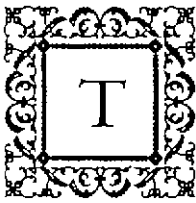


Richard Pearson Strong and the Manchurian Epidemic of Pneumonic Plague, 1910-1911

ELI CHERNIN



THE Chinese winter of 1910-1911 was one of death and discontent: an epidemic of pneumonic plague—the greatest since the Black Death of the fourteenth century¹—scourged China's three Eastern Provinces (Manchuria), and famine afflicted the Central Provinces. The Manchurian plague claimed some fifty thousand lives in four months, and the famine took thousands more. Not all the hungry died, but no one sick with plague survived; there were, claimed one source, 43,942 cases and 43,942 deaths.² While famine neither affected the foreigners in China nor menaced international frontiers, plague threatened to do both. World powers held privileged positions in a backward China, and some, especially Russia and Japan, feared that the plague would endanger their resident populations, compromise commercial interests, and spread to contiguous national territories. The epidemic also provided Russia and Japan with a potential excuse to take over plague control—and perhaps more—in Chinese territory, incursions

1. Contrary to popular belief, pneumonic and bubonic plague were both common and widespread during the infamous Black Plague. Pneumonic plague was, however, uncommon in later epidemics, including the major outbreak that swept India around the turn of the twentieth century.

2. D. Christie, *Thirty Years in Moukden, 1883-1913*, London, Constable and Co., 1914, p. 235.

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the Chinese Government obviously wished to avoid. Thus did mortality and diplomacy confront each other in Manchuria during 1910-1911.

In need of medical help, but needing also to fend off growing political and military pressures, the Imperial Chinese Government at first requested assistance and then called for an International Plague Conference, a step unprecedented in China's history. Richard Pearson Strong became the chief United States delegate to the conference which was held in Manchuria at Mukden in April 1911,³ and his three-month stay in China brought him into prominence. How Strong came to be involved, what he accomplished, and what followed from those accomplishments, are the subjects of this essay.

THE MANCHURIAN EPIDEMIC, 1910-1911: AN OVERVIEW⁴

The accepted if somewhat imprecisely documented reservoir of the epidemic was the tarbagan⁵ (fr. Russian, sometimes spelled tarabagan; in English, the marmot [*Arctomys bobac*, now *Marmota sibirica*]; in Chinese, *hant'a*), a cat-sized, burrowing rodent hunted mainly for its pelt, much valued in the European market where some two million skins annually were processed to resemble sable and marten. The indigenous Mongol and Buriat hunters avoided taking sick-looking (plague-infected) marmots, but when the price of pelts soared from twelve to seventy-two cents US,⁶ many inexperienced Chinese came from the Central Provinces to Manchuria as trappers and proved careless about handling the marmots, sick or well. While marmots were reservoirs of plague, and were circumstantially linked to infection of humans, it is problematical how the first human case originated at Manchouli, ten miles from the Sino-Siberian border (Figure 1), in October 1910, and it is also uncertain why that index case should have turned pneumonic. At all events, the

3. For the full conference proceedings see: R. P. Strong, ed., *Report of the International Plague Conference*, Manila, Bureau of Printing, 1912. **Bibliographic note:** The short title "Conf. Rept." is used throughout the notes to designate this volume.

4. This summary of the epidemic is drawn from several sources: C. F. Nathan, *Plague Prevention and Politics in Manchuria, 1910-1931*, East Asian Research Center, Cambridge, Harvard University Press, 1967 (Nathan's book provides an invaluable view of the epidemic and its political context); G. F. Petrie, "An epidemiological review of the epidemic of pneumonic plague in Northern China, 1910 to 1911," *Conf. Rept.*, pp. 409-27; Wu Lien-Teh, *Plague Fighter*, Cambridge, W. Heffer and Sons, 1959; R. Farrar, "Plague in Manchuria," *Proc. Roy. Soc. Med.* 5 (pt. 2): 1-24, 1911-12; G. D. Gray, "The septicaemic and pneumonic plague outbreak in Manchuria and North China," *Lancet* 1: 1152-62, 1911.

5. The medical and public press frequently misreported this name. The *Boston Medical and Surgical Journal*, 174: 366, 1916, for example, in reporting on a lecture given by R. P. Strong, substituted "ptarmigan," the common name of an innocent arctic grouse, for "tarbagan," the Siberian marmot.

6. Petrie, (n. 4) p. 412.

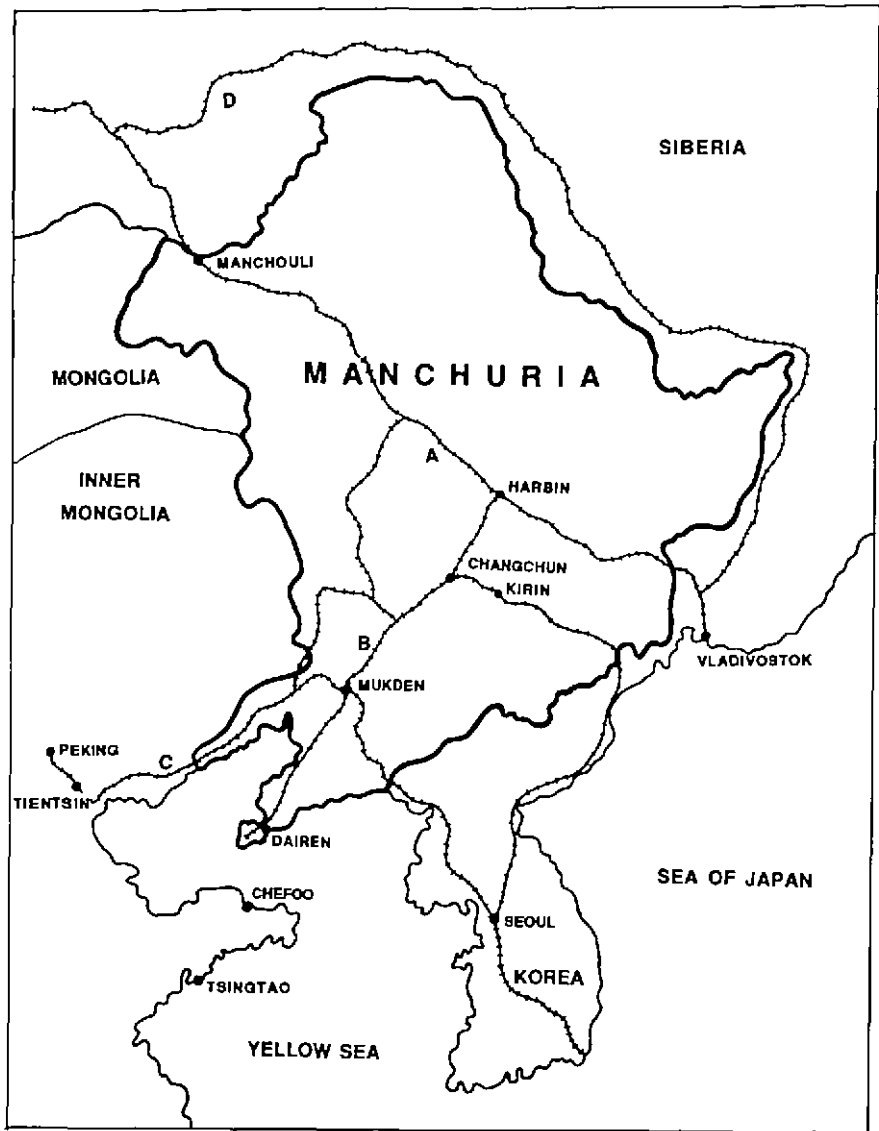


Figure 1. Sketch-map of Manchuria and adjacent regions, showing key cities and rail lines. A = Chinese Eastern Railways (Russian controlled); B = South Manchurian Railway (Japanese controlled); C = Imperial Railways of North China (Chinese controlled); and D = the Trans-Siberian Railway. The distance from Harbin to Mukden is 350 miles. Map modified from Nathan, (n. 4).

epidemic that evolved from it was pneumonic; bubonic plague never appeared in people or in rats.

With the onset of cold weather, the ten thousand hunters, along with many thousands more migrant agricultural laborers, began the annual journey homeward to the South. The men were traveling after completing their seasonal work, to avoid the bitter cold of the Manchurian winter (minus 30°F was common), and to reach home for the Chinese New Year, a holiday important to family and ancestor worship. Manchuria, with a land-mass of some 360,000 square miles, boasted three railways (Figure 1) along which most of the "coolie" laborers moved: one line was owned and operated by the Russians, a second by the Japanese, and the third by the Chinese; the Russians and Japanese also controlled large "conceded" territories and towns abutting their lines. The epidemic clearly followed the rail routes, and wherever men gathered in railway carriages or rested in overcrowded inns, sleeping "packed like sardines,"⁷ plague flourished and men died, frequently a day or two after sickening.⁸ The corpses lay unburied, some in coffins stacked on the deep-frozen ground, or were thrown into pits blasted with dynamite; later in the epidemic, cremation was permitted despite popular repugnance.⁹

Manchurian hospitals and staff were unequal to caring for the plague victims. There was no public health organization, little or no local expertise, no safe way to handle patients or corpses, and no therapeutic help from traditional Chinese or Western medicine. The epidemic began to decline in January-February, owing mainly to administrative measures that controlled personal and population movements,¹⁰ and perhaps also (as some later argued) because the weather moderated.

7. Gray, (n. 4) p. 1158.

8. Pneumonic plague tended to spare females, infants, the old, and the wealthy. The incubation period was three to five days, followed by sudden fever, chills, headache, lassitude, and rapid pulse. A day later productive coughing began and the sputum turned bloody. Death came quickly thereafter, probably of respiratory insufficiency and endotoxin shock.

9. The decision to use cremation, however, did not come until the Imperial Government was pressed to it in January 1911, by which time some 2,000 frozen corpses had accumulated, unburied, outside Harbin alone. See Wu Lien-Teh, (n. 4) p. 29.

10. The administrative controls included: military cordons around certain towns; the division of towns into segments between which travel was regulated; the development of plague hospitals and of quarantine or isolation units, the latter usually in heated railway freight cars; selective restrictions on rail travel; and cremation of the dead. See, for example, Gray, (n. 4) p. 1157 *et seq.* Local peoples evolved their own techniques: the Buriats, for example, "sew a patient in his tent and no one goes near it until the smoke goes out," according to Farrar, (n. 4) p. 23. On a grander scale, the Japanese were said to have considered controlling population movement by "stretching a live wire across the whole [Dairen] peninsula" (Farrar, [n. 4] p. 8).

AMERICAN PARTICIPATION: STRONG NAMED U.S. DELEGATE

On 24 January 1911 the American Minister to China, W. J. Calhoun, cabled Secretary of State Philander C. Knox that plague was "spreading throughout Manchuria with unabated virulence," and that the Chinese Foreign Office was "inviting different nationalities . . . to select and send specialists to Manchuria . . . to investigate cause and cure [of the epidemic] and to suggest precautionary measures. . . . for the advancement of medical science and for the protection of mankind. Chinese government will defray all travelling expenses upon arrival. . . . this invitation extended American Government."¹¹ Knox cabled acceptance of the invitation,¹² and Calhoun, having been asked to name American physicians who might be available, responded with "Swan of Canton" (probably John M. Swan), and Victor Heiser of Manila, Director of Health of the Philippines.¹³ An inquiry to Surgeon General Wyman brought word of unnamed plague experts in Manila and in San Francisco,¹⁴ and the navy responded that Surgeon (later Admiral) Edward R. Stitt was available in the Philippines.¹⁵

The hunt widened when Miss Mable Boardman, the powerful guiding member of the Central Committee of the American Red Cross, wired William Welch at Johns Hopkins asking for his recommendation.¹⁶ Welch responded with several names, including those of Simon Flexner of the Rockefeller Institute, and Milton J. Rosenau of Harvard Medical School.¹⁷ In thanking Welch, Boardman said that she planned also to consult with Dean C. Worcester, Secretary of the Interior of the Philippines, then visiting Washington.¹⁸ According to a cable from Gen. Clarence R. Edwards, Chief, Bureau of Insular Affairs, War Department,¹⁹

11. W. J. Calhoun to secretary of state [P. C. Knox], cable, 24 January 1911, National Archives, Washington, D.C. 158.931/66. **Bibliographic note:** References to documents in the National Archives are hereafter designated "NA" followed by the file number.

12. P. C. Knox to Amlegation, Peking [W. J. Calhoun], cable, 26 January 1911, NA 158.931/66.

13. W. J. Calhoun to secretary of state [P. C. Knox], cable, 2 February 1911, NA 158.931/74.

14. W. Wyman to P. C. Knox, 27 January 1911, NA 158.931/70.

15. Navy Department [signature illegible] to secretary of state [P. C. Knox], 2 February 1911, NA 158.931/76.

16. M. T. Boardman to W. H. Welch, telegram, 31 January 1911, NA 898.53. The American Red Cross was then as now a volunteer quasi-governmental organization, chartered by Congress, with administrative ties to the president and operating ties to the Departments of War (now Defense), State, and others.

17. W. H. Welch to M. T. Boardman, telegram, 31 January 1911, NA 898.53.

18. M. T. Boardman to W. H. Welch, 1 February 1911, NA 898.53.

19. The Bureau of Insular Affairs, created within the War Department after the Spanish-American War, helped administer the various islands, including the Philippines, that had come into U.S.

to Governor Forbes of the Philippines, Worcester recommended Richard P. Strong of the Biological Laboratory,²⁰ who was promptly nominated.²¹ Edwards cabled Governor Forbes his hope that Strong would accept the assignment, "thus adding prestige to the Bureau of Science,"²² and Forbes in turn asked Insular Affairs how soon Strong was needed because it would be "difficult for him to leave before the middle of March."²³ On 9 February 1911 the Red Cross, under pressure from the State Department, cabled Strong: "Important you start immediately. Cable when. Welch Baltimore warmly approves your selection. State Department anxious."²⁴ On 14 February Strong and his physician-assistant, Oscar Teague,²⁵ for whom the Red Cross had granted permission to accompany Strong,²⁶ sailed to Shanghai.²⁷

STRONG: A BIOGRAPHICAL SKETCH²⁸

Richard P. Strong was born of a military family in Virginia in 1872 (d. 1948), graduated from Yale's Sheffield School (1893), and received his M.D. in the first medical school class (1897) at Johns Hopkins where he also did a residency. After a two-year army stint in the Philippines during the Spanish-American War, Strong helped organize and for twelve years headed the Biological Laboratory, a part of the Philippine Bureau of Science directed by Dr. Paul C. Freer.²⁹ After some additional laboratory experience in Germany, Strong concentrated his research on infectious and nutritional diseases, including cholera, yaws (for which he intro-

possession. Administration in Manila rested with the governor-general, the Philippine commissioners, and the secretaries of the several Departments, notably the Department of the Interior under which fell the Bureau of Science which in turn subsumed the Biological Laboratory headed by Strong.

20. C. R. Edwards to W. C. Forbes, cable, 1 February 1911, NA 3234/72

21. G. W. Davis to W. Wyman, 3 February 1911, NA 158.931/89a.

22. C. R. Edwards to W. C. Forbes, cable, 3 February 1911, NA 6550/16.

23. W. C. Forbes to secretary of war, cable, 3 February 1911, NA 6550/17.

24. Red Cross to R. P. Strong, cable, 9 February 1911, NA 6550/18.

25. Oscar Teague was born in Alabama in 1878, graduated from Vanderbilt, and took his M.D. from the University of Berlin. He worked with Strong in Manila 1908-12, and subsequently held academic posts in the U.S., working mainly in microbiology and immunology. Teague died in an automobile accident in 1923 (*Am. J. Trop. Med.* 4: 225-26, 1924).

26. C. R. Edwards to W. C. Forbes, cable, 10 February 1911, NA 3234/9.

27. W. C. Forbes to G. W. Davis, cable, 14 February 1911, NA 6550/21.

28. For details of Strong's career, see G. C. Shattuck and J. S. Simmons, Faculty Minute, *Harvard University Gazette*, pp. 65-66, 21 November 1948. Similar descriptions appear in *JAMA*, p. 306, 25 September, 1948; *N. Engl. J. Med.* 237: 489, 1948; and *Trop. Med. News* 5: 3-5, 1948.

29. Freer was an M.D. and Ph.D. (chemistry) who developed and directed the Philippine Bureau of Science from 1901 until his sudden death in 1912. He was also dean of the College of Medicine and Surgery in Manila, and the founder and general editor of *The Philippine Journal of Science* (See Freer Memorial Number, *Phil. J. Sci.* 7: 1-51, 1912).

duced salvarsan), beriberi, and plague, a subject on which he published a half-dozen papers. For years Strong was editor of the medical sciences section of the *Philippine Journal of Science*, and he served as chief of medicine at the General Hospital in Manila (1910-13) and as professor of tropical medicine in the Philippine University's College of Medicine and Surgery (1907-13). During much of this time Strong was physician to and intimate friend of W. Cameron Forbes, a successful Boston businessman who served in the Philippine Government from 1904 and as governor-general from 1909-13.³⁰

STRONG LEAVES FOR CHINA

While Strong was directly responsible to the State Department through Minister Calhoun in Peking, he was also under notice "that he will be the American official representative [of the] Red Cross which would be pleased if Red Cross button could be worn."³¹ The Red Cross agreed to cable \$3,000 for expenses, and asked to be advised of Strong's accounts, movements, and observations.

With Strong and Teague en route to China, the State Department bethought itself to ask Calhoun whether the Chinese Government would take out insurance on their lives; failing this the Red Cross would probably do so. "This has not been asked by Doctors Strong and Teague as a condition precedent to their going, but it is suggested by the Red Cross as no more than their due."³² Calhoun replied that the Chinese were willing to "place a policy for £1000 for six months for each representative, if any company will issue the policy." Alternatively, in the event of deaths, the Chinese would indemnify the families in the amount of about \$6,500.³³ (Strong was then thirty-eight and married but childless; Teague was thirty-two and single.) It is unclear whether the two men were ever insured against the hazards of Manchuria, although a dispatch in the *New York Times* asserted that the Peking Government is "insuring each foreign volunteer for \$20,000."³⁴

The Chinese, meanwhile, having left undefined the roles of the foreign experts, became unsettled by Russia's refusal to allow outside plague investigations within its railway zone of concession. Since Harbin was

30. Forbes (1870-1959), a grandson of Ralph Waldo Emerson, served on the Philippine Commission and as secretary of commerce and police (1904-08), as vice-governor (1908-09), and as governor-general of the Philippines (1909-13). In 1930-32 he was U.S. ambassador to Japan.

31. Edwards to Forbes (n. 26).

32. H. Wilson to W. J. Calhoun, cable, 14 February 1911, NA 158.931/96a.

33. W. J. Calhoun to secretary of state [P. C. Knox], 6 March 1911, NA 158.931/161.

34. *New York Times*, 16 January 1911, p. 5.

within that zone and seriously plague-struck, the Chinese sent word to the secretary of state that the sending or not of experts was now left up to the governments concerned.³⁵ But for experts already en route and for diplomats on the ground, the apparent irresolution by the Chinese Foreign Office brought additional confusion. Minister Calhoun, for example, cabled from Peking to the secretary of state on 15 February 1911:³⁶

Last evening I called at Foreign Office to inquire when and where the plague experts were to be received and what plan for their investigations, if any, had been formulated. I was surprised with the information that the authorities here did not wish experts to arrive until April third. It was also stated that they were not expected to treat cases of the plague or to expose themselves to the disease. They were to form a sort of a medical council and to make such a general *condition* investigation as would enable them to suggest preventative measures, treatment, remedies, etc. I complained that no notice had been given me of this plan. The reply was that each of the Chinese Ministers in the countries to which invitations were extended had already been notified by cable and directed to inform the respective Governments to which they were accredited. I assumed therefore you had this notice.

The confusion evident in Calhoun's cable is not clarified by the archival record. Suffice it that on 13 February 1911, the Chinese Foreign Office had notified its ministers abroad that "It is now decided to hold the opening session of the Medical Congress for the investigation of plague at Moukden on the fifth day of the Chinese third moon (April 3)."³⁷ The experts who were to study the causes and prevention of plague thus found themselves delegates to a formal international conference whose start (never specified) was now "deferred" until the expected end of the epidemic.

The signals were indeed mixed. Strong and Teague arrived in Peking on 25 February just as a dispatch reached the American legation from the secretary of state: "Since the Plague Commission is not to meet until April 3 Red Cross suggests that Doctor Strong study plague conditions in any place Chinese Government may encourage him to go. . . ." ³⁸ Strong had learned en route to Peking that "delegates are not invited [to]

35. Chinese legation to secretary of state, memorandum on message, 31 January 1911, NA 158.931/269.

36. W. J. Calhoun to secretary of state [P. C. Knox], cable, 15 February 1911, NA 158.931/98.

37. Waiwu Pu (the Chinese Foreign Office) to Chinese minister (Washington), cable, 13 February 1911, NA 158.931/100.

38. P. C. Knox to Amlegation, Peking [W. J. Calhoun], cable, 25 February 1911, NA 158 931/112.

participate in the work against the plague. Foreign Office inform. . . should you come to Peking they hope you will not proceed to Manchuria until near. . . the conference [and] that in the meantime you may care to conduct investigation in the laboratory [in Peking] and study plague in this province."³⁹ The *Peking Daily News*, meanwhile, reported on the forthcoming conference and commented that "In some quarters there exists a belief that the foreign experts are invited to take active part in anti-plague work. We fail to see where they received such false impression."⁴⁰

Strong was not easily deterred. Since he had been pressed to leave Manila hurriedly because of the urgent need in Manchuria, he felt justified in reaching Peking quickly and pushing on to Manchuria before the plague abated and the conference began.⁴¹ When Minister Calhoun informed the Chinese of Strong's wishes, he learned that "The Foreign Office had changed its mind and has no objection at all to [Strong and Teague] proceeding at once."⁴² The Foreign Office telegraphed the viceroy at Mukden, and also Dr. Wu Lien-Teh, who was in charge of Chinese antiplague work in Manchuria, asking that every facility be accorded the Americans.

STRONG AT MUKDEN

Calhoun instructed Consul General Fisher at Mukden to introduce the Americans to Viceroy Hsi Liang "as sent by the American Red Cross . . . in response to [the] invitation of China," and that the Red Cross wished Strong to study actual cases before the Conference.⁴³ Strong, Teague, and the laboratory gear brought from Manila arrived in Mukden, the viceregal seat of Manchuria, on 28 February while plague still raged, and on 4 March Strong cabled the Red Cross that his laboratory was ready and he was treating patients.⁴⁴ Strong and Teague had also established living quarters and were using horses to get to and from work. Strong,

39. W. J. Calhoun to American Consulate, Shanghai, telegram, undated, quoted in: Strong to secretary of state [P. C. Knox], 10 August 1911, NA 158.931/181.

40. Cutting from *Peking Daily News* enclosed in Calhoun (n. 33).

41. Strong to secretary of state [P. C. Knox], 10 August 1911, NA 158.931/181. Many of the unpublished details of Strong's trip to China, of his stay in Mukden, and of the conference are drawn from this 33-page confidential report Strong sent to the secretary of state in August 1911, after his return to Manila. Strong's report, only recently declassified, was apparently based on a journal but no such document has been found among Strong's papers. **Bibliographic note:** Strong's report to the secretary of state is referred to hereafter as "Strong/State."

42. W. J. Calhoun to secretary of state [P. C. Knox], cable, 6 March 1911, NA 158.931/162.

43. W. J. Calhoun to F. D. Fisher, telegram, 27 February 1911, as quoted in Strong/State, (n. 41).

44. W. J. Calhoun to secretary of state [P. C. Knox], cable, 4 March 1911, NA 158.931/119.

who was an avid horseman, said that these twenty minute rides provided the best transportation and "all the exercise necessary."⁴⁵

Three small rooms, on the inner court of an old temple converted into a plague hospital, were turned over to Strong along with some basins and tables. Because there was no running water or gas, and the rooms were cold by day and subfreezing by night, many of Strong's bacteriological and pathological studies had to be completed later in Manila.

Patients in the wards lay side-by-side on a wooden platform, about two meters wide set along one wall, and they received little care beyond food and drink. Strong wrote that the sick were merely brought to the hospital to die, and the corpses were removed each morning to the morgue; indeed, the only patients who left the hospital were dead. So bad was the crowding and agonal disease that the floors and walls of the wards were spattered with bloody sputum, the hallmark of pneumonic plague. This represented a deadly hazard to hospital workers and to the occasional nonplague patient who was mistakenly admitted before bacteriologic sputum examinations became routine on admission. Because of the danger of transmission, Strong ordered that doctors and aides on the wards wear gowns, goggles, gloves, and special masks (Figure 2), and "Although we worked on the wards each day until the end of the epidemic, and were often with patients for several hours continually . . . we remained entirely healthy."⁴⁶

Strong planned to investigate three aspects of plague: its treatment, transmission, and pathological anatomy. The medications he tried proved worthless; their nature is not mentioned except that all were administered intravenously.⁴⁷ Because patients died within a day or so of admission, some Chinese doctors became suspicious of Strong's treatments, and since the epidemic was slowing he decided to concentrate on the other two objectives. The transmission of bubonic plague by rat fleas, suggested in 1899 by Simond, had by 1909 been confirmed by the British Plague Commission in India,⁴⁸ but it was apparent that rats and their fleas were not involved in the Manchurian epidemic; indeed, the Plague Conference would hear that some fifty thousand rats had been examined

45. Strong/State, (n. 41).

46. R. P. Strong, "Studies on pneumonic plague and plague immunization. I. Introduction. The expedition to Manchuria and the conditions under which the work was performed there." *Phil. J. Sci. (B)* 7: 131-36, 1912.

47. Strong/State, (n. 41).

48. G. F. Petrie, "A short abstract of the Plague Commission's work in Bombay with regard to the rat-flea theory," *Trans. Soc. Trop. Med. Hyg.* 2: 97-112, 1908-09.



Figure 2. Protective gear worn by Strong (right) and his guest Prof. K. D. Zabolotny, the chief Russian delegate to the Plague Conference, during a visit to Strong's hospital wards at Mukden, 18 March 1911. The photograph was enclosed with Strong's report to the secretary of state (see n. 41). The two figures were identified by Strong on the reverse of the photograph. Reproduced courtesy of the National Archives.

without finding any infected,⁴⁹ and, according to an unpublished report from the Kuomintang, 170 thousand rats were examined in 1910–11 in the Japanese zones, all negative.⁵⁰ Since the unresolved issue of transmission in Manchuria was paramount, Strong did studies in which he held culture plates at specified distances from the mouths of plague patients; he found positive cultures if the patients coughed but not if their breathing was normal or even dyspneic.⁵¹ The masks Strong and others wore presumably intercepted droplets, but later experiments in Manila disclosed that the masks were permeable to sprayed bacteria.⁵² Strong, apparently, was also concerned lest abrasions serve as portals of entry; according to Forbes, Strong “wore a beard because he didn’t dare to shave.”⁵³

According to Strong’s confidential report to the secretary of state, missionary doctors at Mukden, who heard about Strong’s plans to do autopsies, told him “that it would be quite impossible to perform autopsies in Manchuria, that these had never been permitted and that if we attempted them we merely would be mobbed, and that riots among the people would certainly occur.”⁵⁴ Strong reported, however, that when he and Teague were presented to the viceroy, Strong asked to study and treat plague victims in hospital, and to examine their bodies after death. Strong recorded that “The viceroy didn’t state definitely that permission would be granted to us [for] autopsies. . . . However, he did not refuse to let us carry them on, and this was considered by us at the time as a satisfactory arrangement.” Strong gambled on the viceroy’s unspoken “permission,” although he later acknowledged that autopsies were frequently difficult to obtain and the work was sometimes disrupted. In

49. A. Stanley, *Conf. Rept.*, (n. 3) p. 459.

50. A. W. Pontius [Consul, Dairen] to secretary of state [P. C. Knox], 20 May 1912, NA 158.931/195. Pontius enclosed a translation of a report on the epidemic prepared by the Hygienic Department of the Kwantung (= Kuomintang) Government, from which the information is taken. Note that the long-reigning Manchu dynasty had been displaced in late 1911 and 1912 by the revolution led by Sun Yat-Sen.

51. R. P. Strong and O. Teague, “Method of infection in pneumonic plague,” *JAMA* 57: 1270–71, 1911. Somewhat similar results were later reported by N. Murata (*Z. Hyg. Infekt.* 73: 245–52, 1912). It was common knowledge by 1906 that sputum from pneumonic plague patients was heavily charged with plague bacilli. See, for example, E. Klein, *Studies in the Bacteriology and Etiology of Oriental Plague*, London, MacMillan, p. 148, 1906; and W.J.R. Simpson, *The Croonian Lectures: “Plague” I. Lancet* 1: 1757–61, 1907.

52. M. A. Barber and O. Teague, “Studies on pneumonic plague and plague immunizations,” III. Some experiments to determine the efficacy of various masks for protection against pneumonic plague,” *Phil. J. Sci. (B)* 7: 255–68, 1912.

53. W. C. Forbes, *Journal* 4 (4 June 1911): 386. Houghton Library, fMS Am 1365, Harvard University.

54. Strong/State, (n. 41).

March, continued the report, the commissioner of foreign affairs advised Strong to discontinue autopsies because they had provoked popular discontent. A Mukden newspaper, quoted by Strong, commented on the autopsies: "The Chinese Government with praiseworthy promptitude, invited the best plague scientists to meet in this city, and now this must not be spoiled by any foolishness on the part of the people. . . ." Soon after, the Chinese antiplague bureau sent Strong apologies and granted permission to continue autopsies, but only on unclaimed nameless bodies.⁵⁵

Strong completed twenty-five autopsies, the first, he said, ever performed in Mukden.⁵⁶ Whether or not Strong's were the first autopsies pales by comparison with his circumstances: "The examinations were sometimes performed under difficulties owing to the extreme cold. The water in the buckets would sometimes freeze while the necropsy was being performed, and the blood formed icicles as it flowed upon and over the edges of the table."⁵⁷ These and related studies, many done in Manila, materially increased knowledge of the pathology of pneumonic plague. The results were published, within a year of Strong's leaving Manchuria, together with clinical observations, bacteriology, and experimental pathology, in a dozen papers by Strong and his colleagues.⁵⁸

"Strong's work on the pneumonic plague," wrote Governor Forbes in his journal, "was one of the most courageous and splendid bits of work that I know of. . . . He is too modest to do himself justice."⁵⁹ Governor Forbes expressed his personal concerns in a letter to Strong at Mukden: "Please take every possible protection to avoid taking the plague. I hardly need tell you this but I hope you will get yourself vaccinated and for heaven sake take care of yourself. We need you here more than almost anybody."⁶⁰

THE INTERNATIONAL PLAGUE CONFERENCE

Strong and Teague were the only delegates in Mukden studying plague and working in the hospital before the conference began. Some plague

55. *Ibid.*, (n. 41).

56. Wu mentions doing a partial autopsy in December 1910 (two months before Strong) in Fuchatien, the Chinese section of Harbin (Wu Lien-Teh, [n. 3] p. 11). Strong records autopsies done by a Russian in Harbin, and other autopsies by the Japanese (*Conf. Rept.*, [n. 3] pp. 151, 154).

57. Strong (n. 46), p. 135.

58. R. P. Strong *et al.*, "Studies on pneumonic plague and plague immunization," (twelve papers), *Phil. J. Sci (B)* 7: 131-268, 1912.

59. W. C. Forbes, (n. 53), 26 February 1911, p. 292.

60. W. C. Forbes to Strong, 25 March 1911, Forbes *Letterbooks*, 12: 340, Houghton Library, FMS Am 1366, Harvard University.

work was going on in the Russian and Japanese enclaves, and Strong received brief visits from members of the Russian, Japanese, and British delegations.⁶¹ Before the conference opened on 3 April, the Chinese asked delegates to move to the newly decorated conference buildings. Strong complied, moving not only their personal quarters but also the laboratory, and work continued as time permitted until the conference closed on 28 April. Owing to this effort, Strong was able to report to the conference that tarbagans were in fact highly susceptible to experimentally induced plague. He used animals presented to him by the Chinese.⁶²

Eleven countries were represented at the conference: the United States, Austria-Hungary, France, Germany, Great Britain, Italy, Japan, Mexico, Netherlands, Russia, and China; the official delegates numbered thirty-three, supported by nineteen deputies and staff. The codiscoverer in 1894 of the plague bacillus (now *Yersinia pestis*), Professor S. Kitasato of Japan, was the best-known delegate, although others would come away from the conference well known, notably Strong and Wu Lien-Teh, the chief Chinese delegate.⁶³ Kitasato had made some anti-Chinese remarks before leaving Japan for Mukden, but because of his fame he was asked to preside over part of the conference, while the thirty-year-old Wu held the major presidency. Based on its twenty-four sessions the conference generated eleven conclusions about the course and nature of the epidemic, and developed forty-five resolutions about the prevention and control of future outbreaks of pneumonic plague. Together these constituted the "interim report" presented to Sao Ke Alfred Sze, the Cornell-schooled Imperial Commissioner, on the last day of the conference.⁶⁴ In acknowledging the delegates' productive work, Sze expressed pleasure at this the "first scientific conference that has been held in the Chinese Empire. . . ."⁶⁵

Despite some underlying nationalistic frictions and antipathies, the conference, according to Strong managed to avoid political issues. In his confidential report to the secretary of state, Strong recognized that the pressure for his early arrival in Manchuria reflected the Chinese need to

61. Strong/State, (n. 41).

62. Strong, *Conf. Rept.*, (n. 3), pp. 237-39.

63. Wu Lien-Teh, also known in the British literature as G. L. Tuck, was born in Penang, Straits Settlement, Malaya, and was a British subject. He took his M.D. at Cambridge University, and was vice director of the Imperial Army Medical College at Tientsin before being assigned to plague control at Harbin during the epidemic.

64. Alfred Sze later became the Chinese ambassador to the Court of St. James, and minister and then ambassador to the United States.

65. A. Sze, *Conf. Rept.*, (n. 3), pp. 401-02.

have "some other country, besides Russia and Japan [send] a representative a sufficient time in advance of the Conference, and that these representatives [make] original investigations. . . ."66 But this merely hints at the complex political scene in China at the time.⁶⁷

OTHER VIEWS OF THE PLAGUE

The confusion and concern generated by the Manchurian plague were compounded when respected scientists weighed in with ill-conceived speculations. For example, the eminent French scientist, L. P. Simond, declared that the pest organisms in the blood of victims in Manchuria were transmitted person-to-person by human fleas, and that the epidemic subsided because the flea population declined.⁶⁸ There was, however, no epidemiologic basis for Simond's notion. A leading article in *Lancet* favored the infectious air-borne droplet to explain the spread of the pneumonic infection,⁶⁹ an idea some had earlier suggested⁷⁰ but without the direct evidence Strong would produce in Mukden.

The plague epidemic in Manchuria seemed to arise mysteriously and with frightening speed, leaving in its wake thousands of dead and extracting a cost to governments (mainly the Chinese) variously estimated at between eight million⁷¹ and 100 million dollars.⁷² It takes nothing from the credit owed Strong and the Plague Conference to notice that, while governments and newspapers publicized China's four-month ordeal with pneumonic plague, in the first quarter of 1911 flea-borne bubonic plague claimed some 280 thousand lives in British India, or five times the concurrent toll in Manchuria.⁷³ India's decade-long battle with plague, although reported upon in *Lancet* and the *British Medical Journal*,

66. Strong/State, (n. 41).

67. Nathan, (n. 4) p. 38 *et seq.*

68. P. L. Simmond, "L'épidémie de Manchourie en 1910-1911," *Rev. Hyg.* 33: 646-64, 1911.

69. Anon., "The propagation of plague without the aid of infected rats," *Lancet* 2: 1714-15, 1911.

70. See the Klein and Simpson publications, (n. 51).

71. Nathan, (n. 4) p. 8.

72. K. C. Wong and Wu Lien-Teh, *History of Chinese Medicine*, Shanghai, National Quarantine Service, 1936, p. 592.

73. W. J. Simpson, "Plague," *Nature*, 86: 486-97, 1911. In his confidential report to Secretary Knox, (n. 41) Strong remarked that Simpson "had been named to represent Great Britain [at the conference] but that he declined to come for less than 10,000 pounds." The three substitute British delegates (Drs. R. Farrar, G. F. Petrie, and G. D. Gray) proved an unfortunate combination, according to Strong, for they "frequently quarrelled among themselves, presented different opinions, desired to vote in a different manner . . .," etc. On its face the assertion about Simpson demanding £10,000 seems inconsistent with what is known about the man and his ways (see R. A. Baker and R. A. Bayliss, "William John Ritchie Simpson [1855-1931]: public health and tropical medicine." *Med. Hist.*, 31: 450-65, 1987).

seems not to have captured the international imagination as did China's sudden and spectacular epidemic.

The *New York Times* and the *London Times* published frequent brief pieces about the Manchurian epidemic, and occasional feature-length articles that ranged from the near-lurid⁷⁴ to the candidly informative.⁷⁵ The newspapers occasionally mentioned Strong as the United States delegate to the conference,⁷⁶ but headlines declared that Nobel laureate Elie Metchnikoff, of the Pasteur Institute, had reassured the apprehensive French public that the plague would burn out before reaching the West: "the frightful mortality in Manchuria is, in fact, a safeguard for Europe."⁷⁷ The Manchurian plague even disrupted the social life of royalty, for the Germans canceled the Far Eastern tour of Crown Prince Frederick William who had been scheduled to visit Peking in February 1911.⁷⁸

A particularly interesting photograph, published in April 1911 in the *New York Times*, carried this instructive caption: "It shows a Russian soldier, having noted that the Chinaman is showing symptoms of the plague, arresting him, keeping him at a distance with the aid of a sword, and whistling for the sanitary officials to remove from the streets one who is a danger to all he approaches. Such scenes are common in Harbin."⁷⁹ Thus in modern times did swords and whistles join other anti-plague measures during the worst epidemic of its kind in centuries.

STRONG RETURNS TO THE PHILIPPINES

At the end of the conference, Strong, who was chairman of the editorial committee, cabled Governor Forbes (with Sze's approval) for permission to have the Conference Report printed at the government Bureau of Printing in Manila.⁸⁰ When Forbes responded favorably,⁸¹ Sze ordered 2,000 copies and thanked the Philippine Government for its aid.⁸²

Strong returned to Manila in May,⁸³ and Forbes described him as

74. *New York Times*, pt. 5, p. 2, 19 February 1911; *ibid.*, pt. 3, p. 4, 26 February 1911.

75. *London Times*, pp. 8, 23, and 24 March 1911.

76. See, for example, *New York Times*, p. 1, 11 February 1911; *London Times*, p. 5, 28 April 1911.

77. *New York Times*, pt. 3, p. 4, 12 February 1911.

78. *New York Times*, p. 6, 1 February 1911.

79. *New York Times*, pt. 3, p. 4, 16 April 1911.

80. Strong to W. C. Forbes, 27 April 1911, NA 3234/72a.

81. W. C. Forbes to Strong, 28 April 1911, NA 3234/72b.

82. A. Sze to Strong, 6 May 1911, NA 3234/72c.

83. Strong presently accounted for the \$3,000 the Red Cross had advanced: he had spent \$1,097 on apparatus and supplies, and \$759 on transportation for Teague and himself; \$867 was still owed

playing off his form in a polo match and "very pale from his tremendous labours in Manchuria. . . ."84 Forbes was much impressed with Strong's bravery and accomplishments: "[The] achievements are ringing throughout the medical fraternity of the Far East. . . . We are all perfectly delighted to get him back."85 On 19 October Strong wrote to Sze that he had edited the Conference Report (nearly 500 pages in eventual print) and it was in press,86 a considerable feat because Strong was also preparing to publish his own group of papers based on the Mukden researches. The printers had been authorized to bind twelve copies of the Conference Report in full leather and the rest in cloth or paper. Strong presented one of the leather-bound volumes to Forbes with an inscribed card and letter of thanks, to which Forbes responded: "I wish I could persuade myself that I had done more to make the thing possible and successful, but I am very much pleased to have the book and the inscription. You are, as always, the best of friends."87

Strong's final months in the Philippines were troubled by illness and dispute. In July 1912 Governor Forbes cabled the Red Cross, through the Bureau of Insular Affairs, that "Owing to prolonged illness Richard P. Strong leaving Philippines eventually returning to US,"88 and Forbes also cabled the bureau to instruct Strong to "take plenty of time to get strong before undertaking work his life is too valuable to be risked";89 later in July, Strong himself alluded to "my illness."90 Dean C. Worcester, the secretary of the interior (and Strong's ultimate boss), in a letter to Strong referred to "the unfortunate nervous condition to which you found yourself reduced as a result of severe and continued illness."91 In September, Forbes mentioned "kidney trouble" that had impaired

for a portable plague laboratory Strong ordered from Berlin for use in Mukden, leaving a balance of \$277 (Strong to C. L. Magee, 29 June 1911, NA 898.53). The Red Cross asked Strong to store the field laboratory, and also to care for "the heavy underclothing which we presume will be of no use whatever in Manila. . ." (G. W. Davis to Strong, 31 August 1911, NA 898.53). The field laboratory was finally disposed of two years later when Strong, by then at Harvard, bought it for his department (Strong to C. L. Magee, 9 June 1914, GA 82/35, File Red Cross).

84. W. C. Forbes, (n. 53) 13 June 1911, p. 381.

85. W. C. Forbes, (n. 53) 4 June 1911, p. 386.

86. Strong to A. Sze, 19 October 1911, NA 3234/72d.

87. W. C. Forbes to Strong, *Letterbooks 14* (21 February 1912): 311, Houghton Library, fMS Am 1366, Harvard University. (The volume Strong inscribed to Forbes is conserved in the Rare Book Room, Countway Library of Medicine, Harvard Medical School.)

88. W. C. Forbes to Bureau of Insular Affairs, 3 July 1912, NA 6550/31.

89. W. C. Forbes to F. McIntyre, 3 July 1912, NA 6550/30.

90. Strong to T. C. Welch, 26 July 1912, NA 3234/72a.

91. D. C. Worcester to Strong, 16 September 1912, NA 6550/43.

Strong's health,⁹² and a month later Forbes wrote that "Dr. Strong ought to have quite a rest from his arduous service of nearly fourteen years in the tropics. He broke down under the strain this last year . . . although he has recovered . . . and is now perfectly well. . . ."⁹³ Worcester also told Forbes that Strong "had got all shot to pieces before leaving the Islands,"⁹⁴ but the unspecified illness apparently ended before Strong came to Boston in 1913.

Strong's last associations with the Bureau of Science involved two unpleasant conflicts, both outgrowths of the death in July 1912 of Dr. Paul C. Freer, director of the bureau and general editor of the *Philippine Journal of Science*.⁹⁵ Strong had asked as a courtesy that his name appear as the sole editor of the issue of the *Journal* in which his plague papers were to appear, a request Forbes endorsed.⁹⁶ Dean Worcester, who as secretary of the interior had authority over the bureau, took umbrage at Strong's "childish act," committed in his (Worcester's) absence. In a scathing personal letter, Worcester also accused Strong of having "lost [his] sense of perspective," perhaps owing to his illness.⁹⁷ Strong's reply, if any, is lost, but Worcester and Strong crossed swords yet again.

Strong had for years been head of the Biological Laboratory and assistant director of the Bureau of Science under Freer, and he aspired to the director's post left vacant by Freer's death. According to a letter from Governor Forbes to President Taft, Worcester thought Strong unsuited for the position and vigorously opposed the appointment, while Forbes felt that Strong's character and service entitled him to the tender of the post.⁹⁸ The President agreed with Forbes and instructed Secretary of War Henry L. Stimson that Worcester's personal opinion was not to interfere with Strong's promotion.⁹⁹ Forbes later learned that Worcester and Strong had had an encounter during which Strong told Worcester what he thought of him "in a way which made future relations impossible."¹⁰⁰

92. W. C. Forbes to Strong, *Letterbooks 15* (21 September 1912): 226, Houghton Library, fMS Am 1366, Harvard University.

93. W. C. Forbes to A. L. Lowell, 24 October 1912, Dean's File (T.M.), 1908-23, Code 11:597, Rare Book Room, Countway Library of Medicine, Harvard Medical School.

94. W. C. Forbes to Strong, *Letterbooks 16* (15 March 1913): 187, Houghton Library, fMS Am 1366, Harvard University.

95. See (n. 29).

96. W. C. Forbes to Bureau of Insular Affairs, telegram, 10 December 1912, NA 6550/46.

97. Worcester to Strong, see (n. 91).

98. W. C. Forbes to W. H. Taft, 19 October 1912, NA 6550/40.

99. W. H. Taft to H. L. Stimson, 28 October 1912, NA 6550/41.

100. See Forbes to Strong, (n. 94). Whatever the merits of the Worcester-Strong dispute, the

The argument became moot when Strong returned to the United States in the fall of 1912.

STRONG'S SUBSEQUENT CAREER IN THE UNITED STATES

Strong's Manchurian researches on the pathology and bacteriology of pneumonic plague, on the spread of the organisms by droplets, and on the tarbagan's susceptibility to infection, represented important contributions, and his peers appreciated the difficult circumstances under which the studies were done. Furthermore, Strong's participation in the conference discussions was active and spirited, and his editing of the Conference Report was a large and important task well and quickly executed. In all, Strong emerged from the conference as its foremost new figure. Indeed, Imperial Commissioner Sze singled out for praise at the close of the conference "the valuable researches . . . by Dr. Strong and Dr. Teague during their sojourn in Mukden."¹⁰¹

Other recognitions and rewards soon came in abundance. The *Journal of the American Medical Association*, for example, extolled "the investigators who undertook this dangerous and self-sacrificing mission . . . [that] must fill the hearts of their professional colleagues with pride. . . . We compliment our Manila colleagues on the exhibition of personal fortitude, ambitious research and scientific good judgment which has materially enriched our knowledge of a most important disease."¹⁰² Forbes wrote that "Strong has done wonders in Manchuria, and it makes a man proud of being a countryman of his. . . ."¹⁰³ President Taft decorated Strong with the Medal of Merit, Strong's peers elected him president of the American Society of Tropical Medicine (1913-14), and both Yale (1914) and Harvard (1916) awarded him honorary degrees.¹⁰⁴

falling out between the two was ironic because it was Worcester who had nominated Strong for the Manchurian assignment (see Edwards to Forbes, n. 20.) that brought Strong to prominence. Although Strong did not succeed to Freer's post as director of the Bureau of Science, Freer's widow became Strong's second wife in 1916. (His third wife, m. 1936, was the former Grace Nichols of Boston. Strong had no children by his marriages.)

101. A. Sze, *Conf. Rept.*, (n. 3) p. 401.

102. Anon., "American medical men in dangerous posts," *JAMA* 60: 130-31, 1913. The hazards of infection and death were real during the epidemic, and at least three western physicians lost their lives to plague in Manchuria: Professor G. E. Mesny, French head of medicine at the Peiyang Medical College, died in Harbin; Arthur F. Jackson, British medical missionary, died in Mukden; and a Russian doctor identified only as Madame Lebedeff (or Lebedewa). See *Lancet* 1: 313, 1911.

103. W. C. Forbes, (n. 53).

104. By a happy coincidence two other important figures in American tropical medicine, Charles Franklin Craig and William Crawford Gorgas, were honored with Strong (and Jan Sibelius) at the 1914 Yale commencement. Strong's citation from his alma mater credited him rather extravagantly with having prevented the spread of the Manchurian plague into Europe (*Yale Alum. Commence-*

To Strong's appointment in 1913 as a professor in the Harvard Medical School the Harvard Alumni Bulletin responded self-righteously that "the presence of Dr. Strong in the University adds to its moral force and its inspiring power."¹⁰⁵ An element of romance always attached to Strong's Manchurian adventure, and as late as 1926 Frederick C. Shattuck, prominent Boston physician, regretted that Strong's "perilous [and] successful" research in Manchuria had not brought him a place among the immortals in Paul de Kruif's popular book *Microbe Hunters*.¹⁰⁶

Strong's career was supported and furthered by the friendship between himself and Governor W. Cameron Forbes. The two men knew each other well and long, and Forbes' *Journals* carry nearly 200 references to Strong, personal, professional and recreational. Strong and Forbes shared, among other things, a passion for playing polo, an indulgence that is prominently described in the *Journals*.¹⁰⁷ The depth of personal feeling between Forbes and Strong is evident in a letter Forbes sent to Strong in Mukden during the epidemic: "I cannot tell you how much we miss you. Personally I don't find my life nearly as secure as while you are with us. . . ."¹⁰⁸ Forbes was, not surprisingly, Strong's staunch supporter in government affairs, as in the argument with Worcester over Strong's promotion, and in wielding influence with President Abbot Lawrence Lowell over Strong's appointment at Harvard. Indeed, at about the time Strong returned to the States, Forbes wrote to Lowell that "I should feel it a great card for the Medical School to get Dr. Strong to take charge of the tropical medicine work at Harvard."¹⁰⁹ This hope soon became fact, although the seeds of a Harvard medical connection had been sown years before.

Strong came to Harvard in 1913 largely through the efforts of Frederick C. Shattuck, then Jackson Professor of Clinical Medicine at Harvard and the Massachusetts General Hospital, and of his son George C.

ment Issue, June 1914). It is remarkable that, of the handful of American physicians mentioned as candidates for the assignment to Manchuria in 1911, no fewer than five would later become president of the American Society of Tropical Medicine: Strong, Edward R. Stitt, Milton J. Rosenau, John M. Swan, and Victor Heiser.

105. Anon. "Opinion and comment," *Harvard Alumni Bull.*, 15: 274, 1913.

106. F. C. Shattuck, "Review of *Microbe Hunters*," by Paul de Kruif, *Atlantic Monthly*, unpagged, June 1926.

107. Strong is described by those who knew him as personally bland and conventional, even to the extent of naming his polo ponies "Bobbie," "Thistle," and the like. His teammates, however, declared that "Autopsy," "Tourniquet," "Pleurisy," and "Calomel" were more appropriate names for the good doctor's mounts (W. C. Forbes, *Journal* 4: 225, 1911; and 5: 81, 1912).

108. Forbes to Strong, (n. 60).

109. Forbes to Lowell, (n. 93).

Shattuck. After the younger Shattuck took his Harvard M.D., he traveled abroad (1906), and, at his father's suggestion, visited Strong's laboratory in Manila where he was invited to remain and work for some months. George Shattuck is said to have returned "with vivid impressions of Strong's contributions to . . . tropical medicine."¹¹⁰ The elder Shattuck was familiar with Strong's work in Manchuria, and "after he learned that Strong wished to return to the United States and hoped to find an academic post . . . it occurred [to him] that a school of tropical medicine might be organized at Harvard under Dr. Strong. The idea seems to have been favored by the President [and by Harvard's governing board], and by Dr. Edward H. Bradford, . . . Dean of the Medical School. Accordingly, from friends and acquaintances, Dr. Shattuck raised money enough to initiate the project."¹¹¹ On 10 December 1912, Governor Forbes cabled the Bureau of Insular Affairs that Strong had tendered his resignation, and expressed "Doubt if he can be persuaded to return."¹¹² The Bureau of Insular Affairs acknowledged Strong's formal resignation on 7 February,¹¹³ and in accepting it Forbes cabled the Bureau: "Please express to [Strong] extreme reluctance of the government to [accept] this, and its appreciation of the many years of utter devotion and splendid services rendered."¹¹⁴ During these official exchanges, on 13 December 1912, Strong, then on extended leave, notified Washington that "Harvard has offered me professorship and department of tropical medicine."¹¹⁵ On 13 January 1913 Harvard appointed Strong Professor of Tropical Medicine for a five-year term,¹¹⁶ and on 27 January the University approved the organization under Strong of a Department

110. J. A. Curran, *Founders of the Harvard School of Public Health*, New York, Josiah Macy Foundation, 1970, p. 240.

111. G. C. Shattuck, *Tropical Medicine of Harvard*, [Boston, Harvard School of Public Health], 1954, p. 1.

112. W. C. Forbes, (n. 96).

113. F. McIntyre to Strong, 7 February 1913, NA 6550/46.

114. W. C. Forbes to War Department, 16 February 1913, NA 6550/64.

115. W. C. Forbes to C. C. Walcutt, telegram, 13 December 1912, NA 6550/28. In a letter of 15 December 1912 to the Bureau of Insular Affairs, Strong remarked that "I have just decided to accept an offer from Harvard University and not go to the University of California," and he asked not to have his books sent to San Francisco as planned (Strong to Bureau of Insular Affairs, NA 6550/49). No arrangement with the University of California appears in the Strong papers in the Harvard Archives, and the University of California Archives for this period contain nothing about Strong (Marie C. Thornton, Assistant Archivist, University of California, San Francisco, to E. Chermín, 5 January 1988; cited with permission).

116. Notice of Strong's five-year appointment, file 82/22 in Lowell papers, University Archives, Harvard University, 13 January 1913 (effective 1 February 1913).

of Tropical Medicine.¹¹⁷ Two years later Strong was appointed professor without limit of time, i.e., with tenure, perhaps because he had hinted to Dean Bradford that he might otherwise leave.¹¹⁸

Soon after he arrived at Harvard Strong led a major medical expedition to South America (bartonellosis), and another to wartime Serbia for the Red Cross Typhus Commission. Ten more expeditions to remote places followed during the next two decades, the extended trips usually producing noteworthy medical monographs. Strong also organized the International Red Cross Conference at Cannes (1919), from which the League of Red Cross Societies evolved. He saw active service with Harvey Cushing's Base Hospital #5 during World War I, and he returned to active duty as a colonel during World War II to teach tropical medicine at the Army Medical School in Washington.

Strong retired from Harvard in 1938¹¹⁹ and died in July 1948 after a prolonged and painful illness, honored internationally by governments, ranking universities, and learned societies.¹²⁰

AFTERWORD

The United States responded quite rapidly to China's request for expert aid during the epidemic, especially if one considers the number of agencies involved: the Departments of State and War, War's Bureau of Insular Affairs, the American Red Cross, and the Philippine Government. Potential bureaucratic bottlenecks were avoided, it would appear, because selecting a plague expert was handled at the highest levels, and the decision was made swiftly. Only four weeks after his selection Strong was already established in Mukden, no small feat considering the problems of distance, transportation, and the inevitable delays en route. It should also be noticed that the foreign experts, Strong included, did not come prefabricated to Manchuria since medical experience with pneumonic

117. Notice authorizing a Department of Tropical Medicine, 27 January 1913. For file source, see (n. 93).

118. E. H. Bradford to A. L. Lowell, 10 March 1915, File 181 in Lowell Papers, University Archives, Harvard University.

119. For accounts of Strong's department and its successor departments at Harvard, see Shattuck, (n. 111) and E. Chernin, *Tropical Medicine at Harvard: The Weller Years*, Boston, Harvard School of Public Health, 1985.

120. Strong's distinguished career nearly ended in adversity before it was well started. In 1906 Strong inoculated some prisoners in Manila with an experimental cholera vaccine mysteriously contaminated with plague organisms, and several of the recipients died. A description of this episode is in preparation (E. Chernin). Strong was deeply affected by the mishap, but it apparently did not taint his subsequent career.

plague was limited by its comparative rarity in modern times; a few, however, Strong and Wu foremost among them, became expert by studying the disease on the ground during the Manchurian epidemic, and by debating issues at the conference that followed.

The epidemic was not without its positive consequences. In a remarkably prescient statement about the Manchurian plague, officials of the (British) Society for the Propagation of the Gospel in Foreign Parts, declared: "That good will come out of the evil we are well-assured. This epidemic will be the medical salvation of North China. It is the last straw to break the back of ancient quackery. . . . After this scourge is over Western medicine and sanitary methods will have a new birth."¹²¹ Out of China's plague did come changes that began to modernize its medicine and public health. For example, autopsies, instructional dissection, and cremation were all institutionalized. More important, and a direct outgrowth of the conference, was the establishment by the Chinese of the (North) Manchurian Plague Prevention Service, headed by Wu Lien-Teh;¹²² this highly successful agency was the first organized element of a public health service in China. The Manchurian epidemic, together with American-inspired health-related developments in China,¹²³ may also have influenced the nascent Rockefeller Foundation then entering the China scene. The Foundation's 1914 Medical Commission to China¹²⁴ took "encouragement" from the Mukden Conference's recommendations, choosing to concentrate first, however, on basic medical education because trained men were lacking both for public health work¹²⁵ and for a proposed medical research institute.¹²⁶

121. C. E. Brooke and E. P. Sketchley [Letter to the Editor], *London Times*, p. 5, 17 March 1911.

122. For further information see: Wong and Wu (n. 72), pp. 489, 583; Wu, (n. 4), p. 338; and Nathan, (n. 4) p. 41.

123. J. Z. Bowers, "The influence of Charles W. Eliot on medical education," *Pharos*, pp. 156-59, October 1972.

124. China Medical Commission of the Rockefeller Foundation, *Medicine in China*, New York, 1914. The Commission's members were Henry Pratt Judson, president of the University of Chicago, Francis Weld Peabody, of Harvard Medical School and the new Peter Bent Brigham Hospital, and Roger S. Greene, former U.S. consul general at Harbin. Greene had refused to leave his dangerous post in Harbin during the winter of 1910-11, and his act was reported in the *New York Times* (p. 6, 17 January 1911). He later became resident director of the China Medical Board of the Rockefeller Foundation (Wu, [n. 3] p. 16), and helped develop the Peking Union Medical College.

125. *Ibid.*, p. 91.

126. Alfred Sze, the Chinese Foreign Office's commissioner to the Mukden conference, told Strong in April 1911 that China was considering a large appropriation to establish a medical research institute with Strong as its director. Strong notified Minister Calhoun and the secretary of state of the proposal (5 June 1911, NA 6550/28); although he was not personally interested in the scheme,

Finally, the Manchurian episode provided Strong with an international medical reputation and propelled him from a relatively obscure post in the Philippines to a prominent position in American tropical medicine.

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Strong felt that such an institute would be of "incalculable benefit." The Department of State expressed interest in the idea (Knox to secretary of war, 9 May 1911 NA 6550/23), and the Red Cross even authorized Strong to present his field equipment to the putative laboratory (G. W. Davis to Strong, 31 August 1911, NA 898.53). In January 1912 Strong reported no further word about the proposal (Strong to G. W. Davis, 22 January 1912, NA 898.53), and in 1913 he moved to Harvard. The Chinese proposal apparently did not survive the Rockefeller Commission's finding "that it is not advisable at this time to establish an independent institution for research in China . . ." (see n. 124, p. 92).