Veterinary Public Health and Alexander D. Langmuir

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Alexander Duncan Langmuir was recruited by the late Joseph Mountin, as I (J. H. S.) was after World War II, with the challenge to explore new areas that related to public health. Mountin was a leader who gained fame by challenging the old order and anticipating future needs (1). He foresaw the need for an agency such as the Communicable Disease Center (now the Centers for Disease Control and Prevention (CDC)) to service the states.

In 1942, the Office of Malaria Control in War Areas was established by the Public Health Service in Atlanta, Georgia, to devise methods to reduce the incidence of malaria in our troops. This office also cooperated actively with the states in an intensive campaign to control malaria throughout the South where it was endemic. On January 1, 1946, following the war, a disease investigation and training center, the CDC, replaced the Office of Malaria Control in War Areas. The establishment of the CDC was the fulfillment of Mountin's foresight. He believed that the Public Health Service should have a field office that could provide state health agencies with the technical help of consultants with highly specialized knowledge and skills, and it came to be.

Mountin's challenge to me (J. H. S.) in 1945 was succinct: “What are you veterinarians going to do for public health now that the war is over?” Further questioning by Mountin led to an order from him that I should prepare a list of zoonotic/animal diseases that affect human health. The resulting chart (2) inevitably led Mountin to ask what control measures could be put into effect. It was apparent that the epidemiology of most zoonotic diseases was not known, and control was not understood. Mountin summarized the situation by saying, “It appears that we have a lot of ignorance—let's exploit it!” Thus, the Veterinary Public Health unit was established in Mountin’s office in the Bureau of State Services at the National Institutes of Health, late in 1945. The charges were to investigate and develop a control program for the animal diseases that are of public health significance, to assist the states in the establishment of Veterinary Public Health programs, and to serve as a consultant in other Public Health Service activities as they relate to animal diseases (3). This was the first time that Veterinary Public Health was so recognized as a separate entity in a public health organization table. In 1947, the Veterinary Public Health activities were moved to Atlanta in the new CDC under the late Raymond A. Vonderlehr.

Justin Andrews, who was Deputy Director of the CDC at the time, was encouraged to find an epidemiologist who could provide leadership and develop a trained corps of epidemiologists as the threat of the Cold War grew after the Iron Curtain dropped across Europe and biologic warfare became a concern to public health leaders. Andrews helped Mountin find the right man in Langmuir, then Assistant Professor at The Johns Hopkins University School of Hygiene and Public Health and a colleague of Andrews.

When Langmuir arrived in the spring of 1949, he asked probing questions about the Veterinary Public Health program. He was frank in stating that his only contact with veterinarians had been in the New York State Health Department where they were milk sanitarians. He was interested in learning about animal diseases and their public health significance. He was given the zoonoses chart, and he quizzed me (J. H. S.) periodically about diseases that caught his attention.

One of Langmuir's early impacts on Veterinary Public Health was his visit to the CDC Rabies Investigation Laboratory in Montgomery, Alabama. The laboratory had been built by the Rockefeller Foundation in the late 1930s to investigate the efficacy of rabies immunization in the prevention of rabies in human beings, as well as dogs, under L. T. Webster, Charles Leach, and Harald Johnson, all renowned medical scientists of the Rockefeller Foundation. They

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Abbreviations: CDC, Centers for Disease Control and Prevention; EIS, Epidemic Intelligence Service.
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concluded from their work that the old Semple vaccine from the early 1900s was not effective.

Langmuir liked what he saw concerning the approach to the rabies problem. An epidemiologic approach to rabies outbreaks consisted of enumerating dog populations and census tracts, developing spot maps, calculating disease rates and vaccination rates, and preparing charts showing the effectiveness of dog control and vaccination (4). Langmuir provided active support to the rabies control program. Many of the data gathered by Ernest Tiekert, Robert Kissling, and Martha Edson were to appear in the World Health Organization Expert Committee reports on rabies from the 1950s (5) through 1984 (6).

The Veterinary Public Health division interested Langmuir. He was always raising challenging questions on zoonotic diseases. Sometime after he was appointed head of the Epidemiology Branch, he visited the Rocky Mountain Laboratory and observed the Q fever investigations in California in order to be better informed about the activities of zoonoses. Langmuir encouraged the focus on rabies, brucellosis, leptospirosis, and salmonellosis, as well as Q fever. The Q fever investigations were integrated with the National Institutes of Health under Robert Huebner, who asked CDC/Veterinary Public Health to collaborate and assign a veterinary officer to the southern California project. This request had not been cleared with the California Health Department, with resulting confusion and criticism. Vonderlehr and Langmuir had to defuse a stormy situation.

The Q fever investigations continued for a number of years, including studies of the effectiveness of milk pasteurization at the University of California College of Veterinary Medicine at Davis, California. Other studies, which were undertaken as a biologic warfare defense strategy (7), included the role of vaccination of dairy cows. These investigations were strongly supported by Langmuir.

Later in 1951, Andrews, then Director of the CDC, reorganized the Center. Veterinary Public Health was merged with epidemiology (8). There was concern that Veterinary Public Health would be lost in the expanding Epidemic Intelligence Service (EIS) training program. Langmuir was busy recruiting his first class of EIS officers and teaching assistants. Veterinary Public Health provided him with several epidemiologic case studies that were used in the short training session that incoming EIS officers attended. It was enlightening to meet these bright young medical (EIS) officers who asked interesting questions and, in turn, expanded our knowledge of zoonotic diseases in humans.

Langmuir supported Veterinary Public Health in most situations, but there was one instance where disagreement arose. It was in 1952 at a biological warfare review conference for the Public Health Service at Fort Detrick, Maryland. There had been Canadian-American joint investigations of animal diseases as possible biological warfare agents from 1942 to 1950 at Gross Isle, Quebec, Canada (rinderpest, foot and mouth disease, hog cholera, avian influenza); England (anthrax, brucellosis); and the United States (brucellosis, glanders, tularemia, etc.). All of these are animal diseases, but not all are zoonoses. The veterinary authorities of the participating countries all believed in the tried and proven control measures of identification, isolation, and destruction. Langmuir challenged this concept of control by quoting William Farr, the famous English medical statistician who had analyzed the 1860s epizootic of rinderpest that had swept across Europe following the Crimean War (1858–1859). Farr, in his analysis, concluded that there was no need for the slaughter of affected cattle herds, as the epizootic had peaked by the time the slaughter was instituted.1

Langmuir countered that there was no evidence that an acute disease such as rinderpest, with relatively high mortality, would have carrier-survivors. At the time, the carrier state had not been proven, but subsequently the carrier state was recognized. Rinderpest is a viral disease (10) that is related serologically to canine distemper and human measles. Langmuir and I (J. H. S.) had a fine time at this conference defending our positions with the assembly of Public Health Service and US Army officers, foreign scientists, and agriculture officials in attendance.

Late in 1953, at the American Public Health Association meeting in New York, Langmuir invited me (J. H. S.) to attend the editorial review of the forthcoming American Public Health Association Handbook chaired by the distinguished public health professional, Haven Emmerson, the former New York City Commissioner of Health, and then Professor of Public Health, Columbia University School of Public Health. Langmuir was very generous in his introduction of me (J. H. S.) and why he felt I could contribute. This was the beginning of more than 40 years as a member of the editorial board, representing the Conference of Public Health Veterinarians, first under John Gordon’s (1955–1965) editorship, and then under A. B. Benenson’s editorship (1965–1995).

1 Farr’s law: “Subsidence is a property of all zymotic diseases.” The gradually diminishing increase of incidence in an epidemic disease, by virtue of which the epidemic curve first ascends rapidly, then more slowly to a maximum, with a descent more rapid than the ascent (9, p. 840).
Langmuir opened the door that provided the opportunity to include the zoonoses that were not then included and to correct and add new information. The zoonoses remain an important part of the contents of the Handbook, and a veterinarian remains on the editorial board—part of Langmuir's legacy to veterinary public health (11).

In 1953, Langmuir told me (J. H. S.) to find some competent veterinarians to bring into the EIS training program that year. It was a hurry-up recruitment that began in the spring when many new graduates were already committed to other activities. Nevertheless, an outstanding group was assembled. The veterinarians that were recruited to the EIS were trained alongside EIS physicians. They worked well in all areas of epidemiology on both animal disease and non-animal disease problems. This was the beginning of a new sphere of opportunity for veterinarians in public health, as attested to by their past and present contributions. The 1994–1995 EIS Directory shows that veterinarians are the second largest professional group to qualify as EIS officers and are now integrated into all activities of the Public Health Service, state health departments, agricultural agencies, colleges and universities, other countries, and international organizations. Positions included are assistant surgeon generals in the Public Health Service; administrators of the US Department of Agriculture and of the Animal and Plant Inspection Service; deans, associate deans, and professors in universities; and researchers in industry and universities.

In the 1950s, salmonellosis emerged as a problem in poultry and pigs (12). The Institute of American Poultry Industries challenged the epidemiologic finding that poultry were a vehicle of human salmonellosis. Langmuir suggested that a national surveillance activity be organized. Eli Friedman and Philip Brachman did so and generated data that further affirmed that salmonellosis was, and remains, a major public health problem. Mildred Galton, a Florida bacteriologist, demonstrated how extensive Salmonella bacteria were in Florida. When she joined the CDC, her laboratory became the Veterinary Public Health laboratory, and she trained many EIS officers in laboratory procedures for salmonellosis. She also trained state veterinarians and foreign scientists. All contributed to developing the concepts and practice of epidemiology, surveillance, and disease control that Langmuir espoused.

With the support of Langmuir and Andrews, Veterinary Public Health seminars were held at the CDC, beginning in 1951, for state public health veterinarians, teachers, industrial consultants, and practitioners. The epidemiology and control of the emerging zoonoses, especially rabies, were the attractions of the seminars. Langmuir would occasionally participate to emphasize the importance of teaching epidemiology. Sometimes disease outbreaks disrupted the scheduled conference, as in 1953, when western equine encephalitis exploded in Central Valley in southern California. Langmuir ordered all veterinary officers to California for epidemic aid. Thousands of horses were examined and vaccinated. This was a successful operational integration of the medical, veterinary, and entomologic resources of the CDC.

Demonstration of the CDC resources was enlightening to both critics and supporters. Veterinary medical schools became interested in teaching epidemiology. As more graduates expressed interest in public health careers, recruitment became easier despite the end of the Korean War and the draft.

Although the responsibility for milk, meat, and poultry inspection programs did not belong to the CDC, the CDC did make valuable contributions to them. Clean milk and pasteurization programs were successful, though some modifications had to be made because of Q fever. The CDC Veterinary Public Health studies showed that a slightly higher temperature of 145°F (63°C), an increase from 143°F (62°C), for 30 minutes was necessary. Veterinary Public Health also recommended that all Grade A milk be produced by Brucella-free herds (13). This raised objections, but it ultimately came to be accepted. Poultry inspection at the time was voluntary. The CDC believed that there should be government inspection of all poultry. An epizootic of ornithosis from turkeys to humans in Texas brought national attention to the fact that there was no government-required inspection. Within a year or two, the poultry industry was ready to accept a national poultry (chicken, turkey, duck, geese, and other edible birds) inspection program, for which Veterinary Public Health had demonstrated the need.

In 1959–1961, the late Senator Hubert Humphrey had the US Senate Committee on Government Operations prepare a report, “Veterinary Medical Science and Human Health” (14). Previously, this committee had published other reports on health research to which Langmuir had contributed.

As international stability returned after World War II and the Korean War, more foreign public health veterinarians came to the CDC to work in its different laboratories, and others came to learn epidemiology, surveillance, and program development. Langmuir welcomed them to the program. Also, CDC staff members helped in developing Veterinary Public Health programs in the Pan American Health Organization and the World Health Organization, and they contributed to many Expert Committee meetings in Geneva, Switzerland, Washington, and elsewhere. The Pan
American Health Organization Veterinary Public Health program contributed a great deal to international public health. All of the directors of the program were recruited, assisted, and encouraged in their operations by the CDC Veterinary Public Health program. These same concepts that stressed epidemiology, surveillance, and evaluation were also incorporated into the US Department of Agriculture’s Animal and Plant Health Inspection Service by EIS veterinary disciples of Langmuir, most notably James Glosser, Administrator of the Animal and Plant Health Inspection Service during the 1980s.

Today, 50 years after the Mountin challenge, it is clear that Langmuir’s philosophy of surveillance and epidemiology has been fully incorporated into the control and prevention of disease, both domestically and in the international Veterinary Public Health programs he helped to foster. Langmuir shared his knowledge and enthusiasm for epidemiology and surveillance and for the control of disease throughout the world. His contributions live on through the monumental and continuing improvement that they have brought to the health of both humans and animals and by making the world a better place for all creatures—great and small.

REFERENCES