in Thailand, used for bombing campaigns. Some protestors expressed a growing concern over the economic power of Japan, in Thailand and in Southeast Asia more generally. There were also internal criticisms about policies at the university, especially in regard to the growing role of the economics faculty. Critics suggested the program was becoming elitist and too theoretical. As a result, it was not helpful in addressing Thailand's real and immediate economic problems. Dr. Puey and the Rockefeller Foundation asserted that many of the dissertations being produced dealt with applied problems of trade, labor markets, and the like, but minds were generally not changed.

These expressions of dissatisfaction developed in a context of mounting social and political unrest across the country. Thailand's economic success in the 1960s had fueled expectations for political and economic reform. By the end of the 1960s and into 1970 and 1971, student discontent intensified and



contributed to a growing public distrust of the nation's military leaders and the government. In 1973, pro-democracy students and workers staged demonstrations in front of the Democracy Monument. More than 400,000 Thais, including thousands of university students, took part. These demonstrations were met with a bloody military crackdown in October that left many dead. In the wake of the violence, King Bhumibol called for Field Marshal Thanom's resignation and appointed a new prime minister, Sanya Dharmasakti. The change in leadership signaled the beginning of three years of civilian rule in Thailand.

In the wake of these changes, leaders at Kasetsart asked the Foundation to join in a reassessment of their plans for the university. Building a branch campus at Kamphaeng Saen offered an excellent opportunity. Only about 50 miles from Bangkok, it was located in the Mae Klong Basin, a poor rural area of more than 5,600 square miles. The new campus provided a site for intensive educational programs and research in a region previously ill-served by the government and the university. The 1,800 villages in the basin had a population of over two million people. In 1966, approximately 70 percent of them depended on agriculture for their living, for the most part on small farms. There were over 138,000 separate land holdings in the basin.

Kasetsart also invited Mahidol and Thammasat Universities to take part in a major research and service program. Basin farmers faced great changes as fertilizers, pesticides, and improved irrigation were being introduced to

At the Kamphaeng Saen campus in the Mae Klong Basin, faculty and students at the National Swine Center focused on livestock development with support from the Rockefeller Foundation. (Rockefeller Archive Center.)

Rockefeller Foundation Trustee W. Michael Blumenthal visited Thailand in 1976 and met with Dr. Snoh Unakul, Governor of the Bank of Thailand. (Rockefeller Archive Center.)



the region. Change in the area would probably go beyond adjusting to new agricultural techniques, to include concerns about the social, economic, and health consequences of what was nothing less than an agricultural revolution.

Rockefeller Foundation officials in New York approved a request for \$125,000 to fund the initial collection of information about the region. This was the Mae Klong Integrated Rural Development Program (MIRDP) referred to earlier. The new statistics it gathered would buttress planning for the basin. Students and faculty from the three universities assembled extensive data from public sources. Then, teams drawn from 150 faculty members and many more students conducted surveys in over 1,400 households in 132 villages. Early computer techniques were employed, based on coding, card punching, and information transfer to electronic tapes. Meanwhile agricultural specialists went into the field to survey the quality of soil, local crop practices, and water usage. These data and other information assembled by the initial surveys were analyzed and published in Thai in 1976. (An English version appeared in 1978.)

Six villages in the basin were also chosen for in-depth study. These villages were selected from different areas to provide information about varying conditions across the region. Soil differed markedly from one place to another, for example, as did topography, local farm practices, education, ethnic make-up of villages, and communications. Faculty and students from the three universities, working in joint teams, lived in the villages, came to know the residents, and tried to understand their problems from the household's perspective. Following up on the experience of their various teams, the MIRDP organized workshops and seminars for participants to share and compare their experiences.

A major result of these efforts was the growing conviction in 1974 that an integrated, long-term program of rural development was not only desirable but also feasible. University, Foundation, and government representatives that made up the project directorate became champions of this expanded, integrated, indeed holistic approach to development in rural Thailand. The goals were to improve the income of farm families as well as their nutrition and health through better sanitation and cleaner water. Concerns about the isolation of rural life also led to calls for improved education and cultural facilities. Governance was an issue, too, as the program looked toward encouraging better roads, irrigation, and police protection.

Members of the project directorate appreciated the benefits that participating universities hoped to derive from long-term involvement in a program of rural development. Participating students and faculty members would “learn by doing.” They would have a keener sense of the challenges of development

from on-the-ground experiences. Dr. Puey and others in the program directorate looked toward improved teaching, as instructors used personal experience to illustrate larger points. Scholarship would also be improved through the impact of “real” experience on the shaping of research agendas.

Rockefeller Foundation support continued—there was a \$150,000 grant in June 1975—as the MIRDP moved from its first stage of information collection to implementing various projects. Kasetsart embarked on an ambitious series of ventures to improve crop practices for sugar cane, rice, vegetables, and mushrooms. Other projects involved further study of soil quality, the availability of water, and the impact of pesticides. In each project area one farm family would be identified with whom to work closely on issues of raising farm income. Mahidol University focused on adult education, which enlisted and trained local health volunteers to deliver information on sanitation, nutrition, family planning, and occupational safety. Thammasat also provided adult education on a variety of subjects, including relations between villagers and officials. It surveyed market and credit conditions, and supported the promotion of newsletters and radio to provide timely information to rural families.

Unfortunately, despite the promising successes of the MIRDP, the project was undermined—as mentioned earlier—by a growing broader ideological battle between right-wing and left-wing activists in Thailand. The former lamented what they saw as lawlessness and the abandonment of traditional values in the 1960s and 1970s. The latter did not like the direction Thailand was taking either, but they saw the answer in radical change.

Some of the leftist radicalism found expression on the campus of Thammasat University. As a result, right-wing ideologues portrayed the university and Dr. Puey as dangerous to the future of the country. Student involvement in the countryside also became a target of increasing hostility. Why, it was asked, were students not in their classrooms studying? The right wing asserted that the students were agitating for radical causes among rural folk, and Dr. Puey was targeted by the ideological right. Far from being a radical, he nevertheless had spoken up for the need to address long-standing problems like poverty in the countryside. There was also criticism of the program by rightist sympathizers in the Mae Klong Basin. Some local officials saw the MIRDP targeting their performance in the maintenance of public facilities and performance of public services as upsetting rural life. Then, too, there was resentment among some farmers who saw the students and faculty involved in the program as privileged and, at times, condescending.

Tensions on the campus and in the country grew until violence erupted on October 6, 1976, on the Thammasat campus. Forty-six students were killed in

a confrontation with the military. On that same day, Dr. Puey left the country for the United Kingdom. The martial-law government installed after these events dissolved parliament, dismissed the heads of many government departments, and put the country under the authority of military courts. In the years that followed, despite initial disruptions, the new government continued to fund education. While traditional higher education did not suffer for a lack of funds, the MIRDP was assigned to the Ministry of the Interior, which had no interest in continuing the program.

Once the initial shock of the coup wore off, and there was a return to somewhat “normal” life in the country, the Rockefeller Foundation began to take stock. Experiences with the UDP and MIRDP programs provided important lessons for the Foundation regarding the challenges inherent in building ownership and increasing the participation of local stakeholders, especially when seeking change in rural areas. A close working relationship with local officials was essential, as was constant communication about objectives and outcomes between national and local officials and residents in an area. In addition, the Foundation needed to be wary of all-encompassing theories of what was most important to development. Economic and social development was difficult, even when a program employed enthusiastic, well-educated young people to work for free. There can be culture clashes within what is, in many ways, a society that values harmony and stability. Class can also play a role. In sum, failure to take local conditions into consideration, or the perspectives of the people being helped, could create insurmountable barriers to the most well-intentioned objectives.

STRIKING BALANCES

For Thailand, the Foundation’s UDP was a success in terms of the original reasons for beginning the program. In each of the universities supported by the UDP, there was no doubt that the infrastructure had been strengthened. They had better-trained faculty members—Thai medical, agricultural, and social scientists—who conducted independent research that brought them and their institutions into the worldwide intellectual community. But this very success became a source of criticism and tension at home. There was a need, critics said, to balance the demanding professional standards set by an international university community with what others saw as the needs of Thailand. The UDP had succeeded in placing Thailand in the mainstream of research in the natural sciences, agriculture, and the social sciences. But unlike the advanced scientific efforts in such programs as the International Rice Research Institute and the International Program

on Rice Biotechnology, the science at Mahidol, Kasetsart, and Thammasat was not always applied to current needs in obvious ways. Skeptics charged that science for the sake of science did not help solve the country’s problems.

Still, the UDP’s achievements were in line with the historic goal of the Rockefeller Foundation—to expand human capabilities that were self-sustaining, that could replicate themselves by training future scientists.

The belief in the long-term benefits of science—of better understanding the natural world—seemed to some Thai critics a luxury, perhaps too elitist for the realities of the country’s needs, but these criticisms were familiar to the Foundation. Indeed, the tension between a focus on research to develop new knowledge and the practical application of knowledge had been at the core of the Foundation’s work for decades. This tension fueled the organization’s innovative spirit by forcing program officers and trustees to constantly test their priorities and assumptions. In partnership with the people of Thailand, the Foundation had contributed to a much larger process of development that achieved significant levels of economic and social progress in the last decades of the twentieth century.

Out of this mix of achievement and questioning came new emphases in the work of the Rockefeller Foundation in Thailand, and in the Thai people’s understanding of what was needed to address long-term problems. The major institutions advanced by the UDP began to focus on specific, immediate issues, as seen especially in the MIRDP. This led Foundation programs to deal more directly with pressing needs: rural underdevelopment, inadequate resources for rural health, poor nutrition, population growth, and the threats posed by HIV/AIDs. Ultimately, as will be discussed in the next chapter, dealing with these issues helped the Foundation recognize the need to address pressing problems not only in one country, but also regionally. The Foundation came to understand that many local, immediate problems were shaped by larger regional factors.

Indeed, as Thailand’s development efforts achieved notable success in public health, agriculture, and education, and as the economy continued its rapid growth, the country was evolving from the role of a traditional aid recipient to that of a development partner with expertise and experiences that would be relevant for others in Southeast Asia and beyond. Increasingly, the historic partnership between Thailand and the Rockefeller Foundation would provide the platform for building networks that would accelerate this exchange of information and ideas.

This tension fueled the organization’s innovative spirit.



HUMAN CAPITAL TO ADDRESS THE THREAT OF PANDEMIC FLU

In 1918, as World War I drew to a close, an epidemic of Spanish flu took the lives of between 50 and 100 million people around the world. Every year physicians worry that a new strain of influenza will be as virulent as the Spanish flu. WHO has repeatedly expressed concern for the lack of global preparedness for such an event. Given its climate, ecology, and urban population, Southeast Asia could become the epicenter for this next pandemic.

To fight this potential threat, the Rockefeller Foundation's Disease Surveillance Network (DSN) Initiative, which was approved in 2007, has supported the Mekong Basin Disease Surveillance (MBDS) Network. Training to develop the necessary human resources in Thailand and other countries in the Mekong region has proven to be a critical component of the project. In many ways, this initiative builds upon the efforts of the University Development Program launched decades earlier by helping to strengthen Thailand's capacity to perceive and respond to public health threats.

Already, the MBDS Network has helped shape the response to outbreaks of avian influenza, dengue, and cholera in the region. By successfully integrating the work of local and national health officials across national borders, the project promotes a strategic response to disease outbreaks.



FACING A WORLD OF “NEW REALITIES”

Thailand experienced an unsettled political and economic history during the last two decades of the twentieth century and the first of the twenty-first century. Its politics have been marked by periods of unrest as it worked its way toward parliamentary democracy.

Like other countries in Southeast Asia, Thailand saw its economy suffer during the Asian financial crisis of 1997-98, and again, briefly, as a result of the global economic crisis of 2008-09. Fortunately, Asia bounced back quickly from its economic slowdown. Thailand experienced only three months of recession in 2008, when exports and industrial output dropped, after which the country saw an annual average growth rate of 5 percent. Thailand's economy expanded by 7.8 percent in 2010, its fastest rate of growth since 1995. The Thai economy has continued to grow steadily ever since, with the exception of the last quarter of 2011, when mass flooding north of Bangkok debilitated the industrial sector. Thailand has managed to cope with these difficult problems, even when they were exacerbated by challenges including globalization, climate change, and political, economic, and social instability in the region.

Through this difficult period, Thailand continued to partner with the Rockefeller Foundation on a number of important initiatives. The Foundation recognized the organizational, educational, administrative, and intellectual capacity that Thailand had built up in partnering with the Foundation to enhance agricultural productivity and to improve the quality and availability of medical care. It also understood that Thailand had much to offer its

regional neighbors. The country's level of development was considerably above that of other countries in Southeast Asia. Thailand was thus a logical partner in tackling economic and social regional challenges—migration, urbanization, the spread of disease, growing inequality in the distribution of wealth, and the consequences of climate change.

As Thailand confronted new challenges at the beginning of the millennium, so did the Rockefeller Foundation. Foundation executives traditionally addressed large issues like the eradication of disease, ending hunger, and creating high-level human capital through fellowships targeting specialized areas of medical, scientific, and—for a time—humanistic and cultural knowledge. In its earliest decades, the Foundation had few partners, public or private, who were international in scope. The situation was transformed after World War II, and change seemed to accelerate. Multilateral developmental agencies (especially the World Bank, government development agencies, and regional development banks) possessed capital resources that dwarfed the financial wherewithal of even the wealthiest American foundations—Rockefeller, Ford, and Carnegie. The leaders of these foundations responded to post-war developments by partnering more frequently with their peers and the era's new multilateral and national government development agencies, as well as a growing array of non-governmental organizations (NGOs).

In this rapidly changing international environment, the Foundation proved innovative in Thailand, Southeast Asia, and the rest of the developing world. It helped create multilateral organizations—like the International Rice Research Institute—that grew out of Foundation country programs. These organizational arrangements were frequently tied to advances in science. Scientific advances in agricultural, medical, and population studies led to new opportunities for the Rockefeller Foundation to enhance existing programs.

By the 1980s and in the decades that followed, Foundation leaders recognized that the world was changing in ways that challenged the Foundation's traditional approach to philanthropy. Globalization led to more profound changes for the Foundation than had the Cold War or the biotech revolution. The growing interdependence of peoples through trade, finance, communications, the arts, and sports seemed to be positive, as information flowed more quickly and technology was transferred more easily. But globalization also had its negative consequences, most keenly felt among countries in the developing world where governments struggled to cope with new dynamics including rapid and quixotic flows of capital, increased trade, and larger numbers of peoples crossing borders. More generally, while increased trade and investment provided jobs that raised the living standards of many poor people, income disparities grew between the richest and the poorest countries, and between



As capital from global markets flowed to Asia in the 1980s and 1990s, Bangkok emerged as a financial and trade center. The population of the Bangkok metropolitan region swelled to nearly 15 million people by 2013. (Patrick de Noirmont. The Rockefeller Foundation.)

the wealthiest and neediest classes within individual countries. Globalization also changed the ways in which governments, enterprises, multilateral institutions, and foundations like Rockefeller viewed how the world worked, as the power of nation states over their own affairs seemed to decline. These changing power relationships became deeply problematic in the face of complex issues like climate change, global epidemics, and rapid urbanization.

On the international stage, the upheaval in China that followed the death of Mao Tse-tung in 1976 also affected markets, politics, and the relations between nations in Southeast Asia. By the end of the 1980s, the Chinese communist government was turning the former command economy into a unique form of state capitalism. The tenor of international relations was also changed by the collapse of the Soviet Union, which ended the Cold War at the end of the 1980s. A new era seemed to be emerging as the tensions between the U.S. and the Soviet Union abated. But post-Soviet Russia did not make the transition to a market economy as easily as China. As China's economy grew and per capita income increased, the country became more powerful as well as essential to the Rockefeller Foundation's goals in Asia and to the economies of other Asian countries, including Thailand.

NEW DIRECTIONS IN PUBLIC HEALTH

In the two decades before the millennium, and in the years since, the Foundation, with its office in Bangkok, has continued to build on its commitments to medicine, agriculture, and education/human capacity building—but with a recognition of the vast global changes that profoundly affected Thailand and the region.

Efforts by the Foundation and Thai grantees to meet the health care needs of rural communities provide a case in point. Thailand had 20 medical schools at the beginning of the new millennium. But debates continued over whether these schools could train enough doctors, nurses, and technicians to meet the needs of the country's poor, who lived far from health centers in major cities. In some ways, this was the same issue that had confronted Prince Mahidol and Aller Ellis during the early transition to modern medicine in Thailand. Traditional healers—men with no formal medical training, usually working in rural areas—had continued to play an important role in their communities even as they were scorned by the medical establishment. Eventually, the Thai government, with support from the Rockefeller Foundation, introduced community medical curricula to train doctors and nurses to serve the needs of the rural population. Critics continued to complain that there were rarely enough resources available for community medical education to have a major impact

on the health needs of the rural poor, but this was also an arena that drew the Foundation's attention.

A new approach had been developed to make medical care more available to the poor. Its champion was Dr. Kenneth Warren, who in 1977 was appointed director of the Rockefeller Foundation's Division of Health Sciences. During his training at the Harvard Medical School, Warren had become fascinated with tropical diseases. He became an expert on schistosomiasis, an infection caused by a parasitic worm. He worked in Africa, Asia, and the Caribbean before joining the Foundation at the age of 48.

Soon after arriving, Warren read a paper by health economist R.N. Grosse, who concluded that the major factors affecting life expectancy were not medical per se, but economic and social. The paper led Warren to begin a research project, with Foundation research fellow Julia Walsh, to determine the key factors affecting morbidity and mortality in the developing world. With this data they highlighted the interventions that would produce the biggest gains in life expectancy. Although each region of the world experienced a unique set of health challenges, four factors provided the greatest leverage for intervention: immunization, oral rehydration, breast-feeding, and (especially in African children) antimalarial drugs. Walsh and Warren presented their paper at a Rockefeller Foundation meeting and later published it in the *New England Journal of Medicine*.

The authors defined the difference in approach as “horizontal” as opposed to “vertical.” By focusing on populations and communities, rather than individuals, Warren and Walsh believed health-care dollars could

Dr. Kenneth Warren served as director of the Rockefeller Foundation's Division of Health Sciences beginning in 1977. He helped promote “population-based medicine.” Using the tools of epidemiology, he and his team focused on interventions that would deliver the greatest improvements in health outcomes in a particular community. (Rockefeller Archive Center.)



go farther and reduce the disparities in health outcomes. Their approach also became known as population-based medicine, which Warren defined “as an integration of epidemiology, biometry, demography and mass [preventive] or therapeutic intervention programs.”

Warren’s strategy relied on epidemiology, which was considered a backwater field in medicine at the time. By paying close attention to the patterns of outbreaks, he believed it would be possible to intervene strategically to stop the spread of disease. His goal was to institute a revolutionary reform of clinical medical training. He proposed to the Rockefeller Foundation a campaign to introduce epidemiology to medical school curriculums at the point where students receive their training in bedside care. He wanted to ensure that epidemiology would not be taught as an independent discipline. It was, he hoped, to be imparted routinely as a methodology of bedside medicine in all clinical disciplines, training students “not what to think but how to think.”

With Thailand’s participation in the International Clinical Epidemiology Network (INCLIN), medical students and clinicians helped gather health data to track disease patterns. (Patrick de Noirmont. The Rockefeller Foundation.)



The Foundation agreed to support Warren’s initiative. Instead of taking on the medical education establishments in industrialized nations, the Foundation focused on low-income countries. In 1978, Dr. Kerr L. White joined the Foundation to head the population-based medicine program, an initiative that was called Health in Populations. White began his effort in 1979 at the University of Pennsylvania, which had been involved in a pilot program to train Rockefeller fellows.

The Foundation’s aim was to spread health-care delivery systems among developing countries based on the epidemiological profiles of their particular populations. While there was a general need for improved health care internationally among the poor, it was clear that the incidence of various diseases in a region fluctuated among different populations. This understanding inspired the creation of the International Clinical Epidemiology Network (INCLIN), to create epidemiological capacity across Southeast Asia. Initially, creating the network required training clinicians and setting up clinical epidemiological units (CEUs) at medical schools to analyze the data that clinicians collected. Medical schools in Thailand were part of this early training and data-gathering activity.

Thai medical schools also played an important role in the next step in INCLIN’s evolution. Working with Gadjah Mada University in Indonesia, Thai medical institutions provided higher-level epidemiological instruction to advanced students capable of conducting cutting-edge research and training clinicians. In 1989, INCLIN became an independent, incorporated operation that provided leadership in research and training to the medical community. The Foundation continued to provide significant support to Chulalongkorn University, however, to provide training programs in epidemiology. By 2010, INCLIN operated 90 research institutes, 59 CEUs at medical schools, and 31 Clinical Epidemiology Research and Training Centers (CERTCs), operating in 34 countries worldwide.

INCLIN reflected the Rockefeller Foundation’s continuing effort to take a systemic approach to social change and to look for leverage points that would return the greatest benefits to a community or a nation. A grant made to the Population and Community Development Association (PDA) in Thailand in the 1990s provides a further example. Founded in the 1970s by Mechai Viravaidya, Thailand’s former Minister of Industry, PDA focused on slowing Thailand’s population growth rate, which was 3.2 percent at the time (equal to approximately seven children per family) and decreasing poverty. With Thailand on the verge of a major epidemic of HIV/AIDS in the late 1980s, PDA received support from the Rockefeller Foundation to launch a massive effort to promote condom use—a topic that was taboo at the time. These efforts helped

prevent a major rise in HIV/AIDS and helped support Thailand's remarkable efforts to slow population growth to less than 0.6 percent.

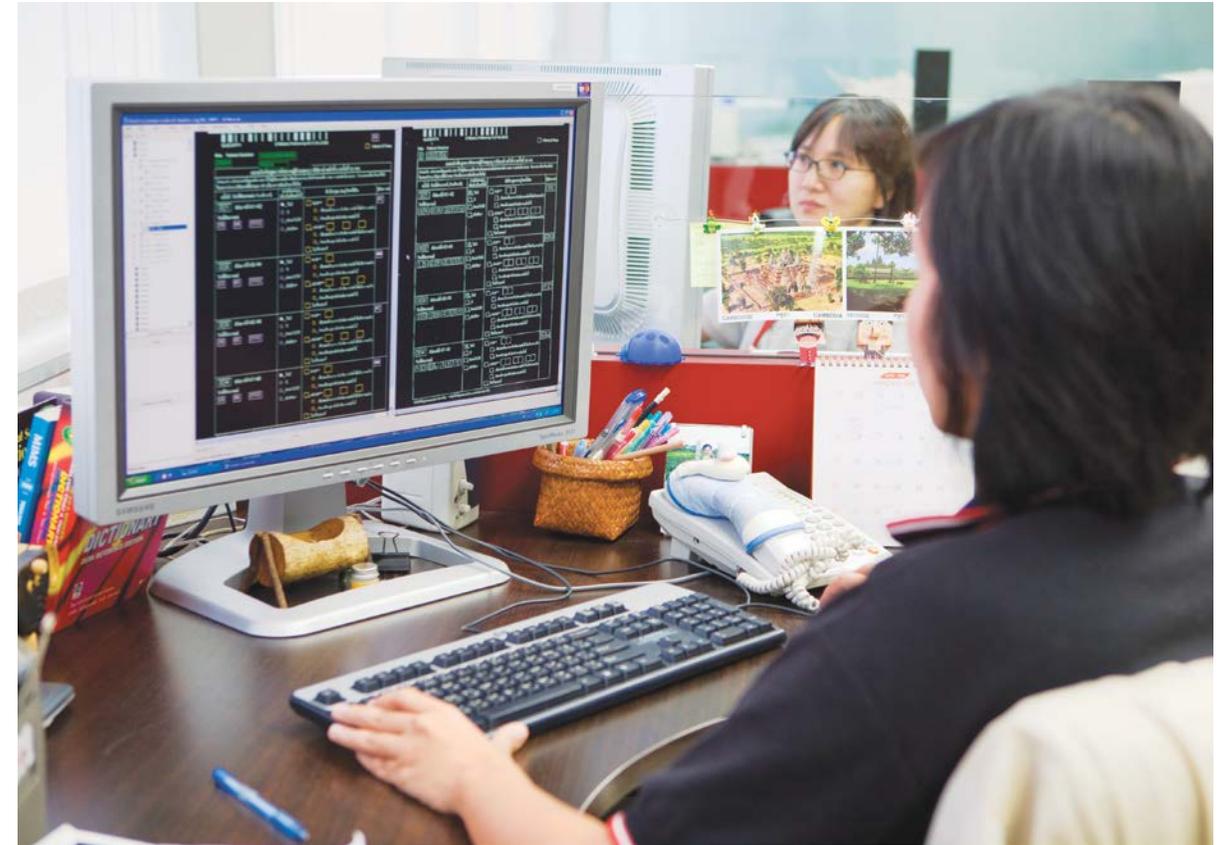
Foundation support also led to establishing the Public Health Schools Without Walls (PHSWOW) initiative in 1992, another example of capacity building for systemic change. PHSWOW focused on bolstering the skills of experienced public health personnel through formal postgraduate training. Universities in Southeast Asia involved in the effort worked initially in Vietnam, under the auspices of its Ministry of Health. Later, three other developing countries availed themselves of the training opportunities provided by the program. Among the medical schools offering instruction was Chulalongkorn University in Bangkok. When the program began to be phased out in 2001, it had graduated over 100 students with Master of Public Health degrees. The PHSWOW and INCLIN initiatives demonstrated the increasing need for partnerships that joined together the Foundation, medical schools, and ministries of health in the region.

FURTHER INITIATIVES IN AGRICULTURE

Agriculture was another traditional interest of the Foundation in Asia that continued to receive attention and resources in Thailand. The initiatives of the 1990s reflected the ongoing innovations of the Green Revolution. In 1991, the Foundation expanded its activities to include the Thai International Program on Rice Biotechnology (IPRB). In cooperation with the Thai National Center for Genetic Engineering and Biotechnology as well as the Ministry of Science, Technology and Environment, the IPRB provided research grants and fellowships in rice biotechnology.

Most notable was the research and development of so-called "Golden Rice" during the years when Gordon Conway was president of the Foundation. Conway was an agricultural ecologist who, in the 1970s, had worked in Thailand on the effects of the Green Revolution's overuse of pesticides on the environment. His work on integrated pest management in Malaysia (Borneo), Thailand, and other countries gained him international attention, and led research scientists and farmers to adopt a more careful approach to the use of pesticides. He was no stranger to the strengths and weaknesses of the Green Revolution.

Golden Rice resulted from the second Green Revolution's emphasis on biotechnology. It introduced pro-vitamin A into rice to combat a vitamin deficiency that afflicted people in the developing world. *Time* magazine's cover story on July 31, 2000, featured the virtues of Golden Rice, including



the promise that it could save the lives of a million children a year. It was a major achievement, although not without its critics.

As a scientist whose reputation had been built on research into the unintended side effects of the practical application of science, Conway became a critic of commercializing aspects of genetic engineering. During his term as Foundation president, for example, he challenged the Monsanto Corporation, a major corporate innovator and beneficiary of genetic engineering. In June 1999, the Monsanto board of directors invited Conway to present his concerns at a Board meeting. He admonished management for rushing genetically modified crops to market without suitable testing, and he criticized Monsanto's habit of aggressively patenting seeds for staple crops. Conway made his views public, along with a list of what the company needed to do to be a responsible practitioner of genetic engineering. Company executives were angry about the publicity that Conway's confrontation

Tracking disease transmission patterns throughout Thailand and Southeast Asia proved critical to fighting emerging epidemics and controlling health care costs. (Patrick de Noirmont, The Rockefeller Foundation.)

generated. Nevertheless, in the following years, Monsanto committed itself to adopting many of his recommendations.

For the most part, during Conway's tenure, the Foundation continued to work quietly on its traditional interests, but with greater attention to collaboration with other agencies and organizations. Capacity building—the ability to train new medical and scientific personnel—was a long-standing Foundation goal in Thailand and Southeast Asia more generally. Fellowship support was part of a sustained effort to enhance the human capital at major universities in the developing world. Thailand, along with the Philippines and Indonesia, were major beneficiaries of the advanced training fellowship program in Southeast Asia.

At the same time, the Foundation helped fund important policy research establishments in the region, and Thailand was the major recipient of assistance. Thai organizations benefiting from Foundation support were the Asian Institute of Technology, the International Health Policy Program, the Southeast Asia START Regional Center (focused on environmental issues), and the Thailand Development Research Institute. Overall, between 1993 and 2011, individuals and organizations in Thailand received 41 percent of the funds granted by Rockefeller in Southeast Asia.

NEW REALITIES, NEW DIRECTIONS

The new realities of globalization, financial instability, climate change, and the rise of China prompted the Foundation to develop new strategies that often took a regional approach to problems that had global ramifications. In view of the enormous size of India and China, the Foundation decided to initially center its activities in Southeast Asia. Its long history of involvement in Thailand made Bangkok a natural hub for its growing interest in regionalism in the 1990s. The Foundation enlarged its Bangkok office in 2002 to accommodate additional staff to carry out the work.

In the 1990s, planners in the Foundation, the Thai government, and the Asian Development Bank (ADB) began to think about the interconnectedness of countries in the Mekong River's far-reaching basin. Despite many differences among these countries, officials recognized the common geographic, economic, and social features of the massive tropical ecosystem that became known as the Greater Mekong Sub-region (GMS) of Southeast Asia. The six countries in the GMS were inhabited by almost 250 million people (one-tenth the population of Asia) and encompassed two economically dynamic areas—Thailand and Yunnan Province in China—bordered the lower-income countries of Cambodia, Laos (the Lao People's Democratic Republic), Myanmar,

and Vietnam. The tributaries of the Mekong River flow through all of these countries on the way to the South China Sea.

Starting with the Vietnam War in the 1960s and 1970s, the GMS suffered through years of internal divisions and conflicts as well as cross-border clashes that left the region—save China and Thailand—trapped in economic stagnation for several decades. Persistent strife had devastated populations, which resulted in psychologically and physically scarred populaces in Cambodia and Myanmar. Land mines and defoliants made large areas of the region dangerous or uninhabitable. Persistent conflicts in many areas had destroyed infrastructure, factories, and farms, further isolating the poorer countries of the area from the world economy. This instability resulted in growing disparities of wealth within the region, as the Thai and Chinese economies continued to grow.

In 1992 the Asian Development Bank and other international partners articulated the so-called “Asian (Export-Driven) Model of Economic Development” in the Mekong Delta. First on the Bank's agenda were far-reaching transportation and infrastructure projects to link the countries and the economies of the region closer together. Secondly, regional markets were integrated. Finally, the plan encouraged the participating governments to foster free-market policies in the region.

Overall, the plan worked to increase economic growth, which led to an increase in the region's wealth and income. But this economic “miracle” did not come without costs. While the Asian development model worked best in places like Japan, South Korea, and Taiwan, which had homogeneous populations, relatively stable governance systems, and low levels of economic inequality, introducing it in the Mekong Delta proved to be complex.

Serious social, cultural, and religious problems developed that were aggravated by the devastating Asian Financial Crisis of 1997-98. By 2000, 30 percent of the people in the Greater Mekong Sub-region lived below the poverty line. Building highways, ports, and hydroelectric dams, along with the increased exploitation of resources for export, also created serious environmental and social problems. Mountainous border areas, which also serve as home to the majority of the region's neglected indigenous communities, had mineral and logging resources that incentivized the construction of access roads and the expansion of extractive economic activities. A significant consequence was severe environmental damage in a number of these areas and the social dislocation of traditional societies. Many people saw their sources of food and livelihoods affected, which triggered higher levels of cross-border migration. In turn, these movements of people put pressure on the wealthier areas to

which the migrants moved. Local residents resented the migrant laborers whose arrival led to depressed wages and pressure on services. As one internal Foundation report noted, rampant irregular migration involved not only undocumented and trafficked laborers, but also women and children trafficked for forced marriages, prostitution and begging. Accompanying these social challenges was an expansion of the drug trade. In 1990, the so-called “golden triangle”—the mountainous regions of Myanmar, Laos, Vietnam, and Thailand—produced the second largest crop of opium in the world. Increased drug trafficking in the 1990s also contributed to an upsurge in the incidence of HIV/AIDS, with serious health consequences across the region. While a concerted effort by the United Nations significantly reduced this trade by 2005, a heavy toll had been taken.

By the end of the 1990s there was alarm over the unintended consequences of policies that focused on regional integration to maximize the development and sale of resources on the world market at the expense of ecosystem protection, cultural resilience, and national sovereignty. Thai officials and Foundation executives began to address these unforeseen results of regionalization in the Mekong River ecosystem. Already-poor people and their fragile communities were at increased risk because of varying rates of economic development and growing disparities of income and wealth. Moreover, regionalism exacerbated cultural differences and tensions based on the treatment of women, long-standing ethnic stresses, and differences over religion.

Four Foundation initiatives stand out in the effort to address the complex issues related to the Mekong region. Learning Across Boundaries (LAB) concentrated on promoting an understanding of the need for increasing integration across the ecosystem. The goal was to bring about greater appreciation of the economic, social, and cultural challenges that arose as the region became more integrated. Related to the LAB initiative was funding for the Bridging Diversity (BD) program, which emphasized improving appreciation of religious and ethnic differences and reducing discrimination.

A third initiative supported by Foundation funding—and perhaps the most significant—was a program designed to make the best use of economic resources across national borders. The Upland Communities in Transition (UCT) program focused on improving food security and the incomes of those in upland population centers in the Greater Mekong region. Part of this effort was the fourth initiative, the Cross Border Health (CBH) program, primarily an informational effort intended to widen governmental and public awareness of the health impact of greater cross-border movements of peoples in the region.

Perhaps one of the most important partnerships in recent times resulted in the Mekong Basin Disease Surveillance (MBDS) Network, which would eventually serve as a model for a much larger and ambitious program designed to have a global impact. The Foundation and the World Health Organization (WHO) began planning for the MBDS in 1999, underwriting a collaborative program among ministries of health in the Greater Mekong Sub-region. They also provided the six countries assistance in acquiring technology, creating a network of medical professionals, and developing the human resources to achieve the goals of the project—to collect, analyze, and disseminate information about changing patterns of infectious diseases in the area. Included in the network were representatives from agencies concentrating on human and animal health.

In 2007, the original Memorandum of Understanding—among the Foundation, WHO, and the ministries of health of the six countries—was extended for another six years. During that period, the aims of the MBDS were to intensify collaboration to better prepare for a public health emergency that might lead to the international spread of disease. The MBDS Network institutionalized itself through the creation of the MBDS Foundation, a legal entity registered in Thailand, which was formed in 2011. Its goals are to build long-term sustainability for the network by diversifying its funding sources and strengthening the organization’s autonomy in program planning and strategy development based on the priorities of its member countries. The success of the MBDS Network would later encourage a much more ambitious effort to link disease surveillance networks worldwide for a larger global impact.

THE ROCKEFELLER FOUNDATION’S ASIA OFFICE IN BANGKOK SINCE 2005

Several new approaches to initiatives followed the appointment of Judith Rodin, an academic psychologist and formerly president of the University of Pennsylvania, as the Foundation’s president in 2005. The Bangkok office was now charged with overseeing work in Thailand and the entire region of Asia, with an enhanced responsibility for scoping out a new era of projects, providing logistical support for their implementation, and engaging more closely with Thai institutions to leverage their knowledge and capabilities for the benefit of the region’s less-developed countries.

Having a global impact was an essential goal of the Foundation’s new approach. The idea was to create successful initiatives that could then become models to be implemented globally.



Thirty-five years after launching the Population and Community Development Association, Dr. Mechai Viravaidya noted that Thailand's population growth rate had dropped to less than 0.6 percent. The PDA's condom campaigns helped raise awareness about reproductive health. (Patrick de Noirmont. The Rockefeller Foundation.)

In focusing on these interrelated global challenges, the Foundation was not making a full break with its interests in specific regions of the world, especially in Thailand and more generally in Asia. Setting a priority on health care delivery to poor and vulnerable populations was not new. Paying attention to health systems, however, was an innovative refinement and enhancement of previous Foundation efforts. A systems approach to health not only brought into the discussion how to strengthen and make health systems function effectively, but also how to make health care affordable and accessible to all. Environmental concerns were also not new to the Foundation, but in the early twenty-first century the negative consequences of climate change were clearly manifesting themselves. The task had moved beyond how to prevent damaging environmental events, and was now how to cope with them. Foundation efforts were based on the need to build programs to enhance the resilience of the poorest and most vulnerable in the developing world in their struggle with the consequences of environmental degradation and global warming.

Urbanization also received heightened attention. For a long time the Foundation had understood that changes in agriculture fostered moves away from the land in many poorer countries. Even in Asia, where most people still live in rural communities, the migration to cities had been rapidly accelerating. In 2010, for the first time, more people around the world were living in urban than in rural areas.

Appreciating the seriousness of these basic realities has led the Foundation to commit to several major initiatives, each receiving detailed study and planning. Three of these initiatives, rolled out in the last few years, owe much to the Foundation's legacy in Thailand. They are the Building Climate Change Resilience initiative; the Transforming Health Systems Initiative (THS); and the Disease Surveillance Networks Initiative (DSN). Each represents a more "systems-oriented" approach than was the case with previous efforts, which centered on programs, projects, and themes.

The Building Climate Change Resilience initiative is based on the important insight that furthering development in the twenty-first century requires an ability of the poorer populations in both urban and rural areas to cope with the consequences of climate change. The Foundation's initiative draws attention to the looming effects of climate change in an effort to mobilize capacities and action by governments, NGOs, other foundations, and public and private donors.

Climate change manifests itself in many interconnected ways. Average increases in temperatures over the last 15 years are obvious to both scientists and average citizens. Rising temperatures result in a rise in sea levels; more numerous and more powerful storms, resulting in higher levels of precipitation;

reduced biodiversity; and persistent loss of arctic ice as well as glaciers. These climate events contribute to—if they do not cause outright—increasing salinity in fresh water, coastal erosion, and flooding. Rising temperatures and rainfall also increase the threats from dengue fever and malaria, and from spawning environments conducive to other diseases.

To manage the climate change initiative in urban areas of Asia and Southeast Asia, the Foundation supports the Asian Cities Climate Change Resilience Network (ACCCRN), designed to cope jointly with three of the developing world's most difficult problems: poverty, urbanization, and climate change. As Foundation president Judith Rodin observed in discussing ACCCRN: "Since it may be too late to stop the global warming that's already occurred, we also must figure out how to survive it. . . . There is far less attention paid to adaptation, what needs to be done to help people and environments cope with what's already occurred and with what's coming."

The Foundation committed \$59 million in 2008 to a seven-year program. Ten cities of varying characteristics in India, Indonesia, Thailand, and Vietnam were selected to be part of the first phase of the initiative, with the hope that they would become models for a much larger set of cities. Two of these pioneering cities are in Thailand. Chiang Rai is relatively small with a growing tourist trade and strong continuing ties to its rural surroundings. Deforestation and poor drainage have made periodic flooding a serious problem that has been aggravated by climate change and poor urban planning. Hat Yai is larger and much more urban than Chiang Rai. As a destination for tourists and a center for manufacturing and service industries related to fisheries and agriculture, Hat Yai faces problems of flooding and, in addition, landslides.

ACCCRN planners selected different urban contexts to examine how cities cope with problems produced by climate change. Collectively, assembling the different experiences of the participating cities will widen the understanding of how they might cope with not only current but future consequences of climate change. Each city goes through a process of intensive capacity development, research, and multi-stakeholder dialogue to generate a locally owned Climate Resilience Strategy. With this strategy in hand, civic projects are prioritized. In some cases, the Foundation complements local resources. In Thailand, many of these projects focus on flood management, ecosystem restoration, and land-use planning. The work is carried forward by city governments, research center, and NGOs. Ultimately, the plan is sequenced over four phases. In its final phase

“Since it may be too late to stop the global warming that’s already occurred, we also must figure out how to survive it.”

Judith Rodin

ACCCRN will have produced hands-on methods applicable across hundreds of other rapidly growing cities in Asia. The pioneering efforts in Chiang Rai and Hat Yai are intended to catalyze a national effort in Thailand in the years ahead.

The four countries involved in the network—India, Indonesia, Thailand, and Vietnam—represent many different languages, ethnicities, and religious groups. Government organizations, as well as political and interest (stakeholder) groups, operate differently at the national, regional, and local levels in each country. Flexibility was a key element in designing an operational framework for ACCCRN, because the ten participating cities have different experiences with poverty, urbanization, and climate change. They also have different levels of expertise to cope with these problems. Despite elements of diversity, the partners in the program are responsible for integrating local experience and knowledge with global science about climate change. Local experts and key city stakeholders have to be deeply involved in applying the larger understanding of global warming and its consequences, and in the practical matters that affect the everyday lives of urban residents. In sum, ACCCRN organizers planned the network to involve as many local representatives as possible not only with their counterparts in other cities, but also with national and international experts in climate science, disaster risk assessment and abatement.

Networking among the partners was not the only long-term objective. Horizontal sharing of experience and expertise is essential for developing practical means of predicting, reducing, and coping with the consequences of climate change. In the end, however, what has been learned through ACCCRN will also be shared “vertically.” The long-term goal is to create national and international models for adapting poor urban populations to climate change, to bring about resilience in the face of serious future environmental challenges.

Like the Building Climate Change Resilience initiative, the Transforming Health Systems Initiative (THS) takes a systems approach to promoting universal health coverage that provides access to care without fear of financial hardship. The major insight into the provision of health care was that health systems are networks of medical organizations, providers, patients, technologists, and policymakers. They are multi-dimensional, and need to be treated that way. While much of the past effort to improve health involved training professionals and building medical facilities, the ability to serve the medical needs of the poor was as much the result of the systems in which care was delivered as the professionals who staffed the institutions.

The Foundation and other donors interested in improving health care for the poor have expended vast sums of money on various diseases tied to specific populations. Despite the best of intentions, those efforts have resulted

in widely varying levels of availability and affordability of health services in fragmented health systems. In the early years of the twenty-first century, developing countries still face the fact that millions of people worldwide do not have access to affordable health care. Indeed, more than three billion people—many among the world’s poorest—have to pay for their own health care out of pocket, which every year impoverishes 100 million people. The Foundation concluded that these unfortunate outcomes were often the result of dysfunctional systems for the provision of health care, and the lack of adequate medical services slowed economic and social development. Because of these circumstances, the Foundation concluded that the strategic anchor of Transforming Health Systems should be to support countries working to achieve universal health coverage (UHC).

To meet these challenges, the Foundation’s THS initiative devotes attention to strengthening system-wide activities. THS does not build hospitals, provide care centers, or deliver medicines and vaccines. Instead, it focuses attention on improving the stewardship and management of mixed (private and public) health systems to understand what promotes better health outcomes at lower cost. Better results require improving the various components of health systems, and Foundation efforts have focused on enhancing the capabilities of those who direct and administer them at the national level. They are being trained to better collect, analyze, and utilize various kinds of data to help them manage and plan for UHC. Also essential parts of the initiative are health financing and cost issues, the application of technology (especially Global eHealth, the innovative joining of new information and communication technologies), and the governance of health systems. Ultimately, the goal of the THS initiative is to improve health systems in selected sub-Saharan African and Southeast and South Asian countries to such an extent that they can serve as demonstrations, to be learned from and expanded in other parts of the world.

Thailand has played an important role in these efforts. It has been a model in the provision of UHC, which was introduced in Thailand in 2002. This success has served to encourage other developing countries to learn from the Thai experience. Thailand’s attainment of universal health coverage has challenged the commonly held belief that only the richer nations of the OECD can provide access to all of their citizens. Furthermore, Thailand’s experiences illustrate that knowledge sharing can occur across what has been called the Global South. Initiatives such as the Joint Learning Network, which facilitates knowledge exchange and joint problem-solving among practitioners and policymakers from ten low and middle-income countries in Africa and Southeast Asia, provide a forum for sharing ideas and experiences relating to



universal health coverage. In 2011, to further exemplify the value of South-South collaboration and underline Thailand’s emergence as a leader in proving access to health coverage, the Foundation supported the creation of the Capacity Building Center on Universal Coverage (CapUC). Housed in the Thai Ministry of Public Health’s International Health and Policy Program (IHPP), this new institution serves as a learning and knowledge sharing center for others in the region and around the world.

The Foundation also works closely with leaders of the Thai public health system to advocate for global initiatives to support universal health coverage. Working through the Foreign Policy and Global Health group with Dr. Suwit Wibulpholprasert and Dr. Viroj Tangcharoensathien of the Ministry of Public Health, as well as Dr. Churnrurtai Kanchanachitra of Mahidol University and numerous Thai colleagues in the health sector and in the Thai Ministry of Foreign Affairs, the Foundation and its Thai partners helped to pass the United Nations General Assembly Resolution on Universal Health

In Mukdahan, an important crossing point on the border between Thailand and Laos, health workers with the Mekong Basin Disease Surveillance Network collaborated with immigration officials to collect data on disease rates and to deter regional epidemics. (Patrick de Noirmont. The Rockefeller Foundation.)

Coverage in December 2012. With the adoption of this resolution, the stage was set for universal health coverage to be the central health goal in the post-2015 Millennium Development Goal framework. Passage of the resolution also highlighted the emergence of Thailand as an influential actor in the field of global health.

Another Foundation initiative, the Disease Surveillance Networks (DSN, approved in 2007) has the distinction of being built directly on an ongoing program—the Mekong Basin Disease Surveillance (MBDS) Network discussed earlier. Established at a meeting in Bangkok in 1999 and funded by the Foundation in partnership with the World Health Organization, the MBDS was motivated by an increase in the number of new varieties of infectious disease.

DSN encourages the development of sub-regional networks of countries and disease specialists to enhance surveillance of and response to national, regional, and global outbreaks of disease that have particularly dire consequences for the world’s poorest populations. These efforts were prompted by the appearance of new infectious diseases—HIV/AIDS, Ebola, SARS, avian influenza, and H1N1 influenza (swine flu)—that could cause pandemics. DSN employs a multi-pronged approach to its mission. One is to increase individual and institutional capacity to detect outbreaks of new diseases and enhance the ability to respond to them. Another is to improve the connections among disease surveillance networks. With the encouragement of DSN, the Mekong Basin Disease Surveillance network, headquartered in Bangkok, has served as a model for the development of such networks in Eastern and Southern Africa. The DSN has also encouraged increased collaboration among specialists in animal health, human health, and environmental health in the One Health initiative. According to the National Center for Emerging and Zoonotic Infectious Diseases at the Centers for Disease Control and Prevention, approximately 75 percent of recently emerging infectious diseases affecting humans are diseases of animal origin; approximately 60 percent of all human pathogens are zoonotic. These zoonotic diseases—Ebola, West Nile, H1N1, and HIV/AIDS—have an impact on public health, food supplies, the livelihood of the poor, and the environment.

To cope with pandemic diseases, it is essential that they be identified quickly and confined in the best way possible to a particular locality. Establishing surveillance networks has proved difficult because of the fragility of health systems, poor mechanisms for responding to outbreaks, and unreliable coordination. Still, there are local initiatives that contribute to the larger objectives of the DSN. Thailand and Lao PDR, for example, have established a cross-border site between Savannakhet, Laos, and Mukdahan, Thailand.

Representatives of district and public health offices regularly share information through e-mails, websites, conferences, and personal communication (especially during outbreaks) about 18 diseases of concern to the region. This effort has involved the cooperation of doctors, public health officials, and animal specialists.

In building on the work of the MBDS, the Foundation had two major goals. First, it set out to strengthen the network already in place that included Thailand, Cambodia, Laos, Myanmar, Vietnam, and China's Yunnan and Guangxi Provinces. Second, Rockefeller officials plan to make successful practices originated in the Mekong basin available to nascent networks elsewhere, through its support of the global network Connecting Organizations for Regional Disease Surveillance (CORDS). The objective is to encourage closer collaboration, knowledge transfer, and sharing of best practices among surveillance networks across the world—the

Judith Rodin became the first woman to serve as president of the Rockefeller Foundation. Soon after her appointment in 2005 she visited Thailand and reaffirmed the Foundation's commitment to work in Thailand and other parts of Asia, using its regional office in Bangkok to coordinate that work. (The Rockefeller Foundation.)



Mekong region, Eastern and Southern Africa, South Asia, the Middle East, and Eastern Europe. Achieving these two goals will contribute to fostering greater resilience in the face of challenges confronted by communities in Thailand and its neighbors.

As in its work with ACCCRN and THS, the Foundation looks upon the surveillance network developed in the Mekong in terms of a “system,” a holistic entity. DSN is providing support to improve the training of those working on surveillance; to enhance collaboration and trust among countries in the network; and to improve the coordination of efforts across borders. Fine tuning procedures for quickly determining the presence and seriousness of a pandemic disease can help ensure that information is quickly made available to others in the network.

Overall, then, facing the new realities of the last 30 years has led to profound changes in the way the Rockefeller Foundation pursues its mission in Asia. Confronting a world marked by the opportunities and challenges of accelerating globalization, the rise of China as a major economic force, and the growing awareness of climate change, the Foundation built on its strong achievements while at the same time branching out to tackle new problems and new ways to approach them.

The relationship between the Foundation and the Thai people provides a rich example of the way innovative partners can work together in a world of new realities. While remaining true to its legacy of improving the lives of the world's poor and vulnerable populations, the Foundation has nevertheless employed new tools and strategies to cope with global problems.

At the same time, Thailand has become a leader in numerous areas, most notably in its pioneering effort to provide universal health coverage to its citizenry. It also has become a center for generating and dispersing new knowledge about limiting the spread of disease and improving health through, among other activities, the Prince Mahidol Annual Conference to honor individuals and institutions that have made significant contributions to global health; the BIOPHICS program at Mahidol University, a major center devoted to providing biomedical and public health information; the International Health Policy Program, committed to improving research in public health for Thailand and for developing countries; and the Global Health Diplomacy Network, of which Thailand is a member, designed to help educate policymakers who work outside the field of health regarding the potential impacts of their decisions on the well-being of their citizens.

HELPING FARMERS COPE WITH CLIMATE CHANGE

Climate change poses challenges for farmers and city dwellers in northern Thailand, particularly in Chiang Rai Province. Cool-weather agriculture is critical to the region's economy and to the food security of many rural residents. To help face the challenges of climate change, the Rockefeller Foundation has supported efforts by the Thailand Environment Institute (TEI) to train poor farmers in sustainable agricultural techniques.

Rice is the main crop in Chiang Rai, but farmers also cultivate maize, lychee, longan, tea, coffee, and pineapple. Climate change is expected to increase average temperatures and shift the pattern of rainfall. In 2009, drought damaged almost 90 percent of the pineapple crop. Meanwhile, many rice paddy fields dried up. Higher temperatures also inhibited the flowering of lychee and coffee plants, lowering production.

To cope with these effects of climate change, Chiang Rai is focusing on sustaining and increasing biodiversity in the region. Ecotourism supports the new direction in agriculture and provides supplemental income to the regional economy. The introduction of organic farming methods, new irrigation systems, and urban agriculture create more sustainable and resilient systems for food production.

The project brings together a wide range of collaborators, from local and national government agencies to non-governmental organizations and private businesses. The Rockefeller Foundation has supported these initiatives, primarily through its multi-year grants to TEI and the Asian Cities Climate Change Resilience Network (ACCCRN).





Waterways like the Chao Praya River serve as an important means of transportation. In 2011, however, flooding in Bangkok and other communities in Thailand claimed more than 800 lives and caused economic losses that exceeded \$45 billion. To help support efforts to mitigate damage from future floods, the Rockefeller Foundation teamed up with the Asia Foundation to improve coordination and collaboration among key stakeholders. (Patrick de Noirmont. The Rockefeller Foundation.)

It has been almost a century since Dr. Victor Heiser steamed into Bangkok harbor, in April 1915, to study Siam's health system. He was an early embodiment of what John D. Rockefeller established as the mission of the newly formed foundation that bore his name—"to promote the well-being of mankind, throughout the world." The doctor's arrival marked the beginning of what would become a unique partnership between the Foundation and Thailand.

Heiser found a country unlike others he had visited in Asia. Thailand had protected its independence in a part of the world dominated by European imperial powers during the nineteenth century. Its less fortunate neighbors had to cope with the consequences of colonialism, but the three Thai kings whose reigns spanned the end of the nineteenth and beginning of the twentieth centuries—King Mongkut (Rama IV), King Chulalongkorn (Rama V), and King Vajiravudh (Rama VI)—encountered the western world on their own terms. They alone had reformed the country's military, legal system, public administration, and education.

Thai efforts to construct practical state institutions convinced Heiser that Thailand would be a fruitful place for the Rockefeller Foundation to build a partnership. The Foundation's approach incorporated an intuitive, innovative understanding of what would be needed. Despite a unique Thai culture and history, Heiser and his colleagues grasped that mutual respect was the substance of a workable rapport. It required an ability to listen, one of the most crucial of all qualities in a relationship, but especially essential in a relationship across cultures.

In many ways, appreciating the importance of mutual respect sprang from the Foundation's basic operating principles. John D. Rockefeller did not want his Foundation to deliver charity. Instead, the Foundation was designed to provide recipients with the wherewithal for a specified but limited period of time, to build new and permanent capacity in their own communities and nations.

These ideas of capacity building were prescient. Current thinking among development specialists is that economic, social, and political progress can only be based on the building of capacity—state, institutional, and individual—which allows those who receive assistance to make the best use of it. The Rockefeller Foundation reached this conclusion a century ago. Its experience in Thailand has been suffused with these ideas ever since, as it partnered with Thai colleagues in improving public health and medical training; enhancing agriculture through the Green Revolution; and advancing higher education through the University Development Program. By the twenty-first century, these efforts had made a significant contribution to Thailand's development. And Thailand's success in so many of these areas has made it a model for other countries in the region and around the world.

Prince Mahidol played a pivotal role in forging the initial partnership between the Foundation and Thailand. He, too, intuitively understood the importance of what modern social science refers to as capacity building. In partnering with the Rockefeller Foundation, he strove to improve and build organizations—hospitals, professional schools, public ministries. He also sought to equip individuals for continuing to build and

improve institutions, thereby enhancing the capabilities of generation after generation of doctors, nurses, public health practitioners, scientists, and researchers.

Thailand's leading role in the Rockefeller Foundation's efforts in Southeast Asia today—in new initiatives to provide universal health coverage, combat pandemic diseases, and advance medical and scientific research—owes much to Prince Mahidol's foresight, intellect, and tenacity. It is also the result of Foundation and Thai leaders, in recent decades, embracing the increasing pace of change brought about by globalization.

For nearly a century the Rockefeller Foundation and its partners have worked to promote the well-being of the people of Thailand. The story of this partnership provides important lessons for governments and NGOs working in developing nations. Fundamentally, the collaboration requires mutual respect and a shared commitment to capacity building—to promoting individual, organizational, and national capabilities. It also requires resilience and flexibility to embrace and harness change and to cope with new challenges—positive and negative—that stem from fast-paced advances in technology, science, society, economics, politics, and international relations. Today, many other donors have reduced their presence in Thailand because the country has achieved so much. In contrast, the Rockefeller Foundation and its Thai partners see the legacies of the past as a solid foundation that can provide the basis for continuing innovation in Thailand, Southeast Asia and, indeed, around the world.

Innovative Partners is part of the Rockefeller Foundation's Centennial initiative. Members of the Rockefeller Foundation's staff were deeply involved with the development of this book. Dr. Judith Rodin helped to inspire the concept. Michael Myers, with the close and capable assistance of Carolyn Bancroft, provided critical guidance and encouragement. Staff at the Rockefeller Foundation Asia Regional Office, in particular Natalie Phaholyothin and Deekana Tipchanta, provided invaluable perspective and feedback. Robert Bykofsky, Elizabeth Pena, and the staff in Records Management helped identify and access current and historical materials that tell the story. Kathy Gomez collected spectacular photographs highlighting the Foundation's recent work. In the General Counsel's office, Shari Patrick and Erica Guyer provided legal guidance and feedback. A number of individuals read and provided helpful comments on some or all of the manuscript, including Charlanne Burke, Neill Coleman, Ashvin Dayal, Heather Grady, Natakorn Satienchayakorn, and Gary Toenniessen.

At the Rockefeller Archive Center (RAC) in Tarrytown, New York, President Jack Meyers and Vice President James Allen Smith welcomed our team. Nancy Adgent, Shoshana Brody, Michele Hiltzik, Beth Jaffe, Tom Rosenbaum, and the other archivists on staff helped find key documents and files.

Members of the team from Teneo Strategy, the Foundation's strategic partner for the Centennial, helped shepherd this project across time zones. Thanks especially to Andy Maas, Max Dworin, and Michael Coakley.

Researching and writing this book was a team effort. Without the thoughtful guidance and editing of Centennial series editor Eric John Abrahamson and the indefatigable research of Lois Facer, this book would not have been possible. In addition, Pruittiporn Kerdchoochuen found journal articles, helped compile a chronology, and corrected references in the manuscript. Sam Hurst read and helped improve several drafts. Michael Ilardi helped write sidebars and make corrections. Ernie Grafe copyedited the entire work. Amanda Waterhouse, Craig Chapman, and Vivian Jenkins compiled the index. Ithi Sophonpanich proofread the manuscript and galleys to help with place names and historical references. Mindy Spitzer Johnston and Leigh Armstrong tracked down photographers and copyright holders to make sure we recognized the creators of works that have been buried in the archives for many years. At Pentagram, Michael Gericke and Matt McInerney brought the words and illustrations together in a beautiful book.

William H. Becker

LIST OF ILLUSTRATIONS

2-3	Street scene in Bangkok.	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
4-5	Parade of Pichit school children for the Sanitary Campaign (1928).	Photo by McIntosh. Source: Rockefeller Archive Center.
6-7	Thai weavers in Sidon Cha village, Chiang Khong (2001).	Photo by Steve McCurry. Source: The Rockefeller Foundation.
8-9	Weighing baby as part of Rural Health Training (1970).	Photo by Joe D. Wray. Source: Rockefeller Archive Center.
10-11	Thai women in traditional costumes (2002).	Photo by Steve McCurry, Source: The Rockefeller Foundation.
12-13	Rural health students boarding boats (1970).	Photo by Joe D. Wray. Source: Rockefeller Archive Center.
14-15	Man wading across river near Samut Sakhon (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
16-17	The first protected latrine erected in Siam (1917).	Photo by Milford E. Barnes. Source: Rockefeller Archive Center.
18-19	Debarking boat (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
28	W. L. Blackett (left), Prince Sakon (third from left) and Phya Amorariddhi (far right) (1915).	Source: Rockefeller Archive Center.
30	Temple Brah Meru (1926).	Source: Rockefeller Archive Center.
34	Group of cars loaned to Department of Public Health during cholera control campaign (1926).	Source: Rockefeller Archive Center.
37	Supplying drinking water by boat during cholera control campaign (1926).	Source: Rockefeller Archive Center.
40-41	The old city of Ayutthaya (1915).	Source: Rockefeller Archive Center.
43	Waterways at the Bang Pa-In Palace (1915).	Source: Rockefeller Archive Center.
45	Doctors Heiser, Barnes, MacFarland and Ellis at Wat Phra Kaew (1921).	Source: Rockefeller Archive Center.
49	Traveling inspectors (1923).	Photo by Milford E. Barnes. Source: Rockefeller Archive Center.

INNOVATIVE PARTNERS

50-51	A public health talk in a village in Amphur Hang Dong (1918).	Photo by Milford E. Barnes. Source: Rockefeller Archive Center.
53	Staff of the hookworm unit at Amphur Sansai (1921).	Source: Rockefeller Archive Center.
54	Buddhist monk viewing hookworms through microscope (no date).	Source: Rockefeller Archive Center.
55	Milford E. Barnes with hookworm staff (no date).	Source: Rockefeller Archive Center.
56	Hookworm Work in Siam map (1923).	Source: Rockefeller Archive Center.
58-59	Hookworm report forms (1923).	Source: Rockefeller Archive Center.
60-61	Palm tree on the Mekong River near Mukdahan (2008).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
63	Letter from M.E. Barnes to Victor Heiser, October 16, 1920.	Source: Rockefeller Archive Center.
64	Richard M. Pearce at his desk (no date).	Source: Rockefeller Archive Center.
67	H.R.H. Mahidol Adulyadej, Prince of Songkla (c. 1914).	Source: Harvard University Archives.
69	Siamese nurses trained abroad (1924).	Photo by Henry R. O'Brien. Source: Rockefeller Archive Center.
70	Alice Fitzgerald, director of nurses (no date).	<i>New York World-Telegram & Sun</i> . Source: Rockefeller Archive Center.
72	H.R. H. Prince Bhanurangsi opening children's ward at Siriraj Hospital (1927).	Source: Rockefeller Archive Center.
73	Nurses on steps of operating room, McCormick Hospital in Chiang Mai (c. 1924).	Source: Rockefeller Archive Center.
74	Dr. Aller G. Ellis, director of Studies, in Siam (c. 1924).	Source: Rockefeller Archive Center.
77	Lecture room at Chulalongkorn University (1930).	Source: Rockefeller Archive Center.
78	Midwifery nursing building, Chulalongkorn University (1932).	Source: Rockefeller Archive Center.
82-83	Laboratory of bacteriology, Chulalongkorn University (1930).	Source: Rockefeller Archive Center.

LIST OF ILLUSTRATIONS

85	Mother with child wearing mask, Dontal Hospital (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
86-87	Yellow boat near Samut Sakhon, Thailand (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
89	Women shaking baskets with rice, Farm Suwan (no date).	Source: Rockefeller Archive Center.
91	Corn stamp issued by Thailand (1971).	Source: Rockefeller Archive Center.
92	Guatemala corn known as Tequisate Golden Yellow Flint (no date).	Source: Rockefeller Archive Center.
94	Deep water rice test planting (no date).	Source: Rockefeller Archive Center.
96	Dwight C. Finfrock inspecting rice fertilizer trials at Suwan Farm near Pak Chong (1967).	Photo by Neil MacLellan. Source: Rockefeller Archive Center.
97	H.R.H. Prince M.C. Chakrabandhu with Thai farmers and Rockefeller Foundation staff (no date).	Source: Rockefeller Archive Center.
99	H.R.H. King Bhumibol Adulyadej greets Rockefeller Foundation president Richard Lyman and his wife Jing Lyman (no date).	Source: Rockefeller Archive Center.
101	Gary Toenniessen (1989).	Source: Rockefeller Archive Center.
104-105	Rice paddies in northern Thailand (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
109	Thai farmers working in rice paddies outside Mukdahan (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
110-111	King Bhumibol Adulyadej and Queen Sirikit with John D. Rockefeller 3 rd and Blanche Rockefeller at Lincoln Center (1967).	Photo by Bob Serating. Source: Rockefeller Archive Center.
115	General Netr Khemayodhin with James S. Dinning (c. 1967).	Photo by Ted Spiegel. Source: Rockefeller Archive Center.
117	Medical student with mother and children (c. 1970).	Photo by Joe D. Wray. Source: Rockefeller Archive Center.

INNOVATIVE PARTNERS

119	King Bhumibol Adulyadej presides over the dedication of the new University Medical Science Building (1965).	Source: Rockefeller Archive Center.
120	Students working with microscopes at Mahidol University (no date).	Source: Rockefeller Archive Center.
124-125	Elvin C. Stakman discusses root rot problems with trainees at Suwan Farm (1973).	Source: Rockefeller Archive Center.
126	Sign at Suwan Farm (no date).	Source: Rockefeller Archive Center.
127	Technicians and Rockefeller Foundation staff from the maize improvement program (1966).	Source: Rockefeller Archive Center.
129	Sujin Jinahyon displays two ears of corn at Kasetsart (no date).	Source: Rockefeller Archive Center.
130	Puey Ungpakorn (c. 1967).	Photo by Ted Spiegel. Source: Rockefeller Archive Center.
133	Outdoor class discussion at Thammasat University (1976).	Source: Rockefeller Archive Center.
137	Great Hall at Thammasat University (no date).	Source: Rockefeller Archive Center.
139	Workers at Kamphaeng Saen (1971).	Source: Rockefeller Archive Center.
141	National Swine Research and Training Center sign at Kamphaeng Saen (no date).	Source: Rockefeller Archive Center.
144-145	Trustee Michael Blumenthal greets Snoh Unakul (1976).	Source: Rockefeller Archive Center.
148-149	Boy on tracks in Bangkok (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
150-151	Dontal Hospital in northern Thailand (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
154-155	Red bus in Bangkok (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
157	Kenneth Warren (1977).	Source: Rockefeller Archive Center.

LIST OF ILLUSTRATIONS

158	Dontal Hospital waiting room (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
161	BIOPHICS staff (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
166-167	Founder and Chairman of the Population and Community Development Association (PDA) Mechai Viravaidya (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
172	Mukdahan Port border crossing (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
174	Judith Rodin.	Source: The Rockefeller Foundation.
176-177	Thai farmer working a paddy field outside Mukdahan in northern Thailand (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.
178	Ship towing a string of barges on the Chao Praya river (2009).	Photo by Patrick de Noirmont. Source: The Rockefeller Foundation.

INDEX

Adul Wichiencharoen, 134-135, 143	Bhumibol, Prince, 69, 75. <i>See</i> Bhumibol Adulyadej, King (Rama IX).
Africa: 157, 171, Sub-Saharan Africa, 171; Eastern Africa, 173, 175; Southern Africa, 173, 175	Borlaug, Norman, 92-93
Albert Einstein College of Medicine, 121	Boston: 68, 75, Brookline, 75; Brookline Palace, 75
American Vice Consul, 48	Bowles, Chester, 92
American Presbyterian Mission in Chiang Mai, 72	Bowring Treaty, 88
Ananda Mahidol, King (Rama VIII), 35	Bradley, Dan Beach, 134
Ananda, Prince, 69, 75, 80. <i>See</i> Ananda Mahidol, King (Rama VIII).	Bradley, William L., 134, 136
Anderson, Richmond, 112	Britain colonies, 32
Ankylostomiasis (hookworm disease), 31, 33, 65	Buddhist monks, 52, 54
App, Alva A., 102	Bunchana Attakor, 120
Asia, 23, 38, 44, 92-93, 95, 101, 103, 106, 108, 126, 140, 152, 155-157, 159-160, 165, 168-170, 175, 179	Burma, 29
Asia Rice Foundation, 107	Calcutta, India, 64
Asian (Export-Driven) Model of Economic Development, 163	Cambodia, 93, 162-163, 174
Asian Cities Climate Change Resilience Network (ACCCRN), 38, 169-170, 175-176	Cambridge, Massachusetts, 69, 75
Asian Development Bank (ADB), 162-163	Canada, 103
Asian financial crisis, 1997-98, 152, 163	Capacity Building Center on Universal Coverage (CapUC), 172. <i>See also</i> Thai Ministry of Public Health.
Asian Institute of Technology, 36, 162	Caribbean, 157
Australia, 103, 106	Carnegie Corporation, 153
Avian influenza, 149, 173	Central Institute of English Language (CIEL), 135
Bamras Naradura, Phra (Dr. Long Vejjajiva), 113	Ceylon, 46
Bangkok, Thailand (Siam): 22, 29, 37, 42, 44, 46-49, 65, 70, 72-73, 75-76, 81, 95, 103, 113-116, 118-120, 126, 139, 141, 152, 155-156, 160, 165, 173, 178-179; Bangkokhen, 131	Challenge Program on Water and Food (CPWF), 107
Barnes, Milford E., 45-49, 52, 55, 65	Chakrabandhu Pensiri, Prince, 95, 97, 130
Berlin, Germany, 66	Chiang Mai, Thailand (Siam), 43-44, 46, 48-49, 52-53, 55, 65, 72-73, 76, 95, 115
Bern, Switzerland, 70	Chiang Rai, Thailand, 22, 169-170, 176
Bhumibol Adulyadej, King (Rama IX), 35, 98, 111, 113, 119, 141	Chile, 91
	China: 88, 90, 103, 106, 156, 162-163, 174-175; Communist government, 156; Yunnan Province, 162, 174
	Cholera, 30, 34, 37, 55, 149
	Chulalongkorn, King (Rama V), 30, 35, 44, 52, 62, 66, 94, 132, 179

Chulalongkorn University: 62, 64, 70-71, 77, 79, 81-82, 115, 118, 132, 159-160; Faculty of Arts and Sciences, 70-71; Faculty of Law and Political Sciences, 132. *See also* Thammasat University; University of Moral and Political Sciences.

Churnrurtai Kanchanachitra, 172

Circle of Bayap, Thailand (Siam), 46

Cold War, 98, 153, 156

Colombia, 91

Communism, 92, 98,

Connecting Organizations for Regional Disease Surveillance (CORDS), 174

Consortium for Unfavorable Rice Environments (CURE), 106, 109

Conway, Gordon, 160-162

Cornell University, 130

Damrong Rachanupab, Prince, 44

Dara Rasmi, Princess, 52

Darling, Samuel T., 46

Dinning, James S., 25, 115-116, 118-121, 136

Dr. Puey Ungpakorn, 26, 132, 136

Dusit Park (Bangkok), 47

Dutch development agency, 122

Dysentery, 55

Ebola, 173

Edinburgh University, 68

Ehrlich, Paul R., 92-93

Ellis, Aller G., 45, 71, 74-77, 79-81, 84, 156

Embree, Edwin, 71

England, 66, 116,

English (language), 134-135

English Language Program, 135-136. *See* University of Pittsburgh.

Europe: 30, 68, 75, 90, 103, 106, 108; Eastern Europe, 175

European (colonial powers), 66, 179

Farm Suwan, 96, 126-127. *See* National Corn and Sorghum Research and Training Center.

Finrock, Dwight C., 96, 126

Fitzgerald, Alice, 70-71, 73-75

Flexner, Abraham, 35, 62, 64

Ford Foundation, 95, 122, 127, 135, 153

Fosdick, Raymond B., 90

Fourth Class of the Order of the White Elephant, Busanabaran, 45

France, 32, 116

France colonies, 32

Gadjah Mada University, 159

Galyani Vadhana, Princess, 69

General Education Board (GEB), 90

German Imperial Military Academy, 66

German Kaiser, 66

German Naval Academy, 66

Germany, 66

Global economic crisis, 2008-09, 152

Global eHealth, 171

Global Health Diplomacy Network, 175

Global South, 171

Golden Rice, 160

Golden Sickle Award (2004), 107

Golden Triangle, 164

Greater Mekong Sub-region (GMS) of Southeast Asia, 162-165

Green Revolution, 106, 108, 125, 160, 180

Grosse, R.N., 157

H1N1 influenza (Swine Flu), 173

Halstead, Scott B., 26

Harrar, J. George, 91, 113, 118, 122, 134

Harrow School, 66

Harvard University: 66, 68-69, 73, 74-75, 79; Certificate in Public Health Program, 68; Medical School, 157

Hat Yai, Thailand, 169-170

Heidelberg, 75

Heiser, Victor, 28-29, 31-32, 40, 42-49, 53, 62, 64-66, 179

Herd, Robert, 103

HIV/AIDS, 157, 159-160, 164, 173

Hong Kong, 88

Hookworm disease (Ankylostomiasis), 31, 33, 65

House of Chakri, 29

Huntra Rice Experiment Station, 95-96

India, 91-93, 96, 103, 106, 125, 135, 162, 169-170

Indochina, 29

Indonesia, 159, 162, 169-170

Insee Chandrastitya, 130

International Center for Tropical Agriculture (CIAT), 101

International Clinical Epidemiology Network (INCLEN): 26, 158-160; Clinical Epidemiological Units (CEUs), 159; Clinical Epidemiology Research and Training Centers (CERTCs), 159

International Health Policy Program, 36, 162, 175

International Maize and Wheat Improvement Center (CIMMYT), 100

International Rice Genetics Symposium: 95; Sixth Annual, Manila, 2009, 95

International Rice Research Institute (IRRI): 95-96, 100, 103, 106-107, 109, 126; 50th Anniversary, Philippines, 95; Board of Trustees, 95, 97; International Rice Genebank, 107, 109

IR36, 96

IR8 (“Miracle Rice”), 96

Jackson, Ben R., 95

Jajaval Osathanondh, 113, 116, 119-121

Japan (Japanese), 102-103, 122, 127, 140, 163

Java, Indonesia, 46

Jefferson Medical College, Philadelphia, 77

Jensen, James H., 130-131

Johns Hopkins: 121; Johns Hopkins Hospital, 62; Johns Hopkins University School of Medicine, 62, 121

Johnston, John E., 130

Joint Learning Network, 171

Kamphaeng Saen, 139, 141

Kasetsart University: 95, 113-115, 122-123, 125-128, 130-132, 135, 137-141, 143, 147; Agriculture Faculty, 122; Cooperative Science Faculty (Economics and Business Administration), 122; Education Faculty, 122; Engineering Faculty, 122; Fisheries Faculty, 122; Forestry Faculty, 122; Graduate School, 122; Science and Arts Faculty, 122; Veterinary Science Faculty, 122. *See also* Thai College of Agriculture; Thai School of Forestry; Mae Klong Integrated Rural Development Program.

Khon Kaen University, 115

Knowles, John H., 98

Kuala Lumpur, 29, 43

Laos (the Lao People’s Democratic Republic), 22, 93, 162, 164, 172-174

Latin America, 32, 91, 95

London, England, 66, 69-70, 74, 136

Lyman, Richard W., 98, 100-102

Mae Klong basin, 26, 141, 143
 Mae Klong Integrated Rural Development Program (MIRDP), 138-139, 142-143, 146-147
 Mae Phosop (Rice Mother), 88
 Maha Ammat, Phya, 43-44
 Maha Chakri Sirindhorn, Princess, 95
 Mahidol Adulyadej, Prince of Songkla, 23, 25, 35, 66, 68-73, 75-76, 79-81, 156, 180-181.
 Mahidol University: 26, 84-85, 113-116, 118-122, 127, 132, 135, 137-141, 143, 147, 172, 174-175; BIOPHICS program, 174-175; Faculty of Science, 25, 118, 120-121; Medical-Graduate School, 118. *See also* Siriraj Hospital, Faculty of Medicine; University of Medical Sciences; Mae Klong Integrated Rural Development Program.
 Malay States, 43
 Malaysia (Borneo), 160
 Mao Tse-tung, 156
 Massachusetts Institute of Technology (M.I.T.), 121
 McCormick Hospital, 72-73, 76
 McNamara, Robert S., 101
 Mechai Viravaidya (Minister of Industry), 159, 166
 Mekong Basin Disease Surveillance (MBDS) Network: 33, 38, 149, 165, 172-174; Memorandum of Understanding (Rockefeller Foundation, World Health Organization, ministries of six countries), 165
 Mekong Basin Disease Surveillance (MBDS) Foundation, 165
 Mekong Delta, 34, 163
 Mekong Delta Basin, 38
 Mekong River Basin, 38
 Mexican Agricultural Program (MAP), 91, 96
 Mexican Ministry of Agriculture, 91
 Mexico, 90-93, 95
 Middle East, 29, 175
 Millennium Development Goal, 173
 Miracle Rice, 96. *See* IR8.
 Mongkut, King (Rama IV), 30, 179
 Monsanto Corporation: 161-162; Board of directors, 161
 Mukdahan (Thailand and LAO PDR cross-border site), 104, 172-173
 Myanmar, 162-164, 174
 Nan, Thailand (Siam), 43, 46
 National Center for Emerging and Zoonotic Infectious Diseases at the Centers for Disease Control and Prevention, 173
 National Corn and Sorghum Research and Training Center (“Farm Suwan”), 96, 126-127
 National Epidemiology Board (NEB), 26
 Netherlands colonies, 32
 Netr Khemayodhin, General (Under Secretary to the Prime Minister), 115-116, 118, 120
New England Journal of Medicine, 157
 New York, 46, 70, 111, 114, 142, 182
 Nobel Peace Prize, 92
 Norris, C. Perrin, 44, 46
 O’Toole, John, 103, 107
 Opium, 47, 164
 Oregon State College (Oregon University), 123
 Organisation for Economic Co-operation and Development (OECD), 171
 Orient (“the Orient”), 32
 Overseas National Foundation, 127
 Oxford University, 30
 Pakistan, 92-93, 96, 125
 Paris, France, 65, 70
 Pasteur Institute, 44, 46, 65
 Pearce, Richard M., Jr., 64-66, 69-70

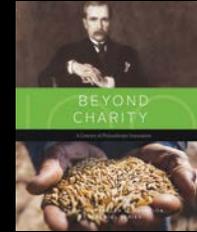
Philippines: 43-44, 64, 71, 93-96, 103, 106, 162; Government of Philippines, 95
 Population and Community Development Association (PDA), 159, 166
 Population-based medicine, 158-159
 Prasert Na Nagara, 130
 Prawase Wasi, 24
 Pridi Phanomyong, 132
 Prince Mahidol Annual Conference, 175
 Prince Mahidol Award Conference, 85
 Prince of Songkla University, 115
 Provincial Bureau of Health (Quebec, Canada), 90
 Public Health Schools Without Walls (PHSWOW), 160
 Puey Ungpakorn, 26, 130, 132, 136-137, 139-140, 143, 146. *See also* Thai Central Bank.
 Quebec, Canada, 90
 Rama IV. *See* Mongkut, King.
 Rama V. *See* Chulalongkorn, King.
 Rama VI. *See* Vajiravudh, King.
 Rama VII, 80
 Rama VIII. *See* Ananda Mahidol, King.
 Rama IX. *See* Bhumibol Adulyadej, King.
 Ramathibodi Medical School (Ramathibodi Faculty of Medicine), 26, 116, 118, 120
 Rangsit Prayurasakdi, Prince, 68
 Rice, 88-89, 93-97, 108, 109, 126, 143, 176; biotechnology, 33, 89, 101-103, 106-107, 160
 Rockefeller Foundation: 22-27, 29-36, 39, 42-43, 46-50, 53-55, 57, 59, 62, 64-66, 69, 71-72, 74-77, 79-80, 84-85, 89-92, 94-98, 100-102, 104, 107-108, 112-116, 119, 121, 126-128, 131, 134-136, 138-144, 146-147, 149, 152-153, 155-159, 161, 165-166, 172, 174-176, 178-182; Asia Office (Bangkok), 156, 162, 165, 182; Board of Trustees, 92; Bridging Diversity (BD) program, 164; Building Climate Change Resilience initiative, 168, 170; Cross Border Health (CBH) program, 164; Disease Surveillance Networks (DSN) Initiative, One Health initiative, 149, 168, 173, 175; Education for Development Program (EDP) 25, 112-114, 138. *See also* University Development Program, Mae Klong Integrated Rural Development Program; Fellowship program, 70, 162; Health in Populations initiative, 159; Health Sciences Division, 157; Inter-Asian Corn Program (IACP), 125-127; International Health Commission (International Health Board), 31, 49-50, 53, 57, 70-71, 77; International Program on Rice Biotechnology, 101-102, 146-147, 160; Learning Across Boundaries (LAB) initiative, 164; Medical and Natural Sciences, 112, 118; Medical Education Division, 65; Medical Sciences Division, 64-65; Scholarships, 108, 121, 123, 135; Transforming Health Systems Initiative (THS), 27, 33, 85, 168, 170-171, 175; University Development Program (UDP), 33, 39, 112-115, 118, 122-123, 126-127, 132, 138-140, 146-147, 149, 180. *See also* Education for Development Program; Upland Communities in Transition (UCT) program, 164.
 Rockefeller Institute for Medical Research, 35
 Rockefeller Sanitary Commission, 31, 47
 Rockefeller, John D., 31, 34, 179-180
 Rockefeller, John D. III, 111
 Rodin, Judith, 22, 165, 169, 182
 Rose, Wickliffe, 31-32, 42, 46, 48, 57, 69, 115
 Rusk, Dean, 92
 Sakol Varavarn, Prince, 53
 Sangwan Talaphat, 68
 Sanya Dharmasakti, 141

Sarit Thanarat, Field Marshal (Prime Minister), 134
 SARS, 173
 Savannakhet (Thailand and Lao PDR cross-border site), 173
 Schistosomiasis, 157
 Siam, *see* Thailand
 Siamese Red Cross Society, 22, 54, 59, 65
 Singapore, 29, 88
 Siriraj Hospital: 44, 62, 65, 68, 70-72, 74, 76, 79, 81, 84-85; Faculty of Medicine, 77, 85. *See also* University of Medical Sciences; Mahidol University.
 Siriraj Medical School, 25, 68, 113, 118
 South China Sea, 163
 South Korea, 163
 Southeast Asia, 23, 29, 33, 35, 38, 43, 84-85, 95-96, 109, 112, 116, 120, 126-127, 136, 140, 147, 149, 152-153, 156, 159-160, 162, 169, 171, 181
 Southeast Asia START Regional Center, 162
 Soviet Union, 156
 Sprague, Ernest W., 130
 Standard Oil, 34, 48
 Stanford University, 92, 100, 121
 Stang Monkolsuk, 25
 Surasi Wisitsak, Chao Phraya, 46
 Suwit Wibulpholprasert, 172
 Swasdi Skulthai, 25, 116, 119-121
 Swine Flu, 173. *See* H1N1 Influenza
 Texas A&M, 101
 Thai Army (Thailand/Siam), 52, 65
 Thai Central Bank: 132; Governor, 130, 132, 136, 144. *See* Dr. Puey Ungpakorn.
 Thai College of Agriculture, 122. *See also* Kasetsart University.
 Thai Democracy Monument, 141
 Thai Department of Agriculture and Fisheries: 95; Thai College of Agriculture (Chiang Mai), 95. *See also* Thai Ministry of Agriculture.
 Thai Department of Public Health, 34, 37, 40, 54-55
 Thai Department of the Interior, 47-48
 Thai Foreign Policy and Global Health Group, 172
 Thai International Program on Rice Biotechnology (IPRB), 146, 160
 Thai Minister of Education, 69-70
 Thai Ministry of Agriculture: 95-96, 122-123, 127, 130-131; Central Agriculture Station (Bangkok), 95; Rice Department, 130; Thai College of Agriculture (Bangkok), 95, 122. *See also* Thai Ministry of Agriculture and Cooperatives; Thai Department of Agriculture and Fisheries.
 Thai Ministry of Agriculture and Cooperatives, 95-96, 122-123, 127, 130-131. *See also* Thai Ministry of Agriculture.
 Thai Ministry of Education, 64-65, 71, 77, 79, 94
 Thai Ministry of Public Health: 26, 74, 79, 172; International Health and Policy Program (IHPP), 172; Minister of Public Health, 113. *See also* Capacity Building Center on Universal Coverage.
 Thai Ministry of Public Instruction and Religion: 95; Thai Civil Service School, 95
 Thai Ministry of Science, Technology and Environment, 160
 Thai Ministry of the Interior: 49, 146; Minister of the Interior, 43-44, 46, 79
 Thai National Assembly, 80
 Thai National Center for Genetic Engineering and Biotechnology, 160
 Thai People's Party, 132
 Thai Rice Knowledge Bank, 107, 109

Thai Royal Court, 29, 44
 Thai Royal House, 95
 Thai Royal Medical College (Royal Medical School), 47, 62, 68
 Thai Royal Naval Academy, 68
 Thai School of Forestry, 122. *See also* Kasetsart University.
 Thai School of the Ministry of Agriculture, 95. *See also* Thai Ministry of Public Instruction and Religion.
 Thai University Development Commission (UDC), 135
 Thailand (Siam): 22-40, 42-44, 46-50, 54-55, 57, 58, 62, 64-66, 68-71, 73-77, 79-81, 84-85, 88-89, 91, 93-98, 100, 102-104, 106-109, 112-116, 118, 120-123, 125-127, 130-132, 134, 136, 138-144, 146-147, 149, 152-153, 156, 158-166, 168-176, 178-181; Northern Thailand, 42, 49, 54, 104, 107, 176
 Thailand Development Research Institute, 36, 162
 Thammasat University: 113-115, 122, 130, 132, 134-141, 143, 147; Faculty of Economics, 132, 136. *See also* Chulalongkorn University, Faculty of Law and Political Science; University of Moral and Political Sciences; Mae Klong Integrated Rural Development Program.
 Thanom Kittikachorn, Field Marshal (Prime Minister), 134, 141
Time magazine, 160
 Toenniessen, Gary, 101-102, 106, 182
 Transforming Health Systems Initiative (THS), 27, 33, 85, 168, 170-171, 175
 Typhoid Fever, 55
 U.S. air bases in Thailand, 140
 U.S. Ambassador to India, 92
 U.S. Ambassador to Mexico, 90
 U.S. Congress, 90
 United Nations: 135, 164; United Nations General Assembly Resolution on Universal Health Coverage, 172
 United States: 24, 31, 35, 44, 47, 59, 62, 66, 68, 71, 75, 84, 90, 103, 108, 116, 121, 134, 137-138; American South; American missionaries, 31-32, 42, 52
 United States Agency for International Development (USAID), 122-123
 Universal Health Coverage (UHC), 170-173, 175, 181
 University Development Program (UDP), 33, 39, 112, 115, 126, 149, 180
 University of Arkansas, 115
 University of California, Berkeley, 121
 University of California, Los Angeles (U.C.L.A.), 121
 University of Chicago, 35
 University of Delhi, 135
 University of Florida, 121
 University of Hawaii, 123
 University of Medical Sciences (Mahidol University), 84, 113, 115-116, 119. *See also* Siriraj Hospital, Faculty of Medicine.
 University of Moral and Political Sciences: 132; Faculty of Commerce and Accountancy (B.A. and M.A. in Accountancy), 132; Faculty of Economics, 132, 136; Faculty of Law (Master's in Law and Diplomacy), 132; Faculty of Law and Political Science, 132; Faculty of Liberal Arts, Departments of Linguistics and Language, 132, 134-135; Faculty of Political Science, 132, 135; Faculty of Social Administration, 132; Institute of Public Administration, 132; Thammasat Bandhit (L.L.B.), 132. *See also* Chulalongkorn University; Thammasat University.
 University of Pennsylvania, 159, 165
 University of Pittsburgh: 135; English Language Program, 135-136

- University of Southern California (USC), 121
 University of Wisconsin, 101, 121
- Vajiravudh, King (Rama VI), 29-30, 32, 35, 42, 44, 46, 66, 179
- Vietnam, 22, 140, 160, 163-164, 169-170, 174
- Vincent, George E., 69-70
- Viroj Tangcharoensathien, 172
- Wallace, Henry, 90
- Walsh, Julia, 157
- Warren, Kenneth, 26, 157-159
- Washington, D.C., 42, 90
- Weaver, Warren, 100
- West Nile, 173
- Westengard, Jens, 43
- Western Reserve, 121
- White, Kerr L., 26, 159
- World Bank, 101, 122, 130-131, 153
- World Health Organization (WHO), 38, 149, 165, 173
- World War I, 88, 149
- World War II, 36, 84, 88, 90, 95, 153

OTHER BOOKS IN
 THE ROCKEFELLER FOUNDATION CENTENNIAL SERIES



BEYOND CHARITY: A CENTURY OF PHILANTHROPIC INNOVATION

The creation of the Rockefeller Foundation in 1913 was in itself a marked innovation in the development of modern philanthropy. Foundation staff, trustees, and grantees had to learn by doing. The topical chapters

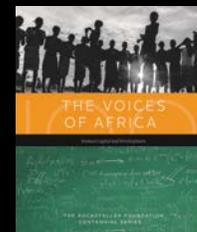
in *Beyond Charity* explore the evolution of the Foundation's practice from the board room to the field office. For professionals or volunteers entering the field of philanthropy, each chapter offers an opening essay that highlights abiding issues in the field. The vivid stories and fascinating characters that illuminate these themes make the history come to life.



HEALTH & WELL-BEING: SCIENCE, MEDICAL EDUCATION AND PUBLIC HEALTH

Philanthropists who seek to improve health often find themselves torn between efforts to identify cures for disease and projects that strive to improve the social conditions that

lead to better health. As this remarkable book shows, over a hundred years, the Rockefeller Foundation's efforts to balance these sometime competing objectives have fundamentally shaped the fields of public health and medicine.

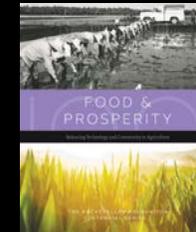


THE VOICES OF AFRICA: HUMAN CAPITAL AND DEVELOPMENT

In every society, development depends on investment in institutions and individuals.

Wickliffe Rose, an early leader in the Rockefeller Foundation, called this "backing brains." But developing

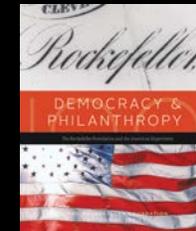
human capital is a risky proposition. This intriguing history explores the challenges and triumphs in the Rockefeller Foundation's efforts to invest in the people of Africa over the course of a century.



FOOD & PROSPERITY: BALANCING TECHNOLOGY AND COMMUNITY IN AGRICULTURE

John D. Rockefeller recognized in his early philanthropy, even before the creation of the Foundation, that agricultural productivity is key to increasing overall wealth and health in

the poorest of rural communities. Embracing the promise of science, the Rockefeller Foundation focused on the discovery of new technologies to enhance food production. But technology was never enough. New techniques and tools had to be adapted to local cultures and communities. This engaging book explores lessons learned from the Foundation's efforts to improve this most basic, but still so complicated, arena of human endeavor.



DEMOCRACY & PHILANTHROPY: THE ROCKEFELLER FOUNDATION AND THE AMERICAN EXPERIMENT

Many argued in 1913 that Rockefeller wealth seemed poised to undermine the democratic character of American institutions. Under the shadow of public concern, the trustees of the

Rockefeller Foundation launched programs to strengthen American political institutions, promote equal opportunity in a plural society, and reinforce a shared sense of national identity. The relationship between democracy and philanthropy has been constantly tested over the last century. *Democracy & Philanthropy* offers insights and anecdotes to guide the next generation of American philanthropists.

To find out more about how to receive a copy of any of these Centennial books, please visit www.centennial.rockefellerfoundation.org.

THE ROCKEFELLER FOUNDATION CENTENNIAL SERIES

ABOUT THIS BOOK

For nearly a century, the Rockefeller Foundation has worked in an innovative partnership with Thailand to promote the well-being of its people. From the battle against hookworm and other diseases to the development of rice biotechnology and agriculture, the lessons learned from this work offer valuable insights into the process of development. Drawing on the rich collection of historical materials held by the Rockefeller Archive Center, this history brings this powerful story to life.

THE ROCKEFELLER FOUNDATION CENTENNIAL SERIES

Published in sequence throughout the Rockefeller Foundation's centennial year in 2013, the six books in this series provide important case studies for people around the world who are working "to promote the well-being of humankind." Three books highlight lessons learned in the fields of agriculture, health and philanthropy. Three others explore the Foundation's work in Africa, Thailand and the United States. As a package, the books offer readers unique insights into the evolution of modern philanthropy.

ABOUT THE ROCKEFELLER FOUNDATION

The Rockefeller Foundation is committed to achieving equitable growth by expanding opportunity for more people in more places worldwide, and building resilience by helping them prepare for, withstand, and emerge stronger from acute shocks and chronic stresses. Throughout its history, the Rockefeller Foundation has supported the ingenuity of innovative thinkers and actors by providing the resources, networks, convening power, and technologies to move innovation from idea to impact. From funding an unknown scholar named Albert Einstein to accelerating the impact investing industry, the Foundation has a long tradition of enhancing the impact of individuals, institutions and organizations working to change the world. In today's dynamic and interconnected world the Rockefeller Foundation has a unique ability to address the challenges facing humankind through a 100-year legacy of innovation, intervention, and the influence to shape agendas and inform decision making.

