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CHAPTER

Department of Virology technicians
Khun Ming Choochong and Khun Anan
Boonkanoke working in the MRL's
"mouse room," 1963. (Photograph
courtesy of Dr. Scott Halstead)





MRL nurses doing a home visit as part of a prospective cohort study of dengue in Bangkok, 1963. (Photograph courtesy of Dr. Scott Halstead)



The 1960s

ESTABLISHED DURING THE 1960s, the SEATO Medical Research Laboratory (MRL) included a Thai component, with a command chain from the Royal Thai Armed Forces Supreme Command, and a US component, staffed from the US Army Medical Research and Development Command. Buildings were built to provide permanent homes for research initiatives that began in borrowed space. Initially, laboratory space was provided for the fledgling SEATO Tropical Medicine Laboratory in the Royal Thai Army Institute of Pathology. In 1964 the present four-story building (later expanded to five floors) was built next to the Institute, with a bridge linking the two buildings. In 1968 the eight-story laboratory building was completed, as well as a nearby building for animal facilities and the Department of Veterinary Medicine. A library and conference room building was constructed in 1969. Also during this period, a clinical research center was proposed, and its construction and staffing initiated.

The new MRL also grew rapidly in both staffing and range of projects undertaken. Major General Pung Phintuyothin oversaw this growth as director general from the beginning until 1969, while the US component was led by five different officers during the decade. The first US director was Colonel Oscar Felsenfeld, who expanded on his previous cholera research during his tenure. Dr. Richard Finkelstein also continued to work with cholera, characterizing the organism's enterotoxin. In addition to cholera, the MRL conducted studies on a wide variety of tropical diseases. The Thai component established a research division comprising sections on epidemiology, microbiology, and special studies. The US component established departments of virology, epidemiology and special studies, medical zoology, medical entomology, bacteriology and mycology, veterinary medicine, neuropsychiatry, parasitology, and experimental pathology. Joint efforts were initiated between the US and Thai components to



[Left] Major General Pung Phintuyothin, Director General, 1961–1969. (Royal Thai Army official photograph)



[Center] Colonel Oscar Felsenfeld, US Army Medical Component (USAMC) Director, 1960–1962. (MFN#003659, AFRIMS photograph archives)



[Right] Colonel James Hansen, USAMC Director, 1962–1965. (US Army official photograph)

study antimicrobials, arboviruses, arthropods of medical importance, bladder stones, diarrheal diseases, enteroviruses, eosinophilic meningitis, filariasis, gnathostomiasis, hepatitis, leptospirosis, malaria, melioidosis, mycotic diseases, rabies, respiratory viruses, rickettsial diseases, and zoonoses. In parallel, staff developed laboratory methods and assays while gaining expertise that allowed the collection of accurate and credible data. For example, the report “Testing and evaluation of a holding medium for enteric bacteria” by Gaines, Carey, and Blair established the widely adopted Carey-Blair media for culture of enteric bacteria.

During the MRL’s initial decade, a number of seminal studies quickly established the laboratory’s reputation as a major force in tropical medical research. Major Philip Russell and Dr. Ananda Nisalak described a test for neutralizing antibodies to dengue in a pair of 1967 papers that have been cited in nearly 500 subsequent publications. Major Scott Halstead and Dr. Suchitra Nimmannitya began the collaboration with the Children’s Hospital that has continued to the present. Their initial studies characterized the clinical features of dengue and chikungunya infections, leading to their hypothesis that prior immunity may increase the severity of dengue infections due to a second viral type. The work mentioned above by Dr. Finkelstein resulted in papers on the pathogenesis of cholera and procholera A that have been cited more than



[Left] Colonel Stefano Vivona, USAMC Director, 1965–1967. (US Army official photograph)



[Right] Colonel Marcus Beck, USAMC Director, 1967–1969. (US Army official photograph)

200 times. Researchers in other departments were also generating important descriptions and insights relating to other tropical diseases under study.

An example of important field studies were those focused on dengue on the island of Koh Samui. There, investigators from several of the departments worked in a cross-disciplinary fashion. Doctors Philip Russell, Thomas Smith, Douglas Gould, Richard Grossman, Phillip Winter, Dennis Johnsen, and Ananda Nisalak, representing the departments of epidemiology, virology, medical entomology, and veterinary medicine, together contributed to a series of five articles that appeared in volume 20 of the *American Journal of Tropical Medicine and Hygiene*. A similar multidisciplinary approach was used in the study of Japanese encephalitis ecology, combining research on humans, vertebrates, and invertebrates to fully appreciate the complexities of this zoonotic infection. Other SEATO MRL studies carried out during this decade were as diverse as the assessment of gibbons as an animal model for malaria, epidemiologic and metabolic studies of bladder stones in northeastern children, and the rodent reservoirs of rickettsial diseases in various regions of Thailand.

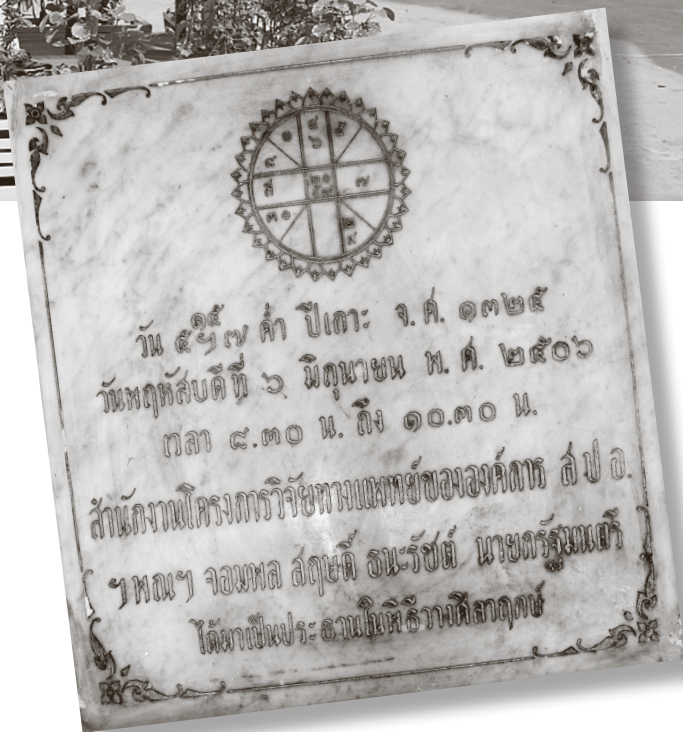
This period of birth and extensive growth in infrastructure and staff, and the breadth of study foci, was a harbinger of the important contributions to follow as the MRL matured in subsequent decades.



Major General Pung, director general, joins Major General Thip Pholpoke, deputy surgeon general of the Royal Thai Army (fifth and fourth from the left), in a group of medical advisors to Prime Minister Srisdi Dhanarajata (center foreground) during his hospitalization in Phramongkutklao Hospital in 1963. (Photograph courtesy of Lieutenant General Laphul Phintuyothin)



[Top] Prime Minister Thanom Kittikachorn presides over the dedication of the first building of the MRL on 8 September 1964. (MFN#59, AFRIMS photograph archives)



[Inset] The foundation stone of the SEATO MRL's first building, which was laid by Prime Minister Srisdi on 6 June 1963. Inscribed on the stone is the time selected as auspicious time for this occasion: between 8:30 and 10:30 AM on that day. The construction was completed 6 months later. (MFN#3789, AFRIMS photograph archives)



[Left] The MRL's first building was linked by a bridge on the fourth floor to the Royal Thai Army Institute of Pathology. In the 1990s, the fifth floor was expanded to make room for the Department of Retrovirology. The building now houses the AFRIMS headquarters. (Photograph reprinted from: *The Search for Health: SEATO Medical Projects in Thailand*. Bangkok, Thailand: SEATO Public Information Office, 1966: 7)

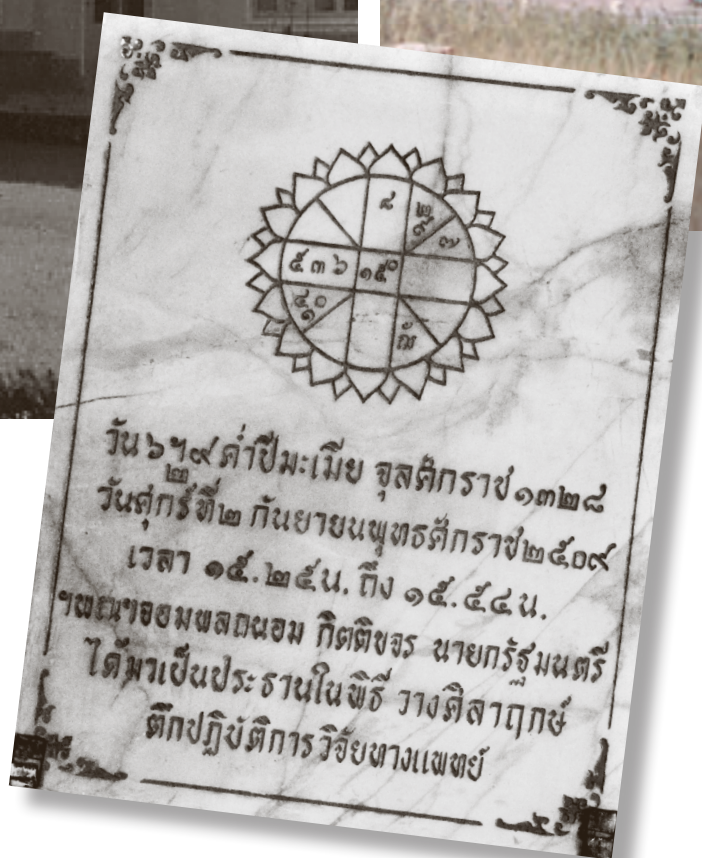


[Center] The MRL's Department of Virology was initially a collaboration with the School of Public Health of the University of Medical Sciences (now Mahidol University) and housed in the School of Public Health's building shown here. During the tenure of Colonel Franklin Top as department chief (1970–1973), the department moved into the SEATO buildings adjacent to the Institute of Pathology. (Photograph courtesy of Dr. Scott Halstead)



[Top] The Department of Veterinary Medicine moved into its permanent home in 1968. The facility was built on Royal Thai Army property located on Yothi Road. This property, called the Yothi Annex, now houses the departments of veterinary medicine and entomology, and the motor pools of each component. (MFN#002897, AFRIMS photograph archives)

[Inset] The foundation stone for the MRL's second building, laid by Prime Minister Thanom Kittikachorn on 2 September 1966. Inscribed on the stone is the auspicious time for this occasion: between 3:25 and 3:54 PM on that day. This second building is now AFRIMS's main research building and is in the process of a phased renovation of its eight floors. (MFN#3788, AFRIMS photograph archives)





[Top] Dr. Rapin Snitbhan, Dr. Pairatana Gunakasem, and Khun Voranat Ritchie (left to right), Department of Virology, were recognized experts in the cell culture methods for isolation of dengue viruses. (Photograph courtesy of Dr. Scott Halstead)

[Bottom] Dr. Ananda Nisalak and Major Scott Halstead, Department of Virology, study cell cultures for evidence of viruses isolated from children with dengue fever. (Photograph reprinted from: *The Search for Health: SEATO Medical Projects in Thailand*. Bangkok, Thailand: SEATO Public Information Office, 1966: 14)





[Top] Research team in the bladder stone study about to fly to a remote part of Ubon Ratchathani Province in 1963. (Photograph courtesy of Dr. Scott Halstead)

[Inset] Major Scott Halstead examines bladder stones with Dr. Cholovit Chutikorn, director of Ubon Ratchathani Provincial Hospital. The Thai component and the Division of Clinical Research carried out studies on the epidemiology and causation of bladder stones found frequently in rural children in north-east Thailand. (Photograph courtesy of Dr. Scott Halstead)

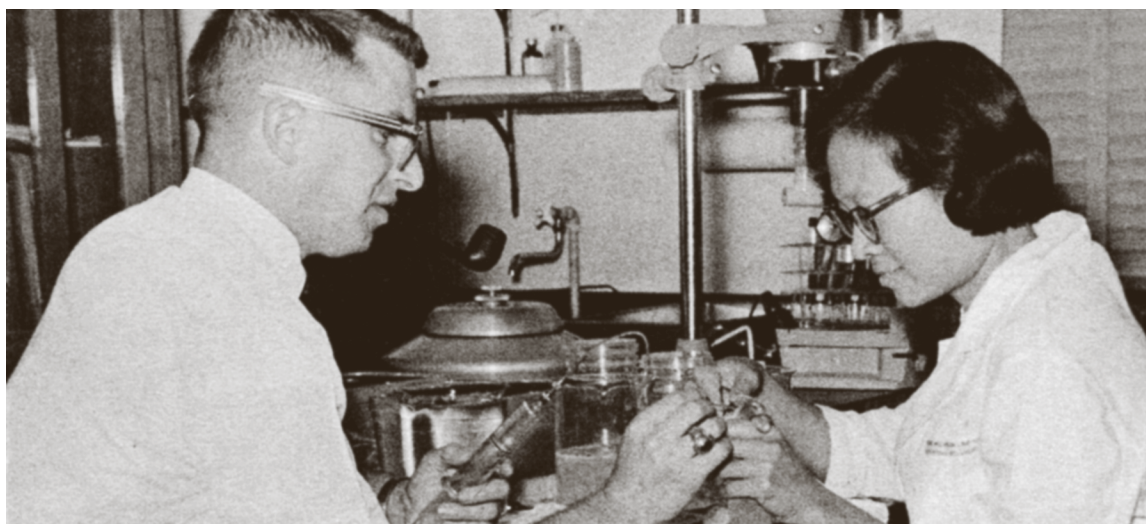
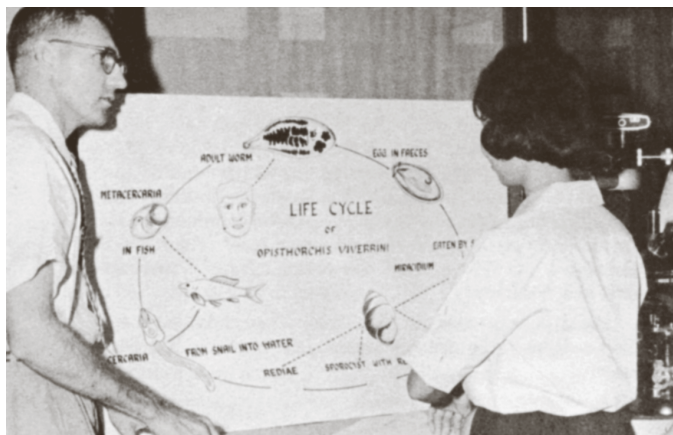






[Left] Department of Entomology team in Saraburi Province during a 1968 daytime collection of the mosquito larvae of *Anopheles minimus*, a primary vector of malaria, in a heavily shaded forest stream. Left to right: Khun Manop Pookasorn, Khun Prajim Boonyakanist, First Lieutenant Bruce Harrison, and Khun Thavi Suthaporn. (Photograph courtesy of Dr. Bruce Harrison)

[Right] Sergeant First Class Tabalevsky and an MRL staff member collect a capillary blood sample from a child by finger stick for thick and thin malaria blood films as part of an epidemiologic study of malaria in Satun Province in southern Thailand. (Photograph reprinted from: *The Search for Health: SEATO Medical Projects in Thailand*. Bangkok, Thailand: SEATO Public Information Office, 1966: 10)



[Top Left] Major Dale Wykoff, head of MRL's liver fluke studies, explains the life cycle of *Opisthorchis viverrini* to staff members. (Photograph reprinted from: *The Search for Health: SEATO Medical Projects in Thailand*. Bangkok, Thailand: SEATO Public Information Office, 1966: 22)

[Top Right] While assessing the local epidemiology of liver fluke disease in a northeast Thailand village, Major Dale Wykoff explains the risk of biliary tract disease posed by eating raw fish to a young woman. (Photograph reprinted from: *The Search for Health: SEATO Medical Projects in Thailand*. Bangkok, Thailand: SEATO Public Information Office, 1966: 21)

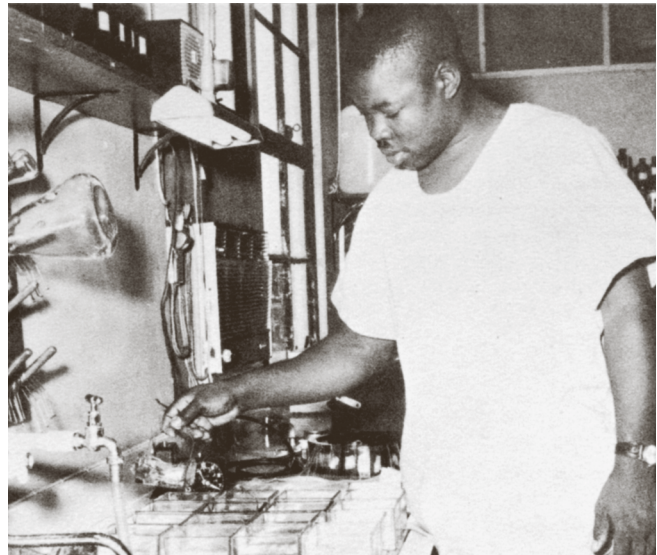
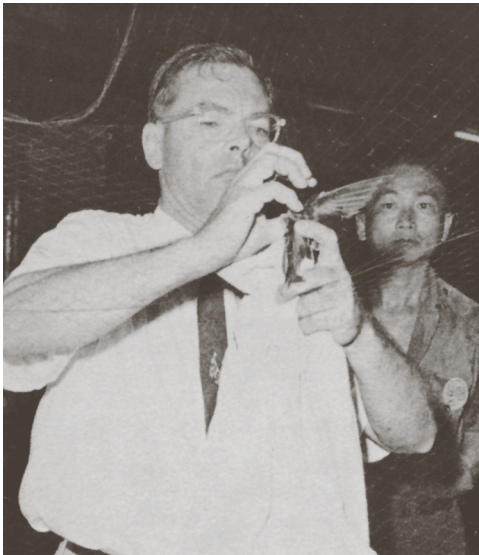
[Bottom] Doctors Richard Finkelstein and Pongsom Atthasampunna, Department of Bacteriology, utilize a mouse model in their studies of the role of procholera A (*enterotoxin* of *Vibrio cholera*) in causing cholera's diarrhea. (Photograph reprinted from: *The Search for Health: SEATO Medical Projects in Thailand*. Bangkok, Thailand: SEATO Public Information Office, 1966: 25)



[Top] Major General Pung Phintuyothin visits Fort Detrick, Maryland, in 1966; here Major General Pung and Dr. Rabstein are briefed at the Animal Farm Division. (Photograph courtesy of Lieutenant General Laphul Phintuyothin)

[Inset] Dr. Chiraphun Duangmani, Department of Bacteriology, examines a vial of dried cholera bacteria. The Laboratory was already maintaining a collection of bacterial cultures from throughout Southeast Asia. (Photograph reprinted from: *The Search for Health: SEATO Medical Projects in Thailand*. Bangkok, Thailand: SEATO Public Information Office, 1966: 26)





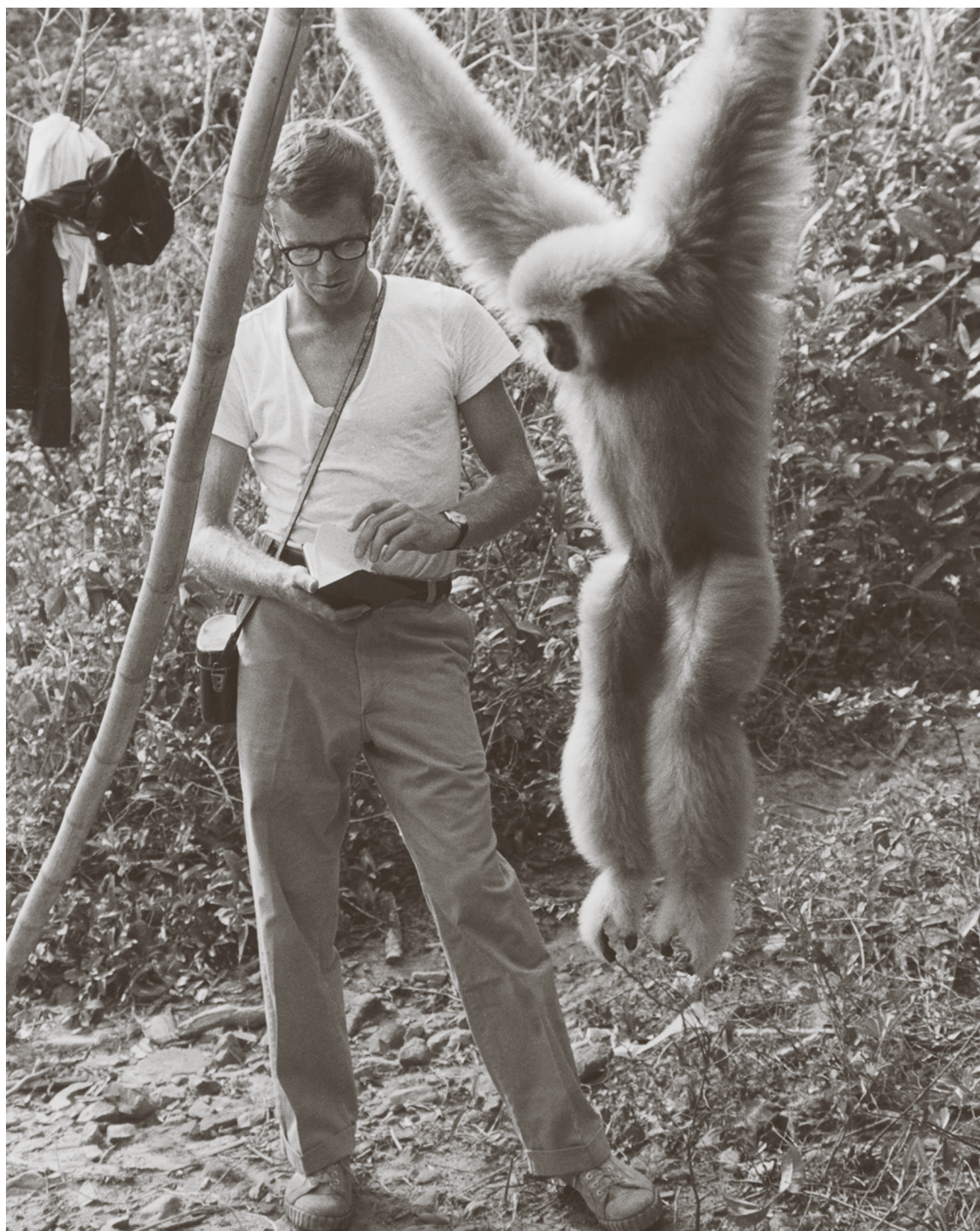
[Opposite | Top Left] Staff from the Department of Veterinary Medicine collect a blood sample from a water buffalo as part of a study of leptospirosis in northern Thailand. (Photograph reprinted from: *The Search for Health: SEATO Medical Projects in Thailand*. Bangkok, Thailand: SEATO Public Information Office, 1966: 32)

[Opposite | Bottom Left] Lieutenant Colonel John Morris, chief of the Department of Veterinary Medicine, and a staff member examine the result of a tuberculin test on a monkey. (Photograph reprinted from: *The Search for Health: SEATO Medical Projects in Thailand*. Bangkok, Thailand: SEATO Public Information Office, 1966: 30)

[Opposite | Center] Major Philip Russell, chief, Department of Virology, examines a child with dengue hemorrhagic fever in a Rayong hospital. Major Russell later commanded WRAIR and subsequently became the only SEATO alumnus to become commanding general of the US Army Medical Research and Development Command. (Photograph courtesy of Dr. Scott Halstead)

[Top Left] Dr. Joe Marshall of the Ecology Section gently removes a swallow from a net so that it can be studied and released in a capture-recapture investigation of possible arbovirus reservoirs. The birds were banded for identification and their blood sampled for antibodies to Japanese encephalitis and other arboviruses. (Photograph reprinted from: *The Search for Health: SEATO Medical Projects in Thailand*. Bangkok, Thailand: SEATO Public Information Office, 1966: 18)

[Top Right] Specialist Benjamin Woods, Department of Experimental Pathology, prepares and stains tissues for microscopic examination. (Photograph reprinted from: *The Search for Health: SEATO Medical Projects in Thailand*. Bangkok, Thailand: SEATO Public Information Office, 1966: 34)





[Opposite] Captain Warren Brockelman and a gibbon that had been released on Koh Klet Kaeo, an island off the coast of Chonburi Province (1967). Gibbons were studied as possible animal models for malaria and other infections. (Photograph courtesy of Dr. Warren Brockelman)



[Top Right] Khun Prajim Boonyakanist, field team leader, Department of Medical Entomology, carrying the morning's catch. Rodents were trapped live and examined for fleas that might carry plague. This was part of a 1969 collaboration with the US Centers for Disease Control and Prevention, carried out at a field station in Nakorn Ratchasima Province. (Photograph courtesy of Dr. Bruce Harrison)

[Bottom Right] Ambassador Graham Martin presents the Legion of Merit to Major General Pung Phintuyothin at the US Embassy in 1966. Khun Prakob Phintuyothin, Major General Pung's wife, reads the citation. (Major General Pung was awarded a second Legion of Merit from the US government in 1971.) (Photograph courtesy of Lieutenant General Laphul Phintuyothin)