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"BRIGHT, AGGRESSIVE, AND ABRASIVE:" A HISTORY OF THE CHIEF EPIDEMIC INTELLIGENCE SERVICE OFFICER OF THE U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION, 1951 – 2006

By

HUGH J. KELSEY

Under the Direction of Stuart Galishoff

ABSTRACT

The history of public health has suggested that the progress of societies cannot be understood without an understanding of community health conditions. The federal government of the United States established the Communicable Disease Center (CDC) in 1946 to assist the states in controlling outbreaks of infectious disease. This coincided with the early days of the Cold War. The concern of some health officials of the time, most notable among them was the CDC's Chief of Epidemiology, Alexander D. Langmuir, was to address the 1950s threat of "germ warfare," or bio-terrorism. To do this effectively the CDC established the Epidemic Intelligence Service (EIS) to train field epidemiologists as the first line of defense against biological attack. The role of the Chief EIS Officer was vital to its success. An examination of the Chiefs' performance from 1951 through 2006 supports this contention.

INDEX WORDS: Alexander D. Langmuir, Centers for Disease Control and Prevention (U.S.), Epidemic Intelligence Service, Public health

“BRIGHT, AGGRESSIVE, AND ABRASIVE:” UNDERSTANDING THE ROLE OF THE CHIEF EPIDEMIC INTELLIGENCE SERVICE OFFICER OF THE U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION, 1951 – 2006

by

Hugh J. Kelsey

A Thesis Presented in Partial Fulfillment of the Requirements for the Degree of

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Georgia State University

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Hugh J. Kelsey

Major Professor:	Stuart Galishoff
Committee:	J. Lyle Conrad
	Clifford M. Kuhn
	Douglas R. Reynolds

Electronic Version Approved:

Office of Graduate Studies
College of Arts and Sciences
Georgia State University
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For my adoptive father, Hugh W. Kelsey (1914 – 1994), in remembrance of the public health disaster that at age five changed the course of his life.

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There are many people who contributed to the making of this paper. I would like to thank my committee members Stuart Galishoff, Clifford Kuhn, and J. Lyle Conrad. Their encouragement and suggestions shaped the flow and argument of this thesis. Dr. Galishoff, though retired from Georgia State, lent his considerable public health historical expertise without reservation. I'm grateful to Dr. Kuhn for agreeing to "anchor" the committee as the sole current GSU faculty member. Dr. Lyle Conrad, besides suggesting the topic, opened doors and showed the way to the rich sources upon which this effort is founded.

Mark Pendergrast generously took time out from his own writing to lend me source materials and to make introductions to EIS officers both current and former. Steve Thacker spent time answering my questions and making source material available from the EIS archives. I want to extend a very big "thank you" to those EIS officers who gave of their time to speak to me about their experiences.

I would like to especially thank my advisor and friend, Douglas Reynolds, who cleared the way for the unorthodox departmental structure that allowed me to complete this project and Michelle Brattain who graciously agreed to it all and provided encouragement and advice. My CDC colleague, Maurine Goodman, taught me about public health and encouraged me throughout.

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LIST OF ABBREVIATIONS

CDC – U.S. Centers for Disease Control and Prevention

CSTE – Council of State and Territorial Epidemiologists

EIS – Epidemic Intelligence Service

EPO – Epidemiology Program Office

MCWA – Malaria Control in War Areas

MMWR – Morbidity and Mortality Weekly Report

MPH – Master of Public Health

NIH – U. S. National Institutes of Health

PMR – Preventive Medicine Residency

WHO – United Nations World Health Organization

Chapter 1: Introduction

The Epidemic Intelligence Service (EIS) of the U.S. Centers for Disease Control and Prevention (CDC) is the field epidemiology training program of what is arguably the most famous public health agency in the world. The CDC itself is a part of the U.S. Public Health Service, one of the seven uniformed services of the United States government.[1] The EIS was founded in 1951 to assist the states in investigating infectious disease outbreaks while providing on-the-job training in epidemiology. The vision of its founder was that it would be the cornerstone of the agency's relation to the states. Since that time the EIS has extended its operations beyond the borders of the United States to participate in outbreak investigations with health services in over 70 countries. As described on its web page within the larger CDC site, the EIS program is "... composed of medical doctors, researchers, and scientists who serve in 2-year assignments, [that] today has expanded into a surveillance and response unit for all types of epidemics, including chronic disease and injuries."[2]

In the 54 years since its inception, the EIS has influenced the practice and teaching of epidemiology in the United States and around the world. Former EIS officers can be found in the health departments of most of the fifty states and in the territories governed by the U.S. Other countries have established field epidemiology training programs that mirror CDC's EIS.[3] The administration of the program throughout its

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[1] The other uniformed services include the Army, Navy, Air Force, Marine Corps, Coast Guard, and National Oceanic and Atmospheric Administration.
[2] <http://www.cdc.gov/eis/about/about.htm> (13 August 2005)
[3] To date, this includes 20 foreign countries with at least one on each continent except Antarctica. Ibid.

history would not have been possible without the position of EIS Chief Officer. The serving officer in this role has been responsible for setting up the training program, running the "match" program[4] to distribute assignments, helping to supervise officers in the field, responding to outbreaks as would any other officer, and recruiting new officers.[5] The EIS Chief Officer position was modeled, by its founder, after the role of the chief resident physician in hospitals. The purpose of my thesis is to illuminate the importance of this position in the history of the EIS. The lack of recognition outside EIS circles can be explained by one former Chief as analogous to public health itself – if the job is done right, no one notices.[6]

The narrative history of the Chief's role must be seen in the context of the agency within which it exists, the practice of epidemiology, and against the background of public health history. The first chapter provides a definition of public health, and an overview of its history through the ages. This chapter touches briefly on the practice of epidemiology, its advances since 1800, and its link to current EIS activity. The second chapter is devoted to the importance of the EIS's work through which the CDC has established its reputation as the premier public health agency in the U.S. and a force for fighting disease around the world.[7] It examines the structure and progress of the Epidemic Intelligence Service from the concern to prepare for "germ warfare" at its inception through its assistance to epidemiologists across the nation and around the world to its current lead role in defending against emerging infectious diseases wherever they occur. The practices

[4] In "matching" the officers to assignments, EIS asks them to place their top 3 requests for assignment in order of preference. The Chief EIS Officer assists the head of the Epidemiology Program Office (EPO) in placing the officers in positions based not only on preference but also personal strengths and aptitudes.
[5] This includes some exceptions who were not epidemiologists in training but rather were trained administrative personnel.
[6] J. Lyle Conrad, MD, MPH, interview by author, Atlanta, GA, 24 April 2005.
[7] September 19 – 24, 2001 Harris Interactive poll results bear this out. Seventy-nine percent of those who say they understand what the agency is and what it does, rate its performance as "Excellent/Pretty Good."

of surveillance and epidemiology, and how they work together to fight disease at the population level are described here. This chapter also introduces the charismatic founder of the EIS, Alexander D. Langmuir, MD, MPH, who created the role of the Chief. Chapter Three examines the experiences of many of the Chief EIS Officers of the last fifty years. The fourth and concluding chapter examines the role of the EIS Chief in the context of twenty-first century challenges and opportunities.

This history of the EIS Chief Officers would not have been possible without extensive interviews with serving officers and former Chiefs. The oral histories collected and transcribed for this thesis are to become part of the CDC's archival collection managed by the Global Health Odyssey Branch of the National Center for Health Marketing.

Chapter 2: A Brief History of Public Health

The stories of civilizations, their development and decline, and migrations and explorations, cannot be completely understood without knowledge of community health conditions. Sanitation and infectious disease have always been societal concerns. This chapter briefly examines the history of public health in order to place the Epidemic Intelligence Service (EIS) in its world historical context. Before proceeding with a survey of the discipline, it is important to have working definitions of both health, in general, and public health, in particular.

The World Health Organization (WHO) defines health in holistic terms as "… a complete state of physical, mental, and social well-being and not merely the absence of disease or infirmity."[8] It is a broad definition that aims to describe an ideal state of which harmony and balance are the hallmarks. The key word in the definition, however, is "social," implying that the focus is necessarily on communities and not simply the individual. Around the globe, and at all times, people have lived in groups, in societies. Through reasons having to do with the immutable laws of human physiology, the well-being of individuals is inextricably tied to their fellows. The concept of public health and welfare, a concern for the "social," has been in the forefront of people's concern throughout history though not always to the same degree or for the same reasons. Public health practitioner, teacher, and writer Bernard J. Turnock, MD, MPH, suggests the definition of public health offered by the 1988 Institute of Medicine (IOM) report

[8] E. J. Osamnczk, *Encyclopedia of the United Nations and International Agreements* (Philadelphia: Taylor & Francis, 1985).

titled, *The Future of Public Health*. Its mission is described as "fulfilling society's interest in assuring conditions in which people can be healthy."[9] John M. Last, MD, an editor of "A Dictionary of Epidemiology," believes public health multi-faceted and essential to the formation and maintenance of all communities. It is, for him, "… a social institution, a discipline, and a practice."[10] While a physical reality, effective public health is at the very least also a mindset. Historian John Duffy, author of a history of American public health, defines it as "… community action to avoid disease and other threats to the health and welfare of individuals and the community at large."[11] George Rosen, author of the classic treatise on the history of public health, notes that the challenges of dealing with people in communities and their health problems derive from the biological needs of each. From this recognition, he says, there developed the "…signal importance of community action in the promotion of health and the prevention and treatment of disease."[12] Thus, concern for the health of the public is part of the panorama of history. All peoples, regardless of their occupations or their stations in their societies, are engaged at some time in at least thinking about public health. It makes sense then that the theory and practice of public health should be considered "multi-disciplinary."

While the most obvious, medicine is but one of the disciplines associated with public health. Duffy makes clear that a population's standard of living has historically determined the level of the public's health. In the United Kingdom, for example, infant mortality decreased and life expectancy increased in some part because of the work of

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[9] Bernard J. Turnock, *Public Health: What It Is and How It Works* (Gaithersburg, MD: Aspen Publishers, 2001) 8.
[10] F. Douglas Scutchfield and C. William Keck, "Introduction," *Principles of Public Health Practice;* 2nd ed.; (Clifton Park, NY: Delmar Learning, 2003) 2.
[11] John Duffy, *The Sanitarians: A History of American Public Health*, (Chicago: University of Illinois Press, 1990) 1.
[12] George Rosen, *A History of Public Health*, (Baltimore: The Johns Hopkins University Press, 1993), *xc*

social reformers but more because in the eighteenth century the country's wealth increased.[13] Understanding the economy of a city, nation, or region is indispensable to explaining the ebb and flow of public health progress. A relatively new discipline, community health, for example, has developed in the industrialized West over the last 40 years because of the extraordinary affluence its societies have attained. Its goal is to identify the health problems and needs of defined sub-populations, specific communities within a larger population.[14] Only societies with the resources to implement and sustain such practices could develop them into more than just academic disciplines. Their study and practice shape real human activity. The same could be said of other fields that are a part of public health, and therefore important to historical study, including nutrition, education, and sanitary engineering. A recent and growing field is that of public health law.[15]

The history of public health shows that the concerns of its current practitioners -- sanitation, provision of safe food and water, medical care, and relief from disability -- were always important.[16] The ancients recognized the need for proper sewage disposal and for transport of clean water to urban areas. Excavations of archaeological sites from the Middle East and India to the Americas provide evidence for this.[17] In pre-scientific and pre-civilization eras, efforts to placate deities and to protect both the community and individuals from "evil spirits" resulted in practices we would recognize and prescribe today. Duffy reminds us that prohibition against leaving "excreta, saliva, nail parings and

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[13] Duffy 2.
[14] An example of this would be London's West Indian community as a subset of the greater London population. Scutchfield and Keck 3.
[15] In tacit recognition of this, the EIS accepted its first lawyer as an officer in 2002. Maryn McKenna, *Beating Back the Devil: On the Front Lines with the Disease Detectives of the Epidemic Intelligence Service*, (New York: Free Press, 2004) 9.
[16] Rosen 1.
[17] Ibid. 3.

so forth" to protect against spells and incantations provided an effective measure of sanitation though these practices were undertaken for religious reasons and were not public health measures.[18] Rosen argues that the concept of "cleanliness" being next to "godliness" preceded the Christian era. He cites the activity of the Inca in ritualistically cleaning their dwellings each year at the start of the disease-associated rainy season.[19] The Egyptians showed a concern for hygiene in their daily ablutions, washing their clothes as well as themselves, and in their public policies. Workers on the great construction projects were not allowed to relieve themselves near their work. The temporary huts in which they lived were burned down annually for sanitary reasons.[20]

Much of our scientific thinking and orientation comes to us from the Greeks. That Greece dominated the eastern Mediterranean world is due in no small part to its hospitable environment. Historian William McNeill declares that the Mediterranean coastlands were relatively disease-free because grain farming involved only modest alterations of the existing biological balance.[21] Whether they were aware of the reasons for their good fortune or not, Duffy credits the Greeks with emphasizing the importance of the environment in determining the course of public health. He points out that this provided the theoretical basis for the sanitary movement.[22] The Greeks, however, did not take the necessary administrative steps to put much of their knowledge into public health practice. Any practical improvement in society that was based on Greek theoretical

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[18] Duffy 5.
[19] Rosen 5.
[20] Duffy 5.
[21] McNeill contrasts this with the problems of infectious disease control that arose in China because the environment was much more significantly altered in the course of rice paddy creation. William H. NcNeill, *Plagues and Peoples*, (New York: Anchor Books, 1976) 89.
[22] This also included the association of miasma and "bad air" (malaria) with the spread of infectious disease. Though mistaken, it was not irrational and indeed persisted as an explanation for the spread of diseases such as malaria and plague until germ theory was proven in the nineteenth century. Duffy 6.

knowledge would have to wait for the master administrators of the ancient world, the Romans.[23]

While the Romans did little but imitate Greek science and medicine, they exceeded them in their engineering, architecture, and, to a limited extent, in provision of medical services. They provided sewerage, bathing, and drinking water supply systems for the burgeoning cities of the Empire. They paid particular attention to the purity of water.[24] Baths were plentiful and made available to all. An attempt to provide medical care to the poor was the institution of *archiatri*, or public physicians. The Romans also established hospitals for both the military and for civilians. Important public health improvements in the city of Rome were made under the emperor Augustus. A water board made much-needed repairs to the aqueducts and enforced the cleaning of streets. Inspectors also supervised the food supply.[25] These were measures public health professionals of today would understand and approve. Roman administrative vigor demonstrated what could be done at least for urban areas when the political will, scientific knowledge, and enforcement muscle came together. It was not, however, to be a story of one improvement after the other until a harmonious state of public health and welfare were achieved. The attempts to seek scientific and practical explanations for health and hygiene were abruptly halted by the disintegration of the Roman Empire and the rise of Christianity.

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[23] Roy Porter, *The Greatest Benefit to Mankind: A Medical History of Humanity*, (New York: W.W. Norton & Co., 1997). The Greeks were also hamstrung in equal measure by lack of scientifically precise measuring tools and belief in the influence of deities on health.
[24] Rosen 14-16.
[25] Ibid. 22-24. While far from perfect and not always effective, these institutions endured to act as models for the medieval hospitals founded to care for the poor and disabled.

While having established a more or less rational basis for ensuring public health in at least a few areas, the successors to Rome in the Christian era returned to the irrational and thus rejected the Greco-Roman legacy. Both Rosen[26] and Duffy[27] confirm the societal reversion to magic and religious explanations of health status. Still, a key positive development, from the scientific point of view, of the medieval period was the use of isolation and quarantine to deal with contagious disease. Venice is credited as the first city to isolate plague patients and to try intervening at ports to screen goods and people that might be carrying infection. The first instance of quarantine implementation took place at Ragusa (now Dubrovnik), a Dalmatian coast colony of Venice.[28] This is one of the very few legacies of public health practice from the Middle Ages that survived the period.[29] The discovery in the 15th century of what Greece and Rome had achieved sparked the next advances in health as part of general "rebirth" of scientific progress.

The Renaissance that followed the medieval period ushered in the modern age. It also saw the birth of public health as we now know it.[30] Thinking was shaped by such radical and liberating events as the Protestant Reformation. Catholic scientists felt the chill that accompanied the trial of Galileo while northern European, that is to say, "Protestant," scientists were free to challenge accepted beliefs and to push the limits of knowledge.

It is perhaps not accidental that "political arithmetic," the method of population and environmental analysis essential to public health policy, was devised in post-

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[26] Ibid. 28-29.
[27] Duffy 6.
[28] Ann G. Carmichael, "History of Public Health and Sanitation in the West before 1700," *Cambridge World History of Human Disease*, (New York: Cambridge University Press, 1993) 198.
[29] More typical of its legacy was adherence to the "miasma" theory of disease as the cause of the Black Death, bubonic plague caused by *Yersinia pestis*. The miasma theory stubbornly persisted almost until the end of the nineteenth century.
[30] Rosen 58.

Reformation England.[31] Coined by the physician William Petty (1623 – 1687), the term meant collection of data on education, population, diseases, and revenue. Numerical assessment of the population's characteristics and tendencies was of interest to the new mercantilist national governments of Europe. In England, the drive for success in the competition with other nations made this information the basis for increasing the power and prestige of the state. This led to John Graunt's (1620 – 1674) beginning the first statistical method of analysis using deductive reasoning.[32] These discoveries formed the basis of what came to be known as epidemiology, the logical, systematic approach to understanding the complexity of disease.[33]

Other milestones were the medical advances of the age that propelled the scientific and the rational again to the fore after the interruption of the "Dark Ages." It was the time of van Leeuwenhoek's observation of bacteria through the microscope (though the germ theory of disease had to wait another 200 years); Harvey's understanding of the blood and its circulation; Ellenbog, Agricola, and Paracelsus addressing occupational diseases; and Fracastoro's first consistent scientific theory of contagious disease.[34] Mercantile princes and governors saw health as the proper concern of rulers because healthy people were needed to extend the power of the state in the competition for trade and colonies.

Disruption of this connection occurred during the Age of Exploration, however, in the seventeenth and eighteenth centuries. Adventurers and explorers had stimulated in people the recognition of their own possibilities in a much less crowded world. It held out

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[31] Ibid. 87.
[32] Ibid. 87-89.
[33] Mary E. Torrence, *Mosby's Biomedical Science Series: Understanding Epidemiology*, (St. Louis: Mosby, 1997) *v*.
[34] Rosen 60, 70, 83-84.

the possibility that policy, including that of public health, could be formulated primarily at local levels without a national direction if one could get far enough away from the seat of power.[35] This was the direction taken in the English colonies of the New World.

Explored in the Renaissance, colonized in the mercantile era, and independent in the Age of Enlightenment, the United States developed a tradition of public health policy making and administration centered in the states (after Independence) and localities. Its development coincided with a betterment of the colonists' health. The invigorating climate and lack of crowding in large cities had a beneficial effect on the Europeans. The diseases they brought with them, however, devastated the Native American population.[36] As the colonies grew into a nation, certain themes began to emerge in the history of public health. Duffy identifies these themes as the effects of the aforementioned rising living standards, constant alternation between "apathy and sharp reaction at periodic health crises," the effects of diverse cultures integrated into American society, and, perhaps most important, "the clash between individual liberty and the public welfare."[37] The colonies and the resulting new nation would soon need to deal with the disruptions of the environment brought about by pushing the frontier farther west.

It is true everywhere and at all times that the most intractable of public health problems have to do with "modernization," that is to say urbanization and industrialization. In his book, "The Greatest Benefit to Mankind: A Medical History of Humanity," the British historian Roy Porter declares that though there may be differing points of view about how the economic benefits were distributed "…there can be no

[35] Ibid. 91-96.
[36] Duffy 9-12.
[37] Ibid. 2-3.

doubt that industrialism jeopardized health."[38] The mercantile, transportation, and industrial revolution of the nineteenth century caused urban populations to explode. Cities grew more rapidly than the capacity of administrators to deal with the health problems resulting from such development and always faster than the will to pay for the remedies. An example of this is the case of New York City garbage collection in the early 1800s. It was theorized that garbage, manure, and rubbish would be removed from the streets because the money made from manure collection would underwrite all the costs. In practice, the city would let contracts but fail to scrutinize the bidders' fitness to perform the function. Finally, the city would have to step in as the refuse build-up became a crisis. Another problem was the spread of the democratic spirit which made politicians respond to the will of the people. The people were not interested in street cleaning and most other expensive sanitation measures unless threatened immediately by epidemics. In the case of New York City and elsewhere, Duffy notes that "sanitary standards are gauged by the lowest common denominator, and a refusal to accept sanitary regulations by even a relatively small percentage of the population can negate an entire sanitary code."[39] The rising, great cities of the industrial West were unsafe and unhealthy places. The crowding tended to cause disease leading to "family breakdown, pauperization and social crisis."[40]

The response to the challenges of expanding urban populations differed greatly. Germany favored "health paternalism." Porter points out that it was easier to do (or at least to propose) in a society where free trade was not considered so sacrosanct as it was in the United States and Great Britain, where any restraint placed on property rights was

[38] Porter 400.
[39] Duffy 71-72.
[40] Porter 399.

strongly challenged.[41] When Rudolf Virchow (1821 – 1902) called attention to the link between public health and social justice, after studying an 1847 typhus epidemic among the poor Polish population of Upper Silesia, he fell afoul of Prussian authorities. The link between illness and social unrest, however, was not lost on Chancellor Otto von Bismarck. He enacted a sweeping health insurance law in 1883 which had the effect of giving workers and peasants a stake in the existing order and helped to mitigate the conditions that sparked revolution.[42]

Revolutions do not necessarily improve public well-being. The French, who favored health reforms as part of the1789 Revolutionary agenda, saw their resources instead going to support wars of defense and conquest. After the Napoleonic Era, the reading of vital statistics told the government of the day that the poor suffered illness and premature death disproportionately. Its solution was to educate the poor about how to protect their health rather than to spend money on public health improvements.[43]

The British did rather better as epidemiologists such as John Snow (1813 – 1858) were persuasive in getting Parliament to pay attention to the water-borne nature of diseases such as cholera and to re-engineer waste disposal and water provision.[44] Prior to Snow's effective use of statistics in demonstrating the origins of cholera, the Benthamite, Edwin Chadwick, concluded that it was disease that exacerbated poverty and not incentives to dependency. At first believing that social policies must be directed at rationalizing the labor market, he was surprised to discover that it was illness, not laziness, that caused the poor to frequent workhouses. Studies confirming this converted

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[41] Ibid. 405.
[42] Rosen 422.
[43] Rosen 296.
[44] Porter 407-414.

Chadwick and others to the importance of disease prevention. This resulted in the first British Public Health Act (1848) which established the first General Board of Health for the nation.[45]

Another important figure in the modern history of public health that emerged at this time was William Farr (1807 – 1883). Farr was the superintendent of the statistics department in the Registrar General's office of England and Wales from 1839 to 1879. He collected vital statistics and reported them to both health authorities and the general public. His methods were lauded by Alexander D. Langmuir, MD, founder of the EIS, who said of him,

> [Farr had] abiding faith that natural laws govern the occurrence of a disease, that these laws can be discovered by epidemiologic inquiry and that, when discovered, the causes of epidemics admit to a great extent of remedy.[46]

Farr is generally credited with establishing the first solid basis for statistical analysis in public health.[47] Analyzing statistics as they relate to communities in given locales is the "bread and butter" work of public health. The epidemiologists of the CDC's EIS trace their heritage back to the English physician Snow. His careful, patient work in analyzing the causes of enteric disease transmission set standards for professional epidemiology that we recognize today.

Snow attacked the problem of cholera epidemics in London in the mid-nineteenth century. It was the opinion of the noted American epidemiologist Wade Hampton Frost that Snow's achievements were impressive in the face of what was *not* known at the time. Diseases that are spread by droplet infection, such as smallpox and measles, had been

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[45] London at the time appointed its own medical officer of health, John Simon, in part to exempt itself from Chadwick's national board of health. Porter 412.
[46] Steven M. Teutsch, "Considerations in Planning a Surveillance System," *Principles and Practice of Public Health Surveillance,* (New York: Oxford University Press, 2000) 17.
[47] Stephen B. Thacker, "Historical Development," *Principles and Practice of Public Health Surveillance*, (New York: Oxford University Press, 2000) 2.

studied and their modes of transmission were fairly well known. Knowledge of diseases spread by fecalized water supplies and insects, such as cholera and malaria, however, were imperfect and open to dispute.[48] Building on Farr's work, Snow brought order to what was a "chaotic mass of facts" and followed it to a conclusion eventually confirmed by bacteriology.[49] This "triumph" is often pointed to by epidemiologists with pride. As one former EIS Chief Officer put it, "What was remarkable is that he [Snow] was 50 years ahead of Koch who discovered the *vibrio* that caused cholera in the late 1890s. Hence the old adage: Epi[demiology] always leads the lab[oratory], then and now."[50]

In America, public health and politics were bound up with religious moralism. The same disease, cholera, investigated so diligently and scientifically by John Snow in England, was thought by many Americans to be the result of "sin" which brought forth calls for the poor to reform their behavior.[51] Despite the political and moral challenges faced by sanitarians, in 1850 Lemuel Shattuck produced one of the most famous documents in the history of public health. A Boston book seller and publisher, Shattuck was keenly interested in community affairs. Among his many public-spirited activities was forming a commission to make a sanitary survey of Massachusetts. He served as chairman of the commission and wrote the final document, titled, simply, *Report*. Although almost no action recommended in the report was taken, Rosen calls it "an important landmark in the evolution of community health action." The Report drew up a plan for public health organization that included establishment of boards to monitor and enforce regulations and is generally credited with recommending measures, especially in

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[48] Rosen 262-265, 287-288.
[49] Wade Hampton Frost, "Introduction" *Snow on Cholera*, (New York: Hafner Publishing, 1965) xiv.
[50] Conrad, J. Lyle, jlconrad@mindspring.com "Re: your three documents," 2 August 2005, personal e-mail (1 August 2005)
[51] Porter 417.

regard to data collection, that were ultimately adopted nationwide in the next one hundred years. [52] Another important step for public health in the United States was brought about during the Civil War through the creation of the U. S. Sanitary Commission (1861 – 1865). The Commission aided soldiers in the Union Army by distributing fresh food to prevent scurvy and to improve nutrition, providing medical services and supplies, and through its pressure to improve sanitation in military camps which did much to prevent the spread of disease. Duffy points out that the familiarity of soldiers with the work of the Sanitary Commission taught many Americans the value of good public health practice.[53]

Another nineteenth century advance in public health came with the establishment of the New York Metropolitan Board of Health created in response to the 1866 – 1867 Asiatic cholera outbreaks. Duffy explains that the Board not only minimized the effects of the disease but was also important because it showed that scientific knowledge could solve health problems. Instead of dwelling on the social condition of the poor as a result of moral degeneracy, "Christian humanitarians … turned sanitation and cleanliness into a moral cause."[54]

At the conclusion of the nineteenth century, more and more states were establishing boards of health, though they concentrated on the health of city dwellers and largely ignored the rural population. Their lack of funding made them mostly ineffective but it was still important for the future that the need for them was recognized.[55] The sanitary movement, spurred on by the competition among cities to lure new residents and businesses, provided better water and sewer systems and brought about an increase in life

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[52] Rosen 217-218.
[53] "The commission conducted large-scale educational campaigns … to teach officers and enlisted men the need for personal and communal hygiene." Duffy 113
[54] Ibid. 128.
[55] Ibid. 154.

expectancy. The next great change in public health worldwide was the "bacteriological revolution" that would "profoundly affect life in the twentieth century."[56]

The German physician Robert Koch (1843 - 1910) by this time had proven that a microorganism was responsible for tuberculosis. Koch, in his elevation of bacteriology into a formal science, and Frenchman Louis Pasteur (1822 – 1896), in his studies of the relation between micro-organisms and disease, provided strong evidence that the miasmatic explanations for infectious disease were mistaken. The last two decades of the nineteenth century saw the rapid identification of the micro-organisms responsible for disease. This was not, however, sufficient to completely control diseases such as malaria.

As Duffy correctly points out, disease control requires more than scientific identification. It is dependent on the willingness of citizens to allow government to fix the problems by spending taxpayer money.[57] In the American South during the New Deal and World War II massive amounts of federal money were needed to drain wetlands in order to control the anopheles mosquito vector. In Appalachia and other areas of trachoma infection, government and private groups joined with medical resources to eliminate the disease by improving social conditions.[58]

In the first decades of the twentieth century, improvement in communications and transportation brought the concept of international cooperation to the fore in public health. In the first era of "globalization," it was recognized that contagious diseases were being transported by sea and over land. Some regulation, and hence cooperation, between nations was required to ensure the health of domestic populations. Nothing demonstrated

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[56] Ibid. 190.
[57] This is not to underestimate the contributions from private entities such as the Rockefeller Foundation. In the early years of the twentieth century, it worked to improve sanitation and to fight hookworm and pellagra in the South in partnership with the U.S. Public Health Service and local officials. Ibid. 228-229.
[58] Ibid. 203.

the truth of that so well as the post-World War I "Spanish" influenza, a worldwide swine flu, outbreak. That such a pandemic in the age of bacteriology could kill anywhere from 20 to 40 million people still inspires fear among public health officials that a similar strain of flu could return.[59]

While the first efforts at international cooperation in public health go back to 1851, it was the post-World War I League of Nations that made concerted action thinkable and acceptable on a global scale. The Malaria Commission of the Health Organization of the League of Nations (HOL) (1923), for example, implied a new approach to international work in the control of communicable diseases as opposed to merely prevention of importation from other countries.[60] Reviled by historians as a feeble attempt at international organization, the League nonetheless made significant progress in public health. The successor World Health Organization of the post-World War II United Nations (UN) was able to build upon its foundation. The HOL, for example, did outstanding work on nutrition starting in 1934. As a result of the Nutrition Committee's 1936 report, nineteen countries set up national commissions on nutrition. It is ironic that the scientific standards of diet drawn up the League were used first by Germany, then by other governments, as a basis for wartime food rationing systems.[61] Margaret E. Burton, in her history of the League, described the nutrition study in this way:

> It has been said that had the League done nothing else than initiate this study of nutrition and to provide for continuous international cooperation for the solution

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[59] The U.S. Centers for Disease Control received a $135,000,000 appropriation to produce, and promote immunization with, swine flu vaccine in 1976 in the not unfounded belief that a major pandemic was due to return. Elizabeth W. Etheridge, *Sentinel for Health: A History of the Centers for Disease Control*, (Berkeley: University of California Press, 1992) 254.

[60] World Health Organization, *The First Ten Years of the World Health Organization*, (Geneva, Switzerland: WHO/Palais des Nations, 1958) 29.

[61] F.P. (Francis Paul) Walters, *A History of the League of Nations*, (New York: Oxford University Press, 1952) 752-755.

> of the health, economic, and social problems bound up with it, it would have justified its existence.[62]

The HOL's transformation into the World Health Organization in 1945 saw a significant increase in material resources devoted to global health.[63] Its most successful effort, the Nutrition Committee, became the new UN's Food and Agricultural Organization (FAO).[64]

At the same time in the United States, many changes were wrought by the experiences of the Great Depression and the World Wars. Post-World War II Americans embraced global responsibilities as never before. Fear of the Soviet menace embroiled the U.S. in a "Cold War" for survival. The populace acquiesced in the establishment of a peacetime draft of soldiers and much enlarged standing armed forces. Increasing prosperity had increased life expectancies from 47 years in 1900 to over 60 years at mid-century.[65] People began to be caught up in an enthusiasm for science which, while a boon to sanitarians, exposed health problems that couldn't be solved by quarantine or immunization. Duffy points out that public health professionals found themselves faced with social ills such as "alcoholism, drug addiction, smoking, radiation, environmental hazards, and … aging" that were outside the normal categories of health concerns with which they traditionally dealt.[66] State health departments found difficulty in coordinating effective responses in circumstances in which their services had become fragmented.[67] Into this landscape the federal government began to insert itself.

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[62] Margaret E. Burton, *The Assembly of the League of Nations*, (New York: Howard Fertig Inc., 1974; first published 1941) 225.
[63] Walters 183.
[64] Ibid. 813.
[65] Duffy 256.
[66] These mostly concerned sanitation and immunization. Ibid. 274
[67] A U.S. Public Health Service study in 1950 revealed that the number of agencies within a single state that were dealing with some aspect of health could range from 10 to 32. Ibid. 294.

The Communicable Disease Center was founded in 1946 out of the project to control malaria in wartime training areas of the South. It was founded on Dr. Joseph Mountin's belief that the U.S. Public Health Service should provide support to state and local health agencies.[68] To that end in 1949, he brought former New York State field epidemiologist and Johns Hopkins University Associate Professor of Epidemiology Alex Langmuir to Atlanta, the new agency's home, to establish an epidemiology branch. In 1951 Langmuir created what Mountin called "an epidemic intelligence service" to train epidemiologists and to provide investigation of disease outbreaks wherever they might occur in the U.S.[69] Epidemic Intelligence Service activities are today conducted in all 50 states, territories of the U.S., and in more than 70 countries abroad. Field Epidemiology Training Programs (FETP), modeled on the EIS, have been created in foreign nations with EIS help.[70]

As we begin the twenty-first century, modern industrialized societies quite unexpectedly find themselves dealing with the problems of success: aging populations, more expensive health care, and questions about access to it. At the same time it is curious that public health is almost never mentioned. Some in the field believe this is because public health has failed to demonstrate what could be achieved if the political will were there. The opinion of historian Elizabeth Fee is that public health professionals have not effectively presented their views or trumpeted their accomplishments before the media, politicians, and the general public.[71] Duffy thinks public health is a victim of its

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[68] Joseph Mountin, MD (1891 – 1952); Assistant Surgeon General of the United States. Etheridge 18.
[69] It was later that the EIS mission included work with other countries. Ibid. 38.
[70] To date, twenty field programs have been established covering every continent except Antarctica. "Fact Sheet," n.d., < http://www.cdc.gov/eis/about/factsheet.htm> (19 August 2005)
[71] Elizabeth Fee, "History and Development of Public Health," in Scutchfield and Keck, *Principles of Public Health Practice,* 27-28.

own success as well as the vagaries of human nature. "… the more successful a public health program is, the more taxpayers are inclined to feel it is not necessary."[72] The irony, of course, is that support of sound public health practice has never been more important as the world at large becomes more familiar and more accessible. Support of public health policies is lacking in technologically advanced countries which tend to place exaggerated confidence in medical treatment as a panacea for all health problems and to neglect prevention.

The most extreme example is the United States where it is the practice of well-funded medical-pharmaceutical interest groups to generate suspicion of all government-based public health efforts. Indeed, since 1980 there has been disdain for all kinds of public activities, and for the tax money needed to initiate and sustain them.[73] This has damaged the cause of public health by distorting it in the mind of the general public and reversing the consensus for action. Very early in the twentieth century, and at intervals since, American citizens have called for government to ensure access to health care. Powerful interest groups have historically risen up and quashed many efforts in that direction. Medical journalist Laurie Garrett refers to the American Medical Association's coining the term "socialized medicine" as a way to disparage rational thinking about the topic. In its place, the "body repair shop" concept of medical research and practice has trumped less expensive, more egalitarian, and more effective preventive measures.[74] This thinking has elevated the status of the medical profession in those societies and created a

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[72] Duffy 316.
[73] Fee 26.
[74] The bias against government activity in the public health arena may be gauged by the 1992 finding of the Council of State and Territorial Epidemiologists that through budget cuts, twelve states had no one on their payroll for monitoring disease-causing microbes in food or drinking water. Laurie Garrett, *Betrayal of Trust: The Collapse of Global Public Health*, (New York: Hyperion Books, 2000) 435.

"medical-industrial complex," about which some writers have expressed concern.[75] They contend that it has produced a faith in medical technology that may be misplaced. Despite its extraordinary successes of the past half century, many antibiotics have difficulty controlling diseases such as tuberculosis (TB) that have developed drug-resistant strains. Garrett states that this inability to effectively deal with a disease such as TB thought to have been largely eliminated as a serious health threat in America "put medicine back in the nineteenth century."[76]

The Epidemic Intelligence Service, however, still toils in the vineyards of prevention and control of both communicable and chronic diseases. Its efforts have often run counter to prevailing medical wisdom.In the early 1960s, for example, bacteriology was thought by some to be passé. We would, in time, defeat the virulent pathogens that had so dominated civilized existence. Antibiotics such as penicillin were seen as "wonder drugs" and the pharmaceutical industry as capable of unlimited achievement. The global AIDS pandemic has shown that microorganisms are alive and well and mutating at extremely rapid rates. The unfettered drive toward globalization, interrupted by the wars of the first three quarters of the twentieth century, has opened a Pandora's Box of perils to health. In the mid-1990s, Garrett drew attention to what she called a "world out of balance." Penetration of the African rain forest, for example, in search of mineral and other wealth, caused disruption of local habitats with unforeseen consequences. It not only brought Westerners into contact with the filovirus hemorrhagic fevers Ebola and Marburg and arenaviruses such as Lassa fever, but has spread them throughout the

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[75] E. Richard Brown, *Rockefeller Medicine Men: Medicine and Capitalism in America*, (Berkeley: University of California Press, 1979) 231.
[76] Garrett, *Betrayal of Trust* 420.

continent.[77] The increased occurrence of both these viruses has raised the specter of another Black Death similar to the plague outbreak that killed one-third of the population from India to Iceland in the 14th century.[78] Knowledge of how these pathogens are transmitted and understanding the social conditions that breed disease are vital if people are to live in an interconnected world. The skill, courage, and dedication of the EIS and like organizations have never been more important. At the same time, there is considerable evidence that global public health has taken significant steps backwardis losing ground in some places.

Russia, and everywhere in the former Soviet Union, is an example of deterioration where the once effective public health structure has disintegrated since free market capitalism was adopted in 1991. A statistical example serves to illustrate this. In 1998, every third recruit for the Army was rejected for health reasons, while in 1985, during Soviet times, that figure was one in twenty.[79] Even the most ardent free marketer would have to consider what methods government needed to maintain health, education, and transportation infrastructures. In other places, however, there have been notable public health successes that have grown, step by step, with the expansion of the global economy. Singapore, a small country with no natural resources but well integrated into the global capitalist system, is thought to have the best health system in Asia.[80]

The history of public health has been distinguished by the effort to address the needs of communities. In this it recognizes the importance of each to all. The activities of

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[77] Laurie Garrett, *The Coming Plague: Newly Emerging Diseases in a World Out of Bala*nce, (New York: Penguin Books, 1994) 220-221.
[78] Garrett, *Betrayal of Trust* 551-2.
[79] Ibid. 128.
[80] Daniel Yergin and Joseph Stanislaw, *The Commanding Heights: The Battle for the World Economy*, (New York: Touchstone, 2002) 166, 183.

the Epidemic Intelligence ServiceEIS, along with the Peace Corps, Médecins sans Frontières, the myriad non-governmental (NGO) aid organizations, and the various foundations of the industrialized countries stand as evidence of the belief that we are all one community in at least some respects.

The EIS, the original mission of which was to support state health departments, grew up with the CDC almost from the beginning. Hhaving been founded a mere five years after establishment creation of the "Communicable Disease Center" in Atlanta, Georgia, it was the logical extension of the view that epidemiology, the branch of medical science that deals with the incidence, distribution, and control of disease in a population, was central to the work of CDC. The next chapter traces the history of the Epidemic Intelligence Service, U.S. Centers for Disease Control and Prevention (CDC) and how it has served the cause of public health at home and abroad, and the role of the Chief as conceived by its founder.

Chapter 3: The History of the CDC and the EIS

Dr. Joseph Mountin, Assistant Surgeon General of the United States Public Health Service (USPHS), Washington, and Dr. Mark Hollis, Director of Malaria Control in War Areas (MCWA), Atlanta, had a problem. In the early spring of 1946, they were preparing for a meeting with the powerful head of the National Institutes of Health (NIH), Dr. Rolla E. Dyer, in which they expected Dyer to object to their idea for a new federal health agency. They had sent Dyer their proposal; now they had to prepare their defense.

The Second World War was over and Mountin, who conceived the plan, had envisioned "centers of excellence" which would be created to deal with water and air pollution, Arctic health, and infectious diseases in the U.S. He was an advocate of the states and local communities retaining responsibility for public health but felt strongly that the USPHS should assist them by translating complex scientific and medical knowledge into formats the public could readily understand and implement.[81] The MCWA, created to control malaria around the numerous Army training camps in the southern states where the disease was considered endemic, was wrapping up its work. Mountin thought he saw an opportunity to capitalize on its success to define and fulfill a broader mission than anything before in public health. The emerging security concerns of the post-war world would eventually help Mountin establish and maintain an agency

[81] Etheridge 18.

smaller than the NIH to work directly with the states. He could count on the support of Dr. Thomas Parran, the U.S. Surgeon General, but would still need to persuade NIH's Dyer that the new agency would not be a threat to his research scientists in Maryland. In naming the new agency Mountin and Hollis had purposely omitted the word *institute* so as not to threaten NIH. They had decided to call it the Communicable Disease Center (CDC) and gave it a scope narrower than NIH in the belief that it would help allay concern, in Congress and within NIH itself, that there was any duplication of effort or any attempt at rivalry with the already-established research agency.[82]

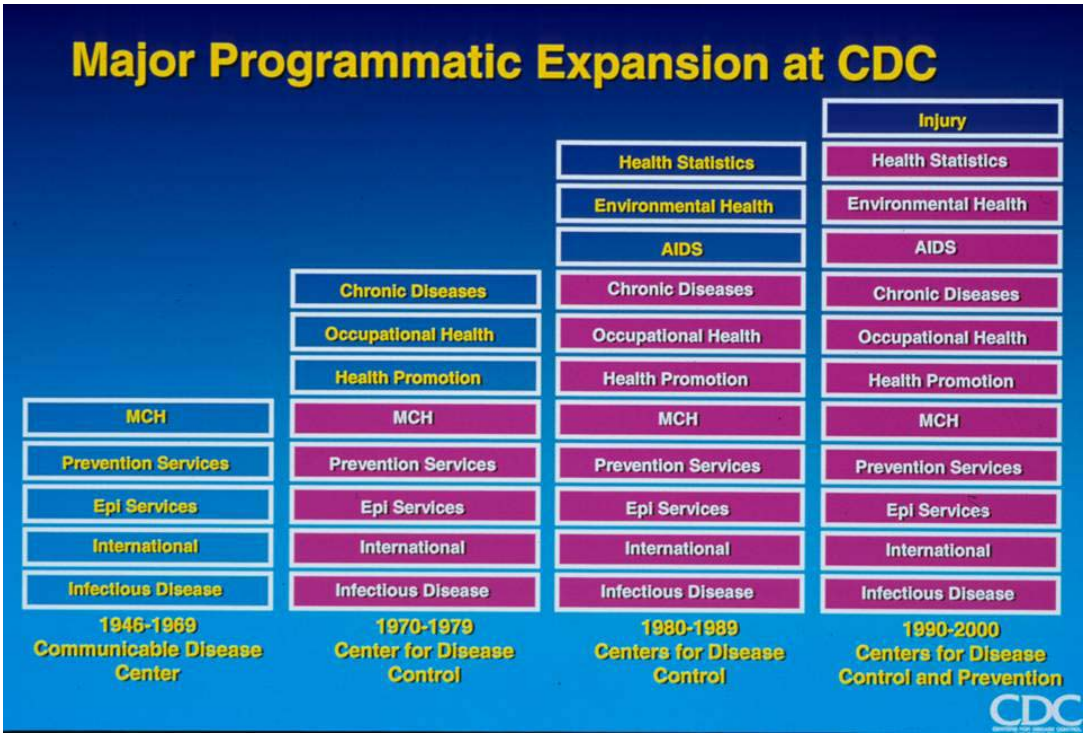
Hollis and Mountin discussed all the possible objections the NIH's Director might raise regarding their plan. They planned to argue that the NIH was concerned with research while the CDC would concentrate on "practical service to the states" and thereby present no conflict in missions. They thought Dyer would introduce all sorts of arguments to the contrary, "straw men," Mountin and Hollis called them, to influence Parran to reject the idea. When the meeting took place, Mountin and Hollis were unprepared to hear Dyer say that after careful scrutiny of the proposal he was wholeheartedly in support of it! Not satisfied with an "easy victory," Mountin, to the astonishment of Hollis, began to enumerate all the objections they were prepared to refute. It was Dyer who knocked down all the "straw men" and solidified the concept of a disease control agency that would allow the NIH to continue to concentrate on basic research. "With Mountin's push and Dyer's blessing, on July 1, 1946, the Communicable

[82] Ibid. 16.

Disease Center (CDC) began operations." CDC's first location was an office building at the corner of Peachtree and Seventh Street in Atlanta, Georgia.[83]

The CDC since that time has taken a lead role in providing technical, financial, and personnel support to public health activity in the states as Mountin intended, as well as having assisted, upon request, around the world in the investigation of disease outbreaks. The CDC also has had occasion to lend its expertise in creating mirror images of its disease detective branch, the Epidemic Intelligence Service (EIS), in countries around the world.[84] The EIS's original purpose was to assist the forty-eight states and the territories in controlling outbreaks of infectious disease. Attention to chronic disease was eventually added to the list. With this new agency, Joseph Mountin saw an opportunity to take public health at the federal level into new and surprising areas. Since 1946, CDC has added functions, personnel, and budget. Expansion of the organization is illustrated by the charts below.

[83] Ibid. 17.
[84] "Epidemic Intelligence Service/About EIS,"< http://www.cdc.gov/eis/about/about.htm> (28 August 2005)



The number of employees has grown from approximately 400 in 1946 to more than 9,000 planned for fiscal year (FY) 2006. The CDC budget has expanded from approximately $1 million in 1946 to over 6.7 billion for FY 2006.

The stories of CDC and the EIS are intertwined. The young agency proved its worth by showing what epidemiology could do to fight disease and improve health. It did so, initially, by demonstrating that malaria, a disease endemic to the American South, no longer posed a threat. The CDC moved on to deal with two of the most feared diseases of the mid-century – polio and influenza – as its reputation grew. The EIS, a training program as well as an investigative branch created in 1951, five years after the CDC was formed, led the way. The significance of the Chief EIS Officer position cannot be fully appreciated without an understanding of the origins and activities of CDC and its "disease detectives."

Post-World War II America was becoming generally more prosperous and hugely confident. It had shaken off the doubt and fear of the Great Depression and organized itself to produce wonders on the factory floor, the battlefield, and in the laboratory.[85] The new "can-do" spirit of the nation at large caused many public health workers to think, as did Mountin, that outbreaks of infectious diseases that might have been barely noticed at the national level 50 years before, and accepted locally as inevitable, could be halted. Changes in communications and transportation made it possible. The conditions that bred such communicable diseases could also be altered by putting into practice methods of prevention that worked with larger scale epidemics such as yellow fever. This was a familiar role for public health. At the same time, the appearance of talented and dedicated field epidemiologists such as Wade Hampton Frost, acknowledged by some to be the "father of American epidemiology,"[86] at the Johns Hopkins School of Hygiene and Public Health, helped to bring about awareness of how diseases could be more thoroughly understood and, therefore, be better controlled. Mountin wanted the CDC to be an exemplar of his vision in which the states would be assisted by federal public health staff. He wrote of this as early as 1942 and said that the occasion of wartime emergency could bring about an improvement in the health of the general public.[87] Nothing remotely like CDC had existed before.[88] To make it work however, Mountin knew he needed a strong epidemiology branch and an able administrator to run it.

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[85] "Wonder drugs," as penicillin and sulfanilamide were called, were on their way to changing the medical landscape by promising to wipe out communicable diseases such as syphilis. Duffy 273.
[86] Etheridge 40.
[87] Mountin believed that eventually health departments and hospitals would be combined. Etheridge 16.
[88] Etheridge 19.

"The death rate is a fact; anything beyond that is an inference,"[89] said William Farr (1807 – 1883), compiler of statistics in the Registrar General's Department in Great Britain during the nineteenth century. Alexander Duncan Langmuir (1910 – 1993) was fond of quoting Farr, whom he credited with having refined the concept of surveillance,[90] to make the point that epidemiology was an investigation and observation science. It was "detective work" in the spirit of the fictional Sherlock Homes and the tradition of real world practitioners such as Farr and the famous London epidemiologist, John Snow, sometimes called the "grandfather of field epidemiology."[91] His field work tracking down the causes of the mid-century cholera epidemics in London is thought to represent the beginning of modern epidemiology.[92] Langmuir was a disciple of Snow, which made the Victorian physician's work important to generations of EIS officers. He was also influenced by the work of Frost, a strong believer in "shoe-leather" epidemiology – the practice of personally investigating disease outbreaks at the local population level and not relying on the reports of others.[93]

Langmuir had arrived at the CDC in Atlanta from Johns Hopkins in 1949. Langmuir had been Associate Professor of Epidemiology at Hopkins, from 1946 to 1949, teaching epidemiology in double class sessions and "going nowhere" as he put it.[94] Though the CDC was only three years old, Joseph Mountin, its founder, was impatient to create an exemplary epidemiology program. The CDC was seeking to expand beyond the malaria work it did as the MCWA. Although CDC had established an epidemic aid

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[89] Ibid. 40.
[90] Torrence vi.
[91] Ibid.
[92] A. David Brandling-Bennett, "Our Long Struggle Against Epidemics," *Epidemic! The World of Infectious Disease*, (New York: New Press, 1999) 161.
[93] Etheridge 40.
[94] Ibid. 31.

program to the states and had a well-staffed laboratory that provided them with excellent service, it still lacked the key personnel needed to execute Mountin's ambitious plan to excel in communicable disease investigation and control. A good epidemiology staff was needed to act as a resource to the states at the level he had envisioned.[95] The person who took the CDC forward to satisfy Mountin's ambition was Justin Andrews, at the time Deputy Director of CDC but effectively its leader.[96] It was Andrews who was responsible for recruiting Langmuir to become Chief Epidemiologist, head of the Epidemiology Branch.[97]

At that time, CDC puzzled over how to make the job attractive to the few epidemiologists in the country almost all of whom, it was noted, already had jobs. CDC was a place that was dominated by malariologists, entomologists, and sanitary engineers. In epidemiology circles, CDC was thought to be a place where no respectable epidemiologist would want to work. Langmuir, however, recognized the fledgling agency's possibilities. Unhappy on the faculty at Johns Hopkins because he felt himself stagnating professionally, he was more susceptible to recruitment than Andrews knew. There were things at CDC that were very attractive to someone of Langmuir's credentials and experience. It appealed to him that Andrews had already started an epidemic aid program to the states and had set up multi-professional teams to address such problems as

[95] Though under-funded and lacking in epidemiologists, the CDC made a good start after the first year. It responded to epidemics through the epi-aid program started by Andrews. Etheridge 20-21
[96] In 1952, Andrews became the third Director of the CDC. Etheridge 19.
[97] As Langmuir was fond of putting it, "Justin Andrews took me up to the mountaintop and showed me the Promised Land." Alexander Langmuir, videotaped interview in the "Leaders of American Medicine" series, National Library of Medicine and National Audio-Visual Center, March 1979.

encephalitis. It was Langmuir's job to recruit and train the epidemiologists to meet the staffing needs of these programs.[98]

Dr. Mountin had "smoothed the way" for Langmuir. Claiming it was a "stroke of luck" that occurred just prior to his arriving at CDC, Langmuir credits Mountin with having "read the Riot Act" to the malaria-oriented non-medical personnel in Atlanta who were seen to have frustrated the attempts of previous epidemiologists to establish programs there. Mountin warned them that if they didn't recruit and retain a top epidemiologist to produce a top-flight program, CDC funding would not survive Capitol Hill budget cuts. Langmuir was welcomed "with open arms."[99] Having worked for a state health department just after the Great Depression, Langmuir had insight into the problems state and local health officers faced. He also subsequently displayed considerable skill as a "talent-spotter" in his new role which served him well especially when filling the Chief EIS Officer's position from among the epidemiologist-recruits. Langmuir proved to be an effective mentor to those he recruited.[100]

Besides "investigation" when outbreaks occur, the other vital element of effective epidemiology is surveillance. Langmuir was a vociferous and persistent advocate of surveillance. In doing so, however, he challenged its accepted definitions. He was particularly careful to distinguish between "surveillance" and "monitoring." Until 1950, surveillance in public health practice meant monitoring the contacts of people with known communicable diseases. Langmuir wanted to apply the concept to the broader

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[98] "I consulted all my friends and they all said … they're [CDC] a bunch of broken-down malariologists, they believe in eradication, there's a non-medical dominance, [and] it's the last place to go." Ibid.
[99] Ibid.
[100] Langmuir looked for special qualities in the EIS Chief. He wanted them to be "bright, energetic, and abrasive" in order to deal with the special demands of the job. J. Lyle Conrad, Interview with author, 4 February 2005.

population. He believed surveillance could be done by requiring local physicians and health workers to report the occurrence of *diseases* diagnosed in each state which would yield an overall picture of the nation's health. Under Langmuir's guidance, surveillance information became central to the functions of the CDC.

Surveillance information tells health officials where the problems are, the part of the population they affect, and where program activities should be brought to bear.[101] The United States has a long history of surveillance activities at the state and local levels, though not nationally. It is important to note that until Langmuir put the CDC surveillance system in place, reporting was not timely. This tradition, however, would form the base upon which the CDC, through Langmuir and the EIS, would help to create a strong national partnership for the surveillance of both chronic and infectious diseases.

In 1951, Alex Langmuir held a meeting in Atlanta of state and territorial representatives who later became known as state epidemiologists. He asked them to create the terminology for describing diseases and to specify which diseases should be reported.[102] Besides standardizing the terms, the meeting, out of which grew the Conference (later Council) of State and Territorial Epidemiologists (CSTE), demonstrated the CDC's commitment to assist the states rather than attempt to mandate what they should do in response to communicable disease. Langmuir offered them assistance on their outbreaks at no cost to them. EIS officers would be dispatched to the states when asked for whatever the state health department thought necessary. The states needed only to identify a single contact that would request CDC help. This person was

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[101] Stephen B. Thacker, "Historical Development" 1-6.
[102] Guthrie S. Birkhead and Christopher M. Laylahn, "State and Local Public Health Surveillance" *Principles and Practices of Public Health Surveillance*, 2nd ed.; 255.

eventually designated the state epidemiologist. Commenting on it many years later, Langmuir said, "It was a uniquely different approach for the federal government to ask the states 'What do you want us to do for you?' rather than ask what we wanted them to do for us!"[103] It helped to convince the states that CDC recognized surveillance and reporting were not the same as control which the states believed was up to them.

Part of Langmuir's redefinition of surveillance placed the emphasis for the prevention and control of specific health problems in local communities. He let it be known that surveillance was the ongoing, systematic collection of public health data with an accompanying analysis. Langmuir also stressed the importance of distributing the results and interpretations to those who contributed to them as well as others with a need to know. To avoid any misunderstanding that might either confuse or alienate the states, he pointed out that surveillance did not encompass direct responsibility for control activities. As Langmuir wrote in 1963, "These traditionally have been and still remain with the state and local health authorities."[104] It would be important to the duties of the Chief EIS Officer to remember that division of labor between the states and the federal government. Young and eager EIS officers would benefit from understanding how delicate relations between the two entities could be. When the state and territorial epidemiologists convened to discuss cooperation in reporting diseases, Langmuir and the CDC had already demonstrated the benefits of surveillance of a specific disease.

Not long after arriving at CDC, Langmuir had tested his surveillance theory on malaria, a disease which had been endemic to the American South. The young CDC was

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[103] Langmuir videotaped interview, 1979.
[104] Alexander D. Langmuir, "The surveillance of communicable diseases of national importance," *New England Journal of Medicine*, 1963; v. 268: 182-192.

spending the largest part of its budget on controlling malaria though Langmuir and Justin Andrews suspected it had all but disappeared.[105] Through the creation of what he called "Malaria Surveillance Teams," Langmuir sought to employ epidemiological surveillance of the disease to prove it was no longer a health threat. The teams consisted of a physician epidemiologist, a nurse epidemiologist, an engineer, and an entomologist assigned to each state. They would be called upon to evaluate every reported case of malaria. Assigned full-time to Mississippi and South Carolina and part of the year in Georgia, Alabama, Arkansas, and Texas, the teams discovered only fifty-five laboratory positive cases in 1950. Of these, only nineteen could not be explained as relapses, blood transfusions, or cases imported from other countries. The nineteen were all single cases with no evidence of clustering, "the ultimate test for determining an endemic presence."[106] The last time two or more cases of malaria had been reported in relation to each other was 1942. As Etheridge writes, during the 1930s more than one hundred thousand cases of malaria were reported each year in the U.S. and that figure was believed to be low. By 1945, malaria had disappeared for all practical purposes and in 1950 the CDC had proved it.[107]

By demonstrating how the states and the "feds" could work together to confirm the disappearance of malaria, Langmuir had set a pattern for cooperation in the future between the states and CDC and within branches of CDC itself. It was also the first time that the practice of surveillance was applied to a disease and not just individuals. It was a

[105] "History of CDC," *Morbidity and Mortality Weekly Report*, U.S. Centers for Disease Control and Prevention; v 45, 1996: 526-8.
[106] Langmuir videotaped interview, 1979.
[107] Ibid.

success both for Langmuir and the young agency[108] and became "the cornerstone on which CDC's mission of service to the states was built."[109] The vehicle for dissemination of surveillance data would be the *Morbidity and Mortality Weekly Report* (MMWR) that came out of the National Office of Vital Statistics (NOVS) in Washington, D.C. at that time.

Many at CDC and elsewhere had only disdain for the publication, which they thought was little known or respected, but Langmuir saw it as vital to communicating surveillance analysis to those who could and should act – the states and local communities. Based on a 1959 recommendation from an EIS officer who would later become Surgeon General of the United States, Dr. William H. Stewart (EIS 1951), the *MMWR* was transferred from NOVS to CDC in January 1961. It immediately expanded under CDC guidance to three pages of narrative, including editorial comments, and one page of tables.[110] Its circulation in 1961 was 6,000. The *MMWR* has influenced the creation and format of similar journals of epidemiology published by the WHO and by other countries.[111] The CDC editorial staff, consisting mostly of Epidemiology Program Office personnel, solicited comments for the articles from CDC staff. In this way, epidemiology became central to CDC's mission.

Epidemiology is the mathematical study of disease occurrence and the identification of disease risk factors, or any health-related event, in a population. Epidemiology is interdisciplinary. Any study of a disease may include methodologies and

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[108] Ibid.
[109] Etheridge, 35.
[110] Langmuir videotaped interview, 1979.
[111] The WHO publication is *Weekly Epidemiological Record* (WER).< http://www.who.int/wer/en> 5 September 2005.

knowledge from other scientific fields including anthropology. As previously mentioned, it is very much like detective work in that it requires creative, critical thinking in drawing inferences in order to arrive at reasonable conclusions.[112] It is considered to be the basic science of public health which is itself concerned with population characteristics.[113] Epidemiologists can be drawn from many disciplines and not just medicine. As well as physicians, nurses, and veterinarians, the current professional categories for EIS eligibility include statisticians, sanitary engineers, chemist/biochemists, demographers, pharmacologists, dentists, toxicologists, mycologists, microbiologists, sociologists, clinical physiologists, anthropologists, industrial hygienists, nutritionists, and even lawyers.[114] The key skill an epidemiologist must have, that should be common to all no matter what their backgrounds, is the ability to reason deductively. Rather than memorizing facts, epidemiologists must be able to think critically and creatively.[115] At the CDC, epidemiology training and investigative activities are managed by the Epidemiology Program Office (EPO). The EIS is a branch of the EPO's Division of Applied Public Health training. (see organizational chart below)

"What we need is an epidemic intelligence service," said Joseph Mountin one day in 1951. He was reflecting on the need of CDC to prepare for the Cold War danger of "germ warfare," epidemics induced by biological agents deliberately let loose on American soil by enemy operatives.[116] This was the first recorded use of the name that eventually stuck to the CDC's famed "disease detectives." The EIS would be supported

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[112] Torrence 1.
[113] Stephen B. Thacker, Donna F. Stroup, and Richard C. Dicker, "Health Data Management for Public Health" *Principles of Public Health Practice,* 2nd ed.; (Clifton Park, New York: Delmar Learning , 2003) 241-242.
[114] *EIS Directory, 2003-2005* (Washington, D.C.: U.S. Government Printing Office, 2005) 33.
[115] Torrence 6.
[116] Etheridge 38.

with “germ warfare” funds but it would be used to investigate disease outbreaks, both chronic as well as infectious, anywhere in the states and, eventually, in the world. The EIS would be a training program for epidemiologists as well as a “rapid deployment force” when epidemics arose. The Chief EIS Officers would be instrumental in gathering young people to embrace EIS’s twin missions of surveillance and investigation assistance. The organization of EIS and EPO has evolved over the years. An explanation of their missions makes their relationship and functions clear.

The Epidemiology Program Office started as the Epidemiology Branch under Alex Langmuir in 1949. Today, its mission consists of four major functions. The first is to facilitate public health communications which it does by publishing *MMWR* (Morbidity & Mortality Weekly Report), *CDC Surveillance Summaries*, and *Recommendations and Reports*. The second is promote prevention research and analytic methods by serving as a catalyst for statistical methodology, the employment of behavioral and social sciences in the service of public health, demonstrating prevention effectiveness, and incorporating new disciplines in public health practice such as the uses of information technology. The third function of public health training includes sponsorship of the Epidemic Intelligence Service (EIS), the Preventive Medicine Residency (PMR) to advance application of epidemiology, the Public Health Prevention Service which is a three-year program in public health program planning, implementation and evaluation; and the Field Epidemiology Training Programs (FETP) which, since 1975, have established applied epidemiological methods in countries around the world, as well as other fellowship and internship programs. The fourth function of EPO is public health surveillance and informatics, the use of information technology in the tracking and

reporting of disease. The purpose is to maximize the efficiency of existing information systems while developing new and innovative methodologies.[117]

The EIS is a 2-year post graduate fellowship of service and on-the-job training for health professionals interested in applied epidemiology. Its mission is to respond to requests for epidemiologic assistance in the U.S. and around the world. That response includes prevention of injury and disease as well as the control of each, the promotion of health, and the effort to build public health capacity in the states and abroad. The individual officers receive training in the applied epidemiological skills of quantitative analysis, research design, epidemiologic judgment, and health communications. The professional skills and abilities that officers are expected to acquire through this program are learned through "hands-on" experience at investigating acute disease outbreaks, analyzing large data bases of health information, evaluating surveillance systems, publishing and presenting scientific manuscripts, and answering public inquiries. Their assignment can be either "Headquarters" (CDC branches in Atlanta) which provide a specialist focus or "Field" assignment to a state or local health department from which officers derive a general view of public health practice.[118]

At the CDC, the EIS was established, in part at least, as a training course for epidemiologists. When Alex Langmuir went to recruit "disease detectives," he found there were very few available. His efforts to obtain qualified candidates turned up only "two young physicians who were genuinely interested but totally untrained."[119] It was

[117] Epidemiology Program Office presentation, courtesy of Stephen B. Thacker, M.D., M.Sc., December 2005.
[118] Ibid.
[119] McKenna 13.

then that he decided that he would train eager, young physicians and other specialists to be the epidemiologists the EIS program needed. The first class of recruits began training in the summer of 1951. They would be learning and working for the CDC's Epidemiology Branch. The threat of biological warfare stemming from involvement in both the Cold War with the Soviet Union and the shooting war in Korea created a sense of urgency within the federal government. Epidemiologists would be needed in case of sudden disease outbreaks. The EIS officers could learn the requisite investigative skills working on conventional outbreaks. It would, Langmuir reasoned, prepare them for a deliberately man-made infectious disease outbreak. By creating this quick-reacting field force, CDC hoped to strengthen its relationship to the states. Service to the states, when invited, was always the most important part of the EIS's mission. In order to do it well, it had to fulfill the other part – recruit and train field-savvy epidemiologists.[120]

The training itself consisted of the Introductory Course on epidemiology and public health. This course was, and still is, taught over the whole month of July. Its focus was turning competent physicians (in the early years, the classes were almost all physicians) used to treating patients one at a time into professionals concerned with population health. The group was now their "patient." From the beginning, EIS training would emphasize statistics which gives epidemiology what Etheridge calls "a scientific tradition."[121] Langmuir demonstrated that the principles of epidemiology could be expressed mathematically as they could for disciplines such as physics and

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[120] William Schaffner and F. Marc LaForce, "Training Field Epidemiologists: Alexander D. Langruir and the Epidemic Intelligence Service." *American Journal of Epidemiology*, v. 144, no. 8, Supplement: S66, 1996.

[121] Langmuir repeated the following simplified definition of epidemiology to the new recruits: "… the basic operation of the epidemiologist is to count cases and measure the population in which they arise." Etheridge 46.

chemistry.[122]After the month-long course, the officers were assigned to their posts. Most stayed in Atlanta where they served in various branches of the CDC while being ready to travel to an investigation at a moment's notice. The rest of the epidemiologist-trainees were assigned to state and municipal public health departments. The Epidemic Aid cooperative agreement program started by Justin Andrews was the vehicle for getting the EIS on the scene of an outbreak.[123] Langmuir then had to make sure they learned as well as performed on the job. From the beginning Langmuir had faith that even inexperienced people could do things well even though they had not done them before. The key was choosing the right people. His program was thus dependent on the recruiting and selection process. It was here that the Chief's role would be crucial. Once the officers were in the field, Langmuir believed that regular communication between them and the experts at CDC would see them through. His method was to guide the officers through a critical examination of an ongoing investigation. Langmuir also knew that the trainees would need solace and encouragement should things not work out as hoped the first time around. As one veteran remembered, "The tone of the supervision was supportive, not authoritarian." The support mechanism was similar to that of the clinical house staff training structure found in teaching hospitals. In this system, the intern has direct responsibility for the patient but is guided by senior residents and attending physicians. Langmuir, who had experienced such a system when at Boston City Hospital, claimed that it influenced his design of this program of a teaching service in the "public health

[122] Donna F. Stroup and Jack C. Smith, "Statistical Methods in Public Health: The Influence of Alexander D. Langmuir." *American Journal of Epidemiology*, v. 144, no. 8, Supplement: S29.
[123] It was a general cooperative agreement that placed field epidemiologists at the service of the states if they so chose. The CDC must be formally invited to assist in outbreak investigations. Etheridge 33.

emergency room"[124] The role of the EIS Chief was patterned after that of the Chief Resident in a clinical setting such as a teaching hospital.[125]

Another structure Langmuir put in place was the annual EIS Conference, held each April in Atlanta. To reinforce his belief that epidemiology was to be practiced with scientific rigor, the conference consisted of ten-minute reports by officers on their investigations with an equal amount of time for fielding questions in open scientific discussion from attendees. The attendees were other current officers, CDC supervisory staff, and former officers. Langmuir himself set the tone for the exchange by always emphasizing a positive aspect of the investigation though he would follow up with "penetrating" questions. In this way the conference served to establish EIS field epidemiology as a discipline where "new information should be produced, and the results openly displayed and subject to constructive critique."[126] The EIS Chief would have primary responsibility for setting up and running the conference.

After completing training and serving for two years, the newly-trained epidemiologists were under no obligation to remain in the Public Health Service. It was Langmuir's hope, however, that a reasonably high percentage would stay in the field and so allow CDC to better fulfill its mission to the states.[127] As it turned out, they remained in numbers large enough to justify Langmuir's faith in the power of the endeavor to inspire. The CDC each year recruits a majority of those who have completed epidemiology training to work in its various branches on problems of public health. The

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[124] Ibid. S19.
[125] Conrad, Interview with author, 11 April 2005.
[126] Schaffner and LaForce S20.
[127] In practice, approximately one-fifth of EIS graduates go into academia, one-third go to work for various state health departments and other federal agencies, one-third get positions at the CDC, and rest typically go into private practice. McKenna 20.

annual EIS Conference provides the occasion and the opportunity for various CDC branch and program administrators to "pitch" their recruiting messages to class members. In this way, epidemiology pervades the CDC and informs its practice.

The case of Reye's syndrome in children and its relation to aspirin provides an example of CDC epidemiology shedding light on the problems surrounding the incidence of a specific disease. Reye's syndrome is primarily a children's disease that usually occurs after cases of influenza or chicken pox.[128] Approximately one year after the 1976 swine influenza effort, EIS officer Dr. Karen Starko, who had been assigned to the Arizona Health Department, noticed a connection between the onset of Reye's syndrome and the use of aspirin to treat the symptoms of chicken pox and flu viral infections.[129] Starko had monitored a flu outbreak that resulted in seven children contracting Reye's syndrome. As a trained epidemiologist, she asked detailed questions about the care and treatment the patients had received. What she discovered was that those children who had contracted the disease had taken aspirin more frequently than those who did not.

Unsure of the connection, she called Dr. Lawrence Shonberger in Atlanta. Schonberger, the Deputy Chief of the Enteric and Neurotropic Disease Branch, thought that her observations should be compared to the information the CDC gathered in the state of Ohio during the swine flu campaign. The surveillance information verified the connections between Reye's and influenza but until the time of Starko's observation no one had noticed the aspirin connection. The Ohio data would be reassessed and a new

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[128] Office of Communications. National Institute of Neurological Disorders and Stroke. National Institute of Health, "Reye Syndrome,"< http://www.ninds.nih.gov/disorders/reyes_syndrome/reyes_syndrome.htm> (9 October 2005).
[129] Karen M. Starko, C.G. Ray, L.B. Dominguez, W.L. Stromberg, and D.F. Woodall, "Reye's syndrome and salicylate use. *Pediatrics*, 1980, v. 66:859-864.

study was conducted in Michigan. Less than a year later the epidemiological studies in Ohio and Michigan, coupled with Starko's observations in Arizona, confirmed that children treated with any amount of aspirin for either flu or chicken pox were more likely to get Reye's syndrome than those who did not.

The first report on salicylates was published in MMWR during the summer of 1980.[130] A few months later, details from the Ohio and Michigan studies were reported there also. The aspirin industry asked for more time to present more information before CDC published its definitive study complete with statistics from Arizona, Ohio, and Michigan. The epidemiologists assigned to the investigation, however, had looked at many factors that might contribute to the greater likelihood of Reye's appearing in some viral infection patients and not others. Their study covered the time period of the antecedent illnesses and the onset of Reye's syndrome. This revealed that the peak of Reye's incidence was one week after the peak of reported influenza outbreak cases which was mentioned in the MMWR. Its article pointed out that the onset of Reye's syndrome in flu patients was consistent with what the investigators expected to see; "presumably reflecting the [expected] 5-7 day interval between antecedent illness and hospitalization with Reye's syndrome."[131] Controlling for factors such as mean duration of viral illness, mean age of parents, mean number of medications received during the viral illness, and mean peak temperature reported, the reviewers concluded that these factors were similar for both. The results of CDC investigations in Arizona, Ohio, and Michigan, and a fourth study by the Michigan Department of Health, showed Dr. Starko's observation to have merit.

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[130] *Morbidity & Mortality Weekly Report*, July 11 1980, v. 29, 321-322.
[131] Ibid.

Despite the weight of the evidence, the aspirin industry fought to delay making the findings public. The CDC was pressured to modify its conclusion. Dr. Walter Dowdle, CDC Deputy Director at the time, said that not even the problems of the swine flu campaign prepared the agency for the political and economic pressure it received to modify its stance on the aspirin connection.[132] CDC's findings prevailed, however, and the aspirin industry started issuing warning labels on their products in 1986. While the industry was congratulated on its "public spiritedness," former CDC Director, Dr. William Foege said, "In fact they avoided letting parents know for more than a year that there was problem with aspirin. It shows how strong the profit motive … can be in trying to make good health decisions."[133] The number of Reye's syndrome cases plummeted thereafter. A decade later Foege said of the Reye's syndrome and other CDC/EIS investigations, "These measures illustrate that public health policy is absolutely dependent on the best epidemiology possible."[134] Alexander Langmuir and the EIS insisted from the beginning that not only was investigation results to be made public, but that measures for control and prevention were to be recommended. The Reye's syndrome case is a good example of how impeccable field epidemiology resulted in health policy change.

After they concluded their first month's training, EIS officers were given assignments through the "match" program. This was the system devised by Langmuir and executed by the Chiefs wherein the recruits were encouraged to request their top three preferences for assignment. The director and Chief EIS officer would review the requests

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[132] Etheridge 298.
[133] Ibid.
[134] William Foege, "Alexander Langmuir – His Impact on Public Health," *American Journal of Epidemiology*, v. 144, no. 8 Supp., S13.

and "match" the requesters with the perceived needs of the CDC as expressed by the branch chiefs. In this way, the year's class would begin its work. Langmuir knew that process of investigation is dependent on the quality of the investigator. A large part of the Chief's job was to help recruit good prospects, develop their investigation skill through training and experience, and to maintain them in the field.[135]

In the early months of the EIS's existence, whenever an epidemic alert came in to the CDC, someone immediately contacted the NIH. It was part of CDC's agreement with that agency that it would handle only investigations NIH refused.[136] CDC knew it had to be prompt in responding if it was to live up to its promise to investigate all outbreaks. A device created to help handle the requests was the Epidemic Aid Memorandum or "Epi 1 memo." A simple administrative device, the Epi 1 memo, was circulated whenever a request came in. At first limited in circulation to only a few staff members, the list was eventually distributed to over two hundred.[137] In 1952, its first full year of existence, the small cadre of EIS officers responded to over two hundred calls for help. Langmuir and his recruits took a great deal of pride in how many outbreaks they could cover, their rate of success, and how quickly they could do it. State health officers were surprised by the speed with which CDC's "disease detectives" responded to their investigation requests. As Langmuir tells it, "[they] were astounded to find bright, young, responsive, epidemiologists in their offices the next morning, or even sometimes the same day that they called. Each epidemic aid call was an adventure and a training experience, even the

[135] Conrad, Interview with the author, 5 March 2005.
[136] Langmuir said when NIH officials were asked the question, "Will you respond to every outbreak?" they replied, "Certainly not; only the interesting ones." Etheridge 47.
[137] Ibid.

false alarms."[138] In 1955, Langmuir had the opportunity to conduct surveillance of a disease in an emergency situation and then provide epidemiological support to alleviate the problem. It was a chance for the fledgling EIS to show what it could do in a major crisis and Langmuir seized it. The disease in question was poliomyelitis.

Polio in the early1950s terrified the public. It was recognized in the U.S. around the mid-nineteenth century and, after 1900, struck small towns and big cities each summer crippling rich and poor alike. The most famous polio victim in America was President Franklin D. Roosevelt (1882 – 1945) who contracted it at age thirty-nine while vacationing in Maine. There were major outbreaks in New York (1916) and Los Angeles (1934) which, because they occurred in large crowded cities, caused considerable panic and contributed to the dread reputation of the disease.[139] Public health officials had been aware of polio since a British physician, Dr. Michael Underwood, in 1789 described a debilitating illness of the lower extremities. Archeological evidence of polio in ancient Egypt was gleaned from an illustration on a stele of a man with a withered leg leaning on a staff. Although present in the United States at least since 1843, the first significant outbreak of poliomyelitis occurred in 1894.[140] The 1916 New York outbreak caused both American and European researchers to devote unprecedented resources to studying the disease.[141] It was President Roosevelt's law partner, Basil O'Connor (1892-1972), who created the National Foundation for Infantile Paralysis (NFIP) in 1938, later renamed the March of Dimes, to combat the disease through research.

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[138] Ibid.
[139] John R. Paul, *A History of Poliomyelitis*, (New Haven: Yale University Press, 1971), 1 passim.
[140] Ibid.
[141] Global Polio Eradication Initiative/History <http://www.polioeradication.org/history.asp > 8 September 2005.

The CDC itself was not unfamiliar with polio. The EIS, in fact, had made a mark in the study of this disease when it responded to an outbreak of polio in Paulding County, Ohio in September 1950. For the first time anywhere in the world, a comprehensive epidemiological study of poliomyelitis was made. A team of thirty people undertook an examination of not only patients but family members, pets, and livestock. They analyzed blood samples from all and even trapped insects and rodents. In the end, the team was unable to say why this particular geographic area was the target for the epidemic but they learned what to do, and what *not* to do, in an epidemiological investigation of the disease.[142] At almost the same time, researchers had succeeded in growing live polio virus in living cells which paved the way toward developing a vaccine to prevent the disease.[143]

Dr. Jonas Salk (1914-1995) of the University of Pittsburgh grew large amounts of pure polio virus with which to experiment. Salk was one of the developers of an influenza vaccine using a "killed" virus that conferred immunity. Salk believed he could do the same with polio. The risk was low: killed viruses could not infect recipients with the disease. After experimenting with a vaccine, Salk was ready in 1953. The disease toll from the previous two years lent urgency to the 1954 effort.[144] O'Connor and the NFIP backed Salk's one-year trial at a cost of $7 million. It would eventually succeed in vaccinating 441,000 children with another 201,000 receiving placebos. Over 1 million

[142] Thirty people involved in an outbreak investigation were discovered to be too many. It was decided to send a single person who could call for help as needed. Etheridge 43.
[143] John Enders, Thomas Weller, and Frederick Robbins were awarded the 1954 Nobel Prize in medicine for achieving this milestone. Jeffrey Kluger, *Splendid Solution: Jonas Salk and the Conquest of Polio*, (New York: G.P. Putnam's Sons, 2004) 315.
[144] In 1952, 57,879 cases were reported. In 1953, the number was 35,592. Kluger 239.

more children were observed as a way to monitor infection rates.[145] The "Francis Field Trials," named for Dr. Thomas Francis, Jr. (1900-1969), the chief monitor, took three months to complete. The EIS class that year spent months working in New York City during the surveillance and follow-up activities. It took another nine months to tabulate the results. Begun on April 26, 1954, the trial's findings were announced on April 12, 1955. That the effort was successful was "unequivocally stated" by Dr. Francis in a press conference at the University of Michigan.

Lost in all the enthusiasm of the trial's success was the understanding that a larger group of manufacturers would be producing the vaccine than had participated in the trials. This fact should have alerted the vaccine Licensing Committee to carefully supervise vaccine manufacture.[146] There was also a problem with the study's population. Physician and historian John Paul points out that the Licensing Committee was under considerable duress at this time to get the vaccine in circulation and perhaps a little too hastily concurred with the data compiled during the trial. Given more time to study the results, they might have echoed Professor William Cochran, statistician from Harvard University, who told Langmuir that he believed the size of the sample was too small.[147] Langmuir reviewed the case rates and controls and felt it was just enough to give it statistical validity. (He eventually wrote a case study utilizing the data from the Francis trials that was used in the EIS course for at least ten years.) Though little noticed at the

[145] McKenna 32.
[146] The Bureau of Biologics of the Department of Health, Education, and Welfare.
[147] Stroup S29.

time, one of the six manufacturers chosen to produce the Salk inactivated polio vaccine was Cutter Laboratories in Berkeley, California.[148]

The CDC had prepared to perform nationwide surveillance of poliomyelitis anticipating two problems: the failure of the vaccine's potency and the possibility that diseases simulating polio would make evaluation of the vaccination effort difficult. As Etheridge writes, "They considered and discarded the problem of vaccine safety. That, after all, had been the concern of the Francis field trials."[149] When verifiable cases of polio turned up in vaccinees within two weeks of the start, the entire vaccination effort was in jeopardy. Alex Langmuir was in Washington, D.C. as the first reports trickled in describing the cases. He attended the meeting which was originally called to discuss rationing the scarce vaccine but instead considered whether or not to stop the campaign. Langmuir argued the virtues of a national surveillance program for polio in order to track the problem. Cutter Labs, whose product was implicated in the polio cases, withdrew its vaccine from distribution. The Surgeon General, Leonard Scheele, held off making any decision to suspend the vaccination program until he spoke to the powerful O'Connor. Thinking he had failed to be convincing about the need for surveillance, Langmuir sullenly returned to the CDC office in the Department of Housing, Education, and Welfare (HEW) Building. A few minutes later, a public affairs officer, Mary Ross, showed Langmuir a press release from the surgeon general announcing the establishment of a national polio surveillance program at CDC headed by Alex Langmuir! Etheridge writes that Langmuir was "dumbfounded." As he told it,

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[148] Secretary Oveta Culp Hobby announced the drug companies that would be cleared to manufacture and immediately distribute the vaccine: Lilly, Pitman-Moore, Wyeth, Sharpe and Dohme, Parke-Davis, and Cutter. Kluger 301.
[149] Etheridge 73

> I asked her what had happened. It was clearly not the decision of the group I just left. She smiled and said, "The SG [surgeon general] has a whole room full of national news reporters he must meet with now. He asked me what he should say. I replied by showing him a news release I drafted in the late afternoon, because what you were saying made the most sense and the SG had to say something!"[150]

A top secret meeting was convened for Friday, April 29 to discuss the Cutter incident. There was fear that the whole program was becoming a "disaster," although no one dared use the word in public.[151] Surgeon General Scheele announced that the vaccinations would be suspended while the safety of the polio vaccine production would be assessed on a plant-by-plant basis. Responding to the emergency, Langmuir created the "Poliomyelitis Surveillance Unit" (PSU) of CDC and assigned EIS officer Neal Nathanson to it. The unit was charged with the collection, collation, and analysis of polio case information reported by state epidemiologists and EIS officers in the field. The PSU issued daily reports for about five weeks and once a month thereafter.[152]

Although it was difficult to track with complete accuracy, Langmuir was sure that a clear picture of the problem would emerge despite some flaws in the data.[153] The disease detectives had narrowed the cause of the polio cases to only two lots of Cutter vaccine. So convinced by this evidence was the by now much more cautious Division of Biologics Standards[154] that it re-cleared the vaccine for distribution. As Nathanson wrote more than forty years later, "… Langmuir had persuaded the public health authorities that

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[150] Etheridge 75.
[151] Ibid. 76.
[152] Neal Nathanson, and E. Russell Alexander, "Infectious Disease Epidemiology." *American Journal of Epidemiology*, v. 144, no. 8, Supplement: S35.
[153] Nathanson and Alexander write that Langmuir was used to dealing with "dirty" data. Ibid.
[154] The Virus, Serum, and Toxin Act of 1902 established federal regulation of biologic products, including vaccines. To fulfill that mission, the Division of Biologics was created as a part of the Hygienic Laboratory of the Public Health Service. Legislation in 1944 moved it to the National Institutes of Health. In 1972 the Division of Biologics was transferred to the Food and Drug Administration where it remains today. It was renamed the Bureau of Biologics at the time of the transfer.

the problem was with a single manufacturer and not with the vaccine itself ... [and] the vaccine of the four other manufacturers should be re-released promptly." Langmuir's faith in surveillance and the skill of the EIS officers involved in the investigation restored public confidence in the poliovirus vaccine.[155] The Communicable Disease Center as a concept had proved its worth.[156]

Langmuir assigned one of the EIS officers from the PSU, E. Russell Alexander, to develop a section of the CDC that would conduct a series of national surveillance activities. Alexander writes that Langmuir was planning the creation of this unit for years and saw the time was right for initiating it. Typical of Langmuir's respect for the states and dedication to CDC's mission to support them was his insistence that the surveillance section obtain the backing of the state epidemiologists for any activity it undertook.[157] Etheridge notes the approbation Langmuir and CDC received from the Cutter incident. The EIS and the Polio Surveillance Unit had confirmed the vaccine was overwhelmingly effective and completely safe, and that the vaccination program, if applied properly, would ensure there would be no polio epidemic in 1956. They had proven that surveillance was essential to controlling epidemic disease. The *New York Times* called Alex Langmuir the nation's "leading medical intelligence officer."[158]

The next big challenge, influenza, followed hard on the heels of polio. It also added to CDC's laurels while demonstrating that concern for global aspects of disease control was properly part of the Epidemic Intelligence Service's mission. Virologists

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[155] Ibid.
[156] "In recognition of [Langmuir's prompt action], a vote of confidence was made which went far to creating at the CDC a permanent surveillance unit which was soon to deal with various diseases in this country by techniques which were eventually copied throughout the world." Paul 437.
[157] Nathanson and Alexander S35.
[158] Etheridge 79.

agree that influenza is a disease that must be watched carefully. Bio-medical research has been unable to offer a permanent solution to the problem posed by group A (there are four strains: A-D, with only A and B a concern to the U.S.) and its ability to either "drift," change slightly, or "shift," mutate into something against which the population has little or no immunity.[159] In 1957, the type A flu shifted into a deadly strain (H2N2) known as the Asian flu. It got that name after the epidemic began in Hong Kong with the sickening of over a quarter million people in that city alone. American servicemen in Asia brought the virus to the U.S. in June of 1957 and it spread rapidly. The Surgeon General, Dr. Leroy Burney, requested that Langmuir monitor the outbreak. "Tell Alex to set up surveillance for influenza as he did for polio."[160] The surveillance unit for influenza consisted of people from both the Epidemiology and Laboratory branches, always rivals in the past, now working closely together in this effort. CDC personnel also volunteered to the test the newest vaccines produced to counter the epidemic. The surveillance unit set up by CDC to monitor the Asian flu discovered a great deal about the nature and progress of the disease. Because it was known how the illness was spread, and who was most susceptible at any given time during the various waves of the epidemics, measures were taken to limit the effects. A vaccine was produced and tested by CDC personnel. An EIS officer, Dr. Bruce Dull, conducted tests on volunteers at the federal penitentiary in Atlanta that proved the vaccine 80%-90% effective in the first round of vaccinations and slightly less in the second. The demand for the vaccine was greater than the supply and the country did not yet have a distribution plan. Surveillance

[159] A swine influenza from the A strain is what caused the 1918 pandemic that killed between 25 and 50 million people worldwide. John M. Barry, *The Great Influenza: The Epic Story of the Deadliest Plague in History* (New York: Penguin Books, 2004) 115.
[160] Etheridge 81.

of the disease indicated that since people over 65 years of age constituted most of the 86,000 excess deaths the vaccine should be administered first to the elderly and the chronically ill. Langmuir's EIS had again proven its worth to the country. Etheridge notes that Langmuir even made an appearance on national television – a first for CDC – to explain the origin, spread, control, and outlook of Asian flu.[161] (Influenza again became a national concern in 1968. At that time, the EPO set up a flu surveillance unit that has monitored flu cases every year since then.)

Despite this success, another tussle with influenza two decades later would cast a shadow upon CDC's reputation. The year 1976 merits a separate chapter in Etheridge's history because of events that showed the agency at its best but ironically contributed to damaging it in the eyes of the public. For the CDC, America's Bicentennial was a momentous year. On the occasion of its 200th birthday, the country that had conquered polio, walked on the moon, and had stood as a bulwark against tyranny had also just recently retreated from Vietnam and found itself caught in the grip of economic hardship that baffled its best minds and sapped its morale. Although America's post-war confidence waned generally, the CDC's fortunes waxed. Confidence in its ability to deal with population and community health problems at home and abroad had never been higher than it was going into 1976, the year that marked CDC's thirtieth anniversary. David Sencer, MD, MPH, became CDC Director in 1966. Under his administration, the CDC gained new responsibilities by adding functions from other areas of the USPHS and grew in size by adding to its facilities. New buildings were erected on the Clifton Road campus in Atlanta, Georgia, on land donated by Emory University next door and

[161] Ibid. 80-85.

arranged by businessman-philanthropist Robert W. Woodruff (1889-1985). Woodruff, who took the Coca-Cola Company from fledgling bottler to international corporate giant,[162] was Emory University's largest benefactor and a close personal friend of President Dwight D. Eisenhower. Woodruff started prodding his friend "Ike" who in turn ordered the surgeon general to proceed with the planning and execution of the campus design. The buildings were dedicated on September 8, 1960. CDC now had a permanent "home."[163] The outlook for the agency was certainly bright. It had begun, as well, to extend its influence abroad.

In 1966, Sencer committed CDC to the global smallpox eradication effort of the World Health Organization (WHO).[164] This continued the CDC on the path started by Langmuir and the EIS in 1958. Until then, CDC was focused almost entirely on domestic concerns. Fighting disease outbreaks in the states and territories at the start of the Cold War had made Langmuir think about the possibilities of infectious diseases entering the U.S. from abroad. One of the lessons from the Asian flu crisis of 1957 was that the world had become more closely-connected following the Second World War. Rapid advances in transportation and communication meant that there wasn't a place on the globe that was very far away from anywhere else. It had important implications for epidemiologists and anyone else working to prevent the importation and spread of pathogens across borders.

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[162] The Robert W. Woodruff Foundation, <http://www.woodruff.org/biography.html> 11September 2005.
[163] Etheridge 104-113.
[164] Stanley O. Foster and Eugene Gangarosa, "Passing the Epidemiologic Torch from Farr to the World." *American Journal of Epidemiology*, v. 144, no. 8, Supplement: S66.

Drs. Stan Foster and Gene Gangarosa, EIS Chief Officer in 1964-65, described CDC's first efforts overseas in a special supplement article to the American Journal of Epidemiology in this way:

> A 1958 cable from the U.S. Embassy in East Pakistan captures the mundane entrance of the CDC onto the international stage: "CDC offer accepted, want up to 10 epidemiologists."[165]

The East Pakistan[166] scourge was smallpox. Led by Langmuir, the team of EIS officers documented 14,000 cases of smallpox, found prior vaccination by Pakistani public health officials to be effective, and identified non-vaccination as the principal risk factor. Foster and Gangarosa are of the opinion that this seminal effort signaled the expansion of CDC's mission from a domestic to a global one. The experience had caused Langmuir to be concerned about the possibility of smallpox importation into the U.S. He accordingly parceled out smallpox-related assignments to EIS officers. In 1961, he told newly-appointed Chief EIS officer, J. Donald Millar, MD, to "Keep an eye on smallpox around the world. See if you can make any sense of what's happening." This led to the creation of a smallpox surveillance unit at CDC headed by Millar.[167] When Sencer made the decision to commit the CDC to smallpox eradication, the unit had been at work for five years and was ready to provide background to the 50 CDC personnel assigned to the U.S. Agency for International Development (USAID)-funded project starting in West Africa in 1966. In this situation, the Chief EIS Officer had responsibility for moving officers, both "field" and "house," into the service rotation. "Field" officers were assigned to state and municipal health departments while "house" officers were stationed at the CDC

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[165] Ibid.
[166] After 1971, Bangladesh.
[167] Etheridge 188-189.

headquarters in Atlanta. The Field Services Division (FSD), created in 1965, was the primary supervisor of field officers while house officers had supervisors in their own units at CDC. The Chief reported directly to the EPO Director at CDC. When the need arose for officers to combat special outbreaks either at home or abroad, the Chief then went to the FSD and to the unit supervisors to pick the officers to respond. The Chief had direct responsibility for creating the staff to investigate outbreaks that required either more than the usual number of officers or required the immediate movement of officers overseas. The Chief also counseled officers in the field when special problems emerged as with a supervisor, family concerns, or anything else outside the usual parameters of an investigation.

A noteworthy contribution to smallpox eradication came from Dr. William Foege, a 1962 EIS class member and future CDC Director serving as a consultant to the program. Familiar with Nigeria, Foege kept monthly track of smallpox by mapping its progress throughout the eastern region of Nigeria during the January to May epidemic season for both 1966 and 1967. He noticed that cases started to appear near the border with the northern area of Nigeria where smallpox was endemic and spread south. This surveillance activity made Foege ask himself if the first outbreaks were stopped, would the entire epidemic cease. When smallpox struck a town with documented vaccination coverage of greater than 90%, he hit upon the strategy of active surveillance, a search for cases, and containment which "laid the foundation for global smallpox eradication."[168]

Despite the success of the EIS at accomplishing seemingly impossible tasks such as smallpox eradication with WHO, two domestic infectious diseases, one new, one all

[168] Foster and Gangarosa S67.

too familiar, were to vex the agency in the mid-1970s. The CDC under Sencer would have a different and broader mission. It was to put activities dealing with primary prevention "under one roof."[169] A reorganization of the U.S. Public Health Service saw the CDC moved up to a level even with that of the NIH and the Food and Drug Administration (FDA).[170] Although some of its programs were cut, CDC acquired the National Institute of Occupational Safety and Health (NIOSH) along with a branch to combat lead-based paint poisoning, the national quarantine program from Washington DC, and the urban rodent control program. These added to CDC's stature, though NIOSH was a difficult fit. Its constituency, labor, was different from CDC's which worked with state health departments. The other two programs, lead paint and rat control, opened the door to work with environmental health issues with which CDC was familiar. As well, Sencer created a Bureau of Health Education.[171] CDC seemed to be doing everything right.

The Legionnaires' Disease outbreak in Philadelphia at an American Legion convention in August 1976 was a very public and highly contentious investigation. Although the mystery of the illness's origin and nature was solved by CDC, federal and state health officials ultimately argued over who would receive credit and who would receive blame for its outcome. Some in the media claimed that CDC ignored toxins in favor of biological causes.[172] In reality CDC did not favor any one investigative strategy to the detriment of others. It was difficult, however, to refute charges of neglect with the

[169] Etheridge 226.
[170] Ibid. 229.
[171] Ibid. 230-233.
[172] Even the EIS officer-turned-journalist, Lawrence Altman of the NY Times, challenged CDC in his column. He published his own epidemic curve on the Legionnaires' outbreak based on the theory that nickel poisoning was the cause. Ibid. 260.

media expecting quick action and suspecting laxness to be the reason why the Legionnaires' investigation remained stubbornly open. Congressman John Murphy scheduled hearings to probe deeper into the accuracy of the charges. Despite pointing out how difficult it can be to increase our medical and scientific knowledge, Murphy's conclusion was that CDC's effort was "botched up."[173] Criticism was also leveled by Pennsylvania's secretary of public health, Dr. Leonard Bachman. He complained that the disease had become a media event and that CDC had given "too much help" during the Philadelphia outbreak.[174] The CDC was under fire as never before.

The increased criticism came at a time when the nation's health officials were concerned, once again, with influenza. An outbreak at the U.S. Army training base at Fort Dix, New Jersey was discovered to be swine flu. This was especially worrisome because the 1918-19 pandemic that killed almost a half million Americans was thought, in 1976, to have been swine flu. (In 2005, it is believed that avian, or "bird," origin is just as likely.) Health officials met to decide what to do. Despite the fear that a killer flu inspires, there appeared to be time to develop a vaccine. The CDC made plans to act because, as Etheridge describes it, "good preventive medicine demanded action."[175] There was not, however, agreement about what that action should be. Some advocated stockpiling the vaccine in case it was needed. Others, including Sencer, thought it should be developed and then used immediately. CDC's recommendation would be to "make grants to the states to purchase vaccines and immunize the [general] population at risk, using the resources of both the public and private sector." The country's top political and

[173] Ibid. 261.
[174] Ibid. 258.
[175] Ibid. 250.

health leaders decided to approve spending $135 million to develop a vaccine and immunize the nation's citizens.

The vaccine program, however, was plagued with problems from the start. Because of adverse reactions from test subjects, the American Insurance Association decided not to insure the vaccine manufacturers against liability, an ominous sign.[176] Sencer intervened with the Secretary of HEW to cover any damage awards stemming from the vaccination program. Without that guarantee, no vaccine would have been produced.

After fits and starts, the vaccination program began on October 1. CDC had its surveillance capability focused to detect any unusual occurrences that might be associated with the vaccine. Six weeks into the program, the first cases of Guillain-Barré syndrome (GBS)[177] surfaced and "a red flag went up in surveillance."[178] After much consultation with surveillance experts, including the now-retired Alex Langmuir, the CDC was ready to say that GBS was not a problem for the program. CDC epidemiologist, Dr. Lawrence Schonberger, however, was not entirely convinced. Re-running the data that had been reported,[179] he found a connection between the vaccine and GBS. As a result, the program was stopped, "temporarily," on December 16 and never resumed. It was eventually determined by CDC that any cases of GBS occurring within 6-8 weeks in people who had received the swine flu shots could be associated with

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[176] Ibid. 256-257.
[177] Sometimes called "French polio," the rare GBS causes paralysis that usually goes away but is occasionally fatal due to respiratory distress. It generally occurs in the absence of any other illness. Garrett *The Coming Plague* 180.
[178] Etheridge 263.
[179] By December 31, 1976, 257 cases of GBS were reported in people having received the flu shots. Six had died. Garrett *The Coming Plague* 181.

the vaccination program and entitled to compensation.[180] Although CDC's epidemiologists had tracked down the problem, the vaccination campaign was halted. The failure of the CDC swine flu program affected the relationship of public health to Congress and the general public for years to come.

The media which had praised CDC's efforts in the '50s and '60s now became openly skeptical of its findings. When Drs. Joseph McDade and Charles Shepard over the Christmas holiday season discovered the bacterium that caused the Legionnaires' disease, it was a triumph for the CDC and its laboratories.[181] Though the Legionnaires' investigation must be ranked as an impressive achievement, the CDC could not counter the negative publicity nor prevent the accompanying political fallout. The fact that the CDC in five months of strenuous effort discovered a whole new family of bacteria, *Legionella pneumophilia*, solved two previous outbreaks due to that bacteria in 1966 and 1968, and established new laboratory technical standards for uncovering similar outbreaks was ignored by Washington political leaders.[182] As Etheridge writes, the CDC "had lost its innocence." In the wake of Vietnam and Watergate the CDC, along with nearly all government agencies, was to receive more scrutiny and less unquestioned trust. Being scientific and to have had so many triumphs were not enough for it to be "above suspicion" any longer.[183] When the Carter administration took office in January 1977, HEW Secretary Joseph Califano publicly fired Sencer. Someone had to pay for the swine

[180] Nathanson and Alexander S37.
[181] Ibid. 184-186.
[182] A notable exception was Senator Edward Kennedy (D-Mass.) who after conducting and investigation in the affair expressed the opinion that CDC deserved a "Nobel prize." Etheridge 275.
[183] Ibid. 278

flu fiasco and that person was the man whose skillful administration had made the CDC a public health force both at home and abroad.

Bill Foege, chosen to succeed Sencer, found Secretary Califano a difficult person to please. Foege spent a lot of time in Washington responding to Califano's demands. Things were different for CDC on Capitol Hill and Foege was unused to the political infighting and the process of lobbying. Budget money was harder to come by and that hurt existing programs. Thoughts turned to making do with less. When the Reagan administration took office in 1981, it was clear that everything CDC did would have to be fiscally justified and staunchly defended. Though not good at doing so, public health, in general, needed to promote itself more than ever as it faced nationwide retrenchment.[184] NIOSH also presented a problem to Foege that was perhaps a symbol of how much change there had been in the society at large.

It became necessary to recognize that NIOSH's pro-labor stance had affected its science in at least one high-profile instance. The Institute's report on beryllium exposure and its threat to worker health was refuted by an expert panel.[185] NIOSH, Foege recognized, needed to be managed more closely. That meant a move to Atlanta. It would not be an easy transition. As longtime CDC official William Watson put it when recalling the Venereal Disease Division's move from Washington to Atlanta, "When the surgeon general made [that] decision, we were unhappy, just as the NIOSH people were unhappy, but in effect, we saluted and went on and did it." As Etheridge puts it, people were more inclined in 1981 to resist the changes and to fight them through their union

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[184] Fee, Elizabeth, "History and Development of Public Health," *Principles of Public Health Practice,* 2nd ed.; (Clifton Park, New York: Delmar Learning , 2003) 25-27.
[185] Etheridge 316.

representatives.[186] The nation as a whole had changed as a result of the social activism of the 1960s and 1970s. Political differences hardened and the electorate became polarized. When the AIDS (acquired immunodeficiency syndrome) virus was recognized in June 1981, the CDC was ill-prepared to stop its spread. The cultural and political climate was not receptive to arguments that a disease affecting sub-cultures on the margins of society, homosexuals and intravenous drug users, should receive the funding necessary to stop it.[187]

By the time the major problems of 1976 and 1977 surfaced, Alex Langmuir had retired. In 1970, he left the EIS to become Visiting Professor of Epidemiology at Harvard Medical School. He had left behind an epidemiology program with a reputation for efficiency and effectiveness. CDC's "disease detectives" were, literally, world-famous. Philip Brachman succeeded Langmuir at a time when Americans no longer reflected the faith in government implicit in the "Great Society" programs of the Lyndon Johnson years (1964-1969). With Sencer gone as well, it was harder to secure funding. People now began to question if government not only "could" but "should" be providing security to its citizens. Public health, a communal effort, would not escape scrutiny. The culmination of increasing anti-government sentiment was the election of Ronald Reagan in 1980. Budget cutting became the norm.[188] The EIS classes were smaller and Chief's position was seen as wholly "administrative" and not worth an officer's time that might be better spent in the field.

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[186] Ibid.
[187] In comparing AIDS victims to those of Legionnaires' disease, Representative Henry Waxman (D-Calif.) said, "What society judged was not the severity of the disease but the social acceptability of the individuals affected with it." Ibid. 329.
[188] All health budgets were cut; those for prevention by 25 percent. Etheridge 319.

It is within this context that the EIS Chiefs operated both under the man who created the role, Alexander Langmuir, and his successors in the Epidemiology Program Office. Their impressions, as well as the course of their careers, reflect CDC internal politics, the influence of Langmuir, effects of disease outbreaks both domestic and foreign, and the social, political, and economic trends in the United States itself from 1951 to the present.

Chapter 4: The Chiefs: 1951 - 1998

" … I'd be glad to speak with you although I cannot imagine why anyone would want to write a master's thesis about the Chief of the EIS."[189] That e-mail message from a former officer should have been daunting but familiarity with the EIS's history and knowledge of how the Chief's role changed over the last 50 years had indicated that even within the EIS, the Chief's full effect was either unknown or underestimated. Anyone skeptical about the importance of the Chief is likely to be so because the changes that can be effected from the position are often subtle and usually dependent on the personality, drive, and vision of the person occupying the office. This chapter will follow the evolution of the position from its inception in 1951 through the late 1990s. The tenure of the current chief (1998 – 2006) and the outlook for the future will be covered in the last chapter. While the officers in training and in the field depended on the Chief's performance, the greatest effect of the position may have been on the dedicated and skilled people who held it.

The narrative is chronological. It is sub-divided by the terms of the Directors of Epidemiology at the CDC.[190] The first period was that of Alexander D. Langmuir, M.D., encompassing the early days with all its excitement and uncertainty (1951 – 1970). The second important period was the leadership of Philip Brachman, M.D. (1970 - 1983), which was marked by the diminution of the Chief's role and the trend away from appointing experienced EIS officers to the position in an era of limited budgets as well as

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[189] Richard C. Dicker, rdicker@cdc.gov "Re: Chief EIS Officer," 20 December 2005. Personal e-mail (20 December 2005).

[190] It is important to note, however, that within their tenures there were sometimes significant changes.

a change in the guiding philosophy. The next stage began with the appointment of Carl Tyler, M.D. and the creation of "functional but unofficial Chiefs." The final and current stage under consideration commenced with the appointment of Stephen B. Thacker, M.D., M.Sc., as head of the Epidemiology Program Office (EPO) in 1989.

Any history of the Chief EIS Officer must begin with the person who created the role, Alex Langmuir. As he began to staff the Epidemic Intelligence Service (EIS), Langmuir knew that the process of a disease outbreak investigation would be wholly dependent on the quality of the investigator. He believed strongly in "shoe-leather" epidemiology; the investigating officer must go to the site and ask questions and collect data himself.[191] For reasons of data integrity, it would not be enough to rely on others to do so. In order to train people to the standard he desired and envisioned, he would need to direct most of the budget to the incoming officers. To make the most of his small budget, he would have to assemble a small but competent and well-motivated staff to manage it. One of the positions he created was that of the EIS Chief Officer. The purpose of the position was to assist the recruitment of good prospects, develop their investigation skill through training and experience, and also to help maintain them in the field.[192] In the course of fulfilling the aforementioned duties, each of the chiefs dealt with one or two different issues that dominated their tenures. The evolution of Chief's role moved in step with changes in the EIS itself.

The role of the Chief may be understood to have gone through a "life cycle" similar to that of any organizational entity. In the beginning when Langmuir created the position, everything was new. The Chief had to forge a relationship with the boss above

[191] Alexander D. Langmuir, "The Langmuir Tradition," interview by Suzanne Hewitt, *EIS Bulletin June 1991*, 1-3.
[192] Conrad, Interview with the author, 5 March 2005.

and the officers in the Atlanta headquarters branches, and in the "field," (state health departments), who were at the same professional level. The role grew in importance as the program grew. This meant that the Chief was there when important decisions were made. A dozen years after its founding, however, Langmuir, pressed to satisfy two talented protégés, separated the EPO into two branches, which changed the relationship of the EIS Chief Officer to both Langmuir and the rest of the EIS. The Chief's role became more complex from that time on as the staff grew. Even as time went on, however, the position was still effective, especially if one was an officer in the field. The position itself was held by some of the more experienced people that had ever entered the EIS. It was also, for a time, a purely administrative job with many of the professional aspects, such as writing the *EIS Bulletin*, editing the *Morbidity and Mortality Weekly Report* (MMWR) etc. having been assumed by the Director of the Bureau of Epidemiology (precursor to EPO). It also served as a marker for how the makeup of the EIS classes was evolving.

As women joined the EIS in greater numbers in the 1980s,[193] it was perhaps inevitable that its first woman Chief would soon follow. Polly Marchbanks was a non-physician R.N., Ph.D., M.P.H., who brought a perspective to the Chief's role that challenged the physicians' rules about pay and recruitment. Her tenure marked the advancement of the Ph.D. in the ranks of epidemiologists as EIS assignments at CDC were increasingly in chronic disease branches. Her performance as chief also reflected the personal qualities that were important to her success.

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[193] There were 11 women officers in the 1950s, only 4 in the 1960s, and then a jump to 44 in the 1970s. The decade of the '80s saw 219 women officers serving in the EIS with another 399 in the 1990s. Women currently make up 65% of the EIS classes. Information provided by the Office of Workforce and Career Development (OWCD) at the U.S. Centers for Disease Control and Prevention, 2006.

She was followed in the job by a woman physician with a completely different point of view on the very crucial issue of equal pay for equal work; the conflict around that issue was reflective of a trend in the society at large except that it was about professional standing and not about gender. This is just one example of how the Chiefs' tenures could reflect what was happening in the broader society as well as in response to changing program emphases.

If Langmuir shaped and guided the EIS as almost a kind of priesthood in its early years, his hand-picked Chiefs, for the most part, worshipped at the same altar. Each of the officers who had served under him had the greatest respect for Langmuir and commented on how much that experience influenced their later careers, though not all of them relished the job. When he retired in 1970, it marked a change in budgets and program emphasis, the result of which was that some of the Chief's responsibilities were assumed by the Director of the Bureau of Epidemiology while others were assigned to clerical staff. The Chief became a "coordinator." Other changes occurred when Marchbanks took the position in 1991 and started emphasizing the Ph.D.'s and their equality with the physicians although some of the changes she advocated did not survive her departure.

Despite the skill and experience of the people occupying the role, there are aspects of all organizations' cultures that are resistant to change, even though all felt they must try to keep the best while still working to improve the program. When asked what he expected when he took the job in 1998, current Chief, Douglas Hamilton, M.D., Ph.D., said, "The program was well-established and was run by well-qualified people. I saw that my job would be to keep things running. I recognized [however] that there is a certain

amount of inertia in any organization and it's important to try to overcome that."[194] There were officers who, while not designated "Chief," could be considered "functional chiefs" and who helped define the position as it is in 2006.[195] The performance of capable field station supervisors such as Tom Chin (EIS '54) showed fledgling Chiefs how operatives in the field might be managed. The position could also be a springboard into other areas and more than one Chief described how the experience opened other doors for them in the world of public health. The Chief's role, as that of the EIS as a whole, was also influenced by what went on in the wider political and social world.

When the doctor draft made physicians liable for military service, Langmuir, who was always alert to opportunities, sought and received permission to offer EIS service as an alternative. In this way, he was able to fill the available officer positions with quality recruits. He was convinced that this was the training program's lifeblood and so was always scrupulous about the paperwork and procedures related to the officers' Selective Service status and charged his Chiefs with monitoring it.[196] Langmuir also used the threat of "germ warfare" to help grow both the EIS and the CDC. In a way that was controversial for the time, and is still questioned in some quarters today, Langmuir took advantage of the possibility for biological attack to grow the EIS by making it seem likely. A case can be made, however, for justifying his actions though there is some evidence to suggest that this damaged the cause of public health in lasting ways. Money allocated to traditional public health functions such as local disease control, staff training, and public education were redirected into biological warfare defense. The lack of money

[194] Douglas H. Hamilton, Interview with the author, 29 December 2005.
[195] Stephen B. Thacker, Interview with the author, 18 November 2005.
[196] "If the doctor draft collapsed, so would the EIS." J. Donald Millar, Interview with the author, 16 September 2005.

was reflected in the large number of public health positions at all levels that went unfilled, thus reducing public health effectiveness.[197] Almost no one would disagree, however, that the system of surveillance, epidemiology training, and response mechanisms he put in place would not likely have been established otherwise.

For the EIS, the 1950s were years of growth, development, and the struggle for credibility. Its first class consisted of 23 officers: 22 physicians and one sanitary engineer. For the CDC to provide meaningful and effective epidemiological aid to the states, it needed to train "crackerjack" epidemiologists who could respond quickly to a host of public health emergencies in peacetime as well as in war. The first training program was for eight weeks and the instructors were faculty members from Langmuir's Johns Hopkins University days, consulting epidemiologists already at CDC, and the U.S. Public Health Service (USPHS).[198] The courses focused on epidemiology, bio-statistics, and public health administration as applied to communicable disease control. The first years of the program were structured to address infectious disease with assignments at headquarters and in a few state and local health departments. As Langmuir intended, the EIS offered physicians obligated to serve in the military an alternative to being drafted.[199] In the process it allowed young doctors (they were mostly physicians at this time) to gain first-hand knowledge of disease investigation and outbreak response while serving their country in the hope that some of them would be inspired and intrigued enough by the

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[197] Elizabeth Fee and Theodore M. Brown, "Preemptive Biopreparedness: Can We Learn Anything from History?" *American Journal of Public Health*, 5;91: 721-26.
[198] Valerie R. Johnson, "The 1950s: From the Outset, CDC's Disease Detectives Were Trained to Meet Any Epidemic Challenge," *EIS Bulletin Fall 2000*, 1.
[199] Under the "doctor draft," approximately 30,000 health professionals were called for induction. Most were physicians although osteopaths, dentists, veterinarians, nurses, and other health professionals also were conscripted. Henry Mohr, "Will America Be Able to Treat Its Battlefield Wounded?" *Heritage Backgrounder No. 398*, December 18, 1984.

experience to want to stay in public health.[200] The most significant health events in which the EIS participated during the 1950s were nationwide malaria control and polio surveillance before and during the administration of the Salk vaccine (1955) and the threat of Asian flu (1957-58).[201] Among the Chief EISOs of the 1950s were Donald A. ("D.A.") Henderson, M.D., M.P.H.,[202] (EIS '55) later Dean of the School of Hygiene and Public Health at Johns Hopkins University (1977-90) and Deputy Assistant Secretary and Senior Science Advisor of the U.S. Department of Health and Human Services (1993 - 95) and James O. Mason, M.D., Dr.PH., (EIS '59) later Director of the CDC (1983-89) and Assistant Secretary for U.S. Dept. of Health and Human Services (1989-92).

In training, Langmuir emphasized the point that the "patient" was the community and not an individual. The program would turn out "shoe leather" epidemiologists who would conduct face-to-face interviews, trace suspect food or water to its origins, and collect samples for laboratory analysis. The phrase became such a well-known expression of how the EIS operated, that its symbol became the sole of a shoe with a worn hole in the middle. Langmuir was a great believer in gathering one's own data and "learning by doing." Stories were often repeated about officers "reading furiously about the putative disease in question while in transit heading toward the epidemic."[203] Langmuir was confident that bright energetic people properly motivated and supervised would be resourceful enough to produce good results. Dr. Philip Brachman (EIS '54), future head of EPO, remembered being informed while attending a banquet that he would be going to Louisiana to investigate what might be a human case of anthrax. "So I left the banquet,

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[200] Johnson 1, 6-12.
[201] Etheridge 67-86.
[202] Dr. Henderson is currently the only EIS officer to serve as Chief twice, in non-consecutive years, 1955-56 and 1960-61.
[203] Schaffner and LaForce S17-S19.

went to the library to read about anthrax, packed my bag, and took the next plane to New Orleans."[204] Langmuir also made sure that officers in the field would be properly "mentored" and supported by the office in Atlanta. Thus the position of the Chief of the EIS was in place to assist the work of officers in the field. The other duties included recruiting, organizing the annual spring conference, selecting officers, selecting supervisors, assisting in assignment selection, and structuring training under the guidance of Langmuir while participating in field investigations themselves.[205]

The first chief of the EIS, Charles ("Mickey") LeMaistre (EIS '51), was witness to this new type of epidemiology. Langmuir felt it was not enough to assess and then stop an outbreak. "While solving the local problem, officers were encouraged to use the investigation to address issues of disease causation that might have national implications. Langmuir wanted the investigation report to conclude with recommendations for prevention, to return with the 'intelligence.'"[206] In answering a request from the city health department in Tuba City, Arizona, LeMaistre saw how being on the spot to collect the data would allow the officers to see for themselves what local conditions led to the outbreak.[207] In this way, recommendations for prevention and control had the force of authenticity. Finding that hepatitis had infected 397 of the 419 children who attended the school, the two EIS officers investigated the school, the city, and a nearby Indian village. The plumbing was found to be at fault and recommendations were made to correct the problem. Instead of "wrapping it up" at that point, the officers made another recommendation for improving community health. In the course of their inquiries they

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[204] Ibid.
[205] Conrad, Interview with author, 22 April 2005.
[206] Schaffner and LaForce, p. S19.
[207] This cannot be overemphasized. The great Louis Pasteur once said, "The microbe is nothing; the terrain everything." Quoted in Garrett, *Coming Plague*, p. 192.

had observed the treatment of tuberculosis in the local hospital. This led to their recommendation to the Chief for assistance in bolstering the effectiveness of the hospital TB program. A group from the U.S. Public Health Service was assigned to the task of improving the hospital's treatment of tuberculosis. As LeMaistre observed, containment was accomplished, the hepatitis patients recovered with "very few residuals [effects]," and a "new format for health" was established within the Navajo tribe.[208] LeMaistre was officially the Assistant to the Chief, at the time Langmuir led the Epidemiology Office. He was, however, the Chief Officer, almost a "first among equals." It was clear that more was expected out of the Chief.

The second Chief, Ira Myers (EIS '51), was an Alabama native interning in a Marine Hospital in Seattle, Washington when Alex Langmuir arrived during a recruiting swing through the northwest. Langmuir made the proposed service sound exciting and Myers applied. He recalled that one of his jobs as Chief was to deliver a presentation to the Surgeon General's Staff Conference in Washington, DC. After explaining the purpose and activities of the EIS, Myers announced he would demonstrate what he meant by "shoe leather" epidemiology. Taking off one of his shoes he said, "This shoe has been used during my internship in the Marine Hospital and I've worn it through in the field." He then poked a finger through a hole in the sole of the shoe, which provoked no small amount of mirth. "I thought the Conference was about to break up [laughing]!"[209]

Among the many challenges facing the Chiefs of the 1950s was the belief on the part of many physicians that public health was a bad place to be. The political climate of the 1950s made support of public health difficult. The prevailing view was that health

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[208] Ripples in the Waters of Epidemiology. Produced by Lou Boviero. Two hours. CDC Broadcasting. 2001. One videocassette.
[209] Ibid.

depended on medical care. Preventive medicine was neglected.[210] Langmuir hoped that by exposing a lot of people (relatively) to public health, a number of them would be inspired to stay. Among those must be counted Ira Myers who, for twenty years, was state epidemiologist and health officer for Alabama before finishing his career in private practice.[211] As Chief, Myers had close contact with Langmuir and was able to observe him. He drew inspiration from the way his boss worked. "Alex was one of those individuals that was a delight because he wanted something spectacular to happen every day!" The experience of being Chief and being in proximity to important people in public health deeply impressed the younger man. "As I think back on it, to sit in a conference room where Jonas Salk and Albert Sabin were sitting across from each other trying to decide whose vaccine was going to be first, is something that stays with your memory forever."[212]

In the early years, public health was not where bright, young physicians wanted to be. Upon joining the two-year EIS program, Brachman remembered a friend's mother lamenting the interval of "intellectual neglect" that might affect his career.[213] Despite such adverse beliefs, the program thrived. EIS Chief Jim Mason made a significant mark as an investigator when he demonstrated the link between oysters and hepatitis A. The results brought attention to the pollution by sewage of urban and rural water supplies.[214]

The EIS spring conference of 1955 broke up on the first day when the need from the field was for epidemiologists to conduct surveillance of polio vaccine complications

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[210] Fee, "History and Development of Public Health," p. 23-25.
[211] Epidemic Intelligence Service 2002-2003 Directory, (Washington, D.C.: Government Printing Office, 2004), p. 375.
[212] Ripples in the Waters of Epidemiology.
[213] Philip Brachman, "Phil Brachman (EIS '54)," interview by Valerie R. Johnson, *EIS Bulletin Fall 2000*, p. 8.
[214] William Marine, "Bill Marine (EIS '59)," interview by Valerie R. Johnson, *EIS Bulletin Fall 2000*, p. 10.

in the midst of the first national vaccination program. The incoming class would be unique in EIS history as the class that received its first field experience before its training. A member of that class, D.A. Henderson, Chief Officer in 1955, remembered that it was August before the class re-assembled in Atlanta.[215] Henderson, the only Chief to serve twice (1955-1956 and 1960-1961), credits extracurricular activities, at Oberlin College in Ohio, with developing the organizational management skills that he employed as Chief. "I worked on the yearbook. It was a big deal at Oberlin…They even paid their editors! I was editor in my junior year and learned to work with a lot of people, mobilizing staff. I wrote a lot for the yearbook." In his senior year, he started a local college radio station, WOBE (today, 91.5 FM), which also gave him further experience managing a staff and budgets.[216] He was recruited into the EIS by Ira Myers as an alternative to military service. Henderson had looked at the prospect of "a tedious two years in the Army giving physicals" and jumped at the chance to join the EIS. He sought the job of Assistant Chief though warned against it by the previous assistant, Heinz Eichenwald (EIS '53). The combination of "medicine and management" appealed to Henderson who applied for the position and secured it. He described Langmuir as a "fantastic teacher" noting that all the officer-trainees were "totally absorbed" by his lectures.[217]

While most of that year's class was away dealing with polio surveillance as a result of the Cutter Vaccine Laboratories Incident,[218] Henderson did his share of outbreak investigations. Returning from a diphtheria investigation in Alabama, he discovered Myers packing his bags. Assuming the position of Administrative Officer in the Alabama

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[215] Donald A. Henderson, M.P.H., M.D., telephone interview by Mark Pendergrast, July 8, 2004.
[216] Ibid.
[217] Ibid.
[218] See Chapter Two.

Health Department, Myers was leaving and now *he*, Henderson, was to be Chief. Myers told a protesting Henderson, who claimed he didn't know the nuances of the job, "That's OK; you'll figure it out."[219]

Henderson, indeed, "figured it out." He found working with Langmuir exciting. He performed the usual duties of organizing the spring conference in 1956, performed recruiting and screening of candidates, and learned a lot about surveillance from Langmuir. The post-EIS program appealed to Henderson as it did to others. The salary was "good money" for the time at $6,000 to $7,000 a year. Signing up for three years after the two-year EIS course meant that officers were one-fourth the way toward performing 20 years' service in the USPHS, the minimum for retirement.

He recalled the summer of 1957 as the time that Langmuir decided to take a summer vacation, which he had denied himself since coming to CDC in 1949. Recalling Langmuir's view that bright people would learn very quickly to handle unfamiliar situations, Henderson was left to deal with some problems on his own. "Alex's standard bet was a bottle of whiskey. If I needed to call him [during Langmuir's vacation], I would have to buy him a bottle. If I made it through the summer without calling him, he would buy me the bottle. I won the bottle that year."[220]

During his second tenure as Chief (1960-1961), Henderson noted that officer retention rates improved by giving them overseas assignments. At a time when most officers were leaving to enter academe, sending them on overseas assignments seemed to pique many officers' interests causing them to stay in public health. "The experience of

[219] Henderson, Interview with Pendergrast, July 2005.
[220] Ibid.

seeing how other countries funded and managed their public health efforts made officers want to compare it to the U.S. method."[221]

A lifelong interest in surveillance was stimulated by seeing statistician Bob Serfling's tracking of the 1957 Asian influenza outbreak. "He found about 75,000 excess deaths that year by plotting the "epi" curve of deaths and showing how the outbreak of flu could be observed." During a single-officer epidemic assistance investigation, referred to as "Epi-Aid," of botulinum toxin in Argentina in the late 1950s, Henderson was first exposed to an outbreak of smallpox. The Argentine health minister granted Henderson's request to fly to the north of the country where an outbreak was taking place. Henderson was later involved in managing the American share of the global effort to eradicate smallpox. His tenure as Chief sharpened his administrative skills and helped him to achieve such a far-reaching public health effect.

Another EIS Chief, H. Bruce Dull, M.D., S.M.Hyg., (EIS '57) was there when the CDC took its first major steps into the field of international Epi-Aid in response to a request from USAID in 1958 to investigate smallpox and cholera in West Pakistan. Dull recalled learning something very important that colored his view of field work and his own role in teaching and assigning officers as Chief. While making rounds in a hospital to check on reporting of smallpox cases, Dull was struck by an encounter with the local physician in charge. In explaining his agitation to the EIS epidemiologists, he said, "You may notice that I'm hostile … the reason I am, is not that you are here helping us because we obviously need your help, but that we have to ask for it." The memory of that physician's anger and embarrassment at his country's failure would remind Dull that the pride as well as the skills of local health officials needed to be respected anytime EIS

[221] Ibid.

officers performed outbreak investigations.[222] Dull would also be Assistant Chief during the 1957 Asian influenza outbreak and would participate in field vaccine trials conducted at the federal penitentiary in Atlanta on which he reported to the EIS community at large through the EIS Bulletin, which was his responsibility as Chief to edit.[223] He described the study as "the most contributory of all that were done" as it proved the vaccine 80% to 90% successful in the first round and only slightly less so in the second.[224]

In addition to the duties mentioned above, the Chiefs edited the EIS newsletter, *The EIS Bulletin*. This publication was distributed to the EIS officers, staff, and alumni.[225] The 1950s issues were written in the style of a memorandum ("To: ..." "From: …" "Subject: …") and, in fact, billed itself as such. "A monthly information memorandum prepared primarily for the E.I.S. officers."

The *Bulletins* contained more information that was written in a style livelier than would have been expected of people with so many other responsibilities as the EIS Chief. There were officer-contributed book reviews; a listing of manuscripts cleared for publication; notices of lectures & presentations; comments on the monthly reports, their progress, and quality ("Monthly reports are coming in on time and they are, by and large, excellent…");[226] feature articles ("An EIS Batting Average" about the number of officers electing to stay in public health);[227] and a listing of the Epidemic-Aid calls since the last *Bulletin*. The brief outbreak investigation notices included the situation "Diarrhea of the Newborn," the location "Jewell, Iowa" and the date, "September 6, 1955." The notice

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[222] "Ripples in the Waters," 2001
[223] H. Bruce Dull, "Laboratory Problems," *EIS Bulletin July 18, 1958*, 3.
[224] Etheridge, p. 84
[225] There was also limited distribution to CDC senior managers.
[226] Donald A. Henderson, *EIS Bulletin October 14*, 1955, 7.
[227] William A. Neill, "An EIS Batting Average," *EIS Bulletin July 1956*, 6.

listed the investigation team members and their professional specialties, "Dr. Fred Payne; Engineer" and a reference to the date of the Aid Memo, "October 17, 1955," from which the information was excerpted.[228] There were articles intended to reinforce training and to keep officers abreast of new scientific developments as in "How Long Will it Take to do How Much?" offering an approximation of the time needed to perform such things as taking blood samples ("14.1 per hour.")[229]

A reading of the *Bulletins* seems to confirm the idea that the Chief needed to be on top of nearly everything that almost everyone in the EIS was doing.[230] This extended to alumni as well as currently serving officers. When the first EIS Chief, Charles LeMaistre, had a building at the M.C. Anderson Cancer Center at the University of Texas named after him in 1997, the news appeared in the *Bulletin*.[231] The *Bulletin* also ran its share of humorous articles from D.A. Henderson's "Administrative Definitions" such as: "FURTHER SUBSTANTIATION DATA NECESSARY" Translation: "We've lost your stuff; send it again,"[232] in a "send-up" of typical bureaucratic language through the pictorial spread on the "kidnapping" and eventual "'round-the-world" travels of Doug Hamilton's "Gumby" plastic figure, affectionately mocking the sudden international assignment that could be the lot of each officer.[233] There was also a "Positions Available" column in each issue. As the EIS grew and the recognition that epidemiology was important grew with it, the number of "job ads" increased for positions both in the states and in academe. The *EIS Bulletin* reflected the fact that the Chiefs were very close to all

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[228] EIS Bulletin December 15, 1955, p. 13.
[229] Neill, "How long will it take to do how much?" *EIS Bulletin January 15, 1957*, 3.
[230] The Chiefs continued to edit the Bulletin until Brachman was appointed head of EPO in 1970 upon Langmuir's retirement. He then began to edit it himself starting in 1972 with the departure of then-Chief, Douglas Huber, renaming it "The Director's Monthly Resume" in August 1973.
[231] "Happenings," *EIS Bulletin Summer 1997*, 13.
[232] Henderson, *EIS Bulletin January 16, 1956*, 13.
[233] Gwen Hammer, "Gumby Goes Global," *EIS Bulletin Spring 2001*, 14-15.

the action in the 1950s as the EIS and the CDC established their credibility. The changes in the EIS and the Chief's role can also be observed in the pages of the *Bulletin*.[234]

The EIS of the 1960s has been referred to as a place where many of the very "best and brightest" in twentieth century public health began their careers.[235] The Sixties is remembered principally for the Vietnam War that ultimately divided the nation. Before that, however, it was a time when young people, inspired by a young president, John F. Kennedy, became imbued with a spirit of service to their nation. The Peace Corps was born out of the typically American desire to spread prosperity, confer education, and alleviate sickness[236] in the "Third World." At the time, physicians were subject to mandatory service through the military draft (Selective Service). The decision by some to opt for training in field epidemiology in the EIS instead of battlefield medicine resulted in a positive effect on public health both home and abroad. These officers, most just out of residency programs, would find their orientation changed decisively from the "single, sick patient to the well-being of communities worldwide."[237] The first Chief of the decade was Don Millar (EIS '61). During his tenure the nature of the role, which was seen by some to be that of Langmuir's "valet,"[238] started to change.

Echoing the sentiment of almost all the interviewed officers, J. Donald Millar, M.D., D.T.P.H., said about his experience, "I considered it an incredible blessing to be with EIS. If I had sat down and drafted anything by way of a career, it would not have

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[234] The EIS Bulletin is no longer published as of January 2006, a victim of budget cuts.
[235] Rachel J. Wilson, "The EIS in the 1960s: EISOs Serve Their Country and Improve Health around the Globe," *EIS Bulletin Winter 200*1, 1, 6-9 +.
[236] J. Lyle Conrad, EIS Chief in 1965, was a Peace Corps "veteran" when he came to the EIS. Conrad, J. Lyle, M.D., M.P.H., Interview with author, 26 April 2005.
[237] Ibid.
[238] Etheridge, p. 188.

been as interesting and fulfilling as what I got at CDC."[239] He had come to the EIS almost as an afterthought. It was a former EIS officer, Luther Giddings, (EIS '56) who asked Millar to consider joining the elite epidemiology program in the spring of 1961, seemingly too late for that year's class. He had been considering which service to enter after he received his notice to report for a pre-induction physical while interning in obstetrics at the University of Utah. Taking Giddings's advice to call Langmuir, Millar was able to speak directly to him. Langmuir said that Millar was in luck as someone had just withdrawn from the program the day before so there was an opening and could he, Millar, fly to Atlanta the next day. He was not able to do so but convinced Langmuir to query references at Utah, which he did to his evident satisfaction and Millar was accepted.

Unlike most of the Chiefs, Millar actively sought the job. In his match interview, Millar needed to pick a headquarters assignment (Atlanta) and a state assignment. (He chose Kansas.) The job he really wanted was Assistant Chief. "I actively sought the position. At the [annual] picnic, I told people I wanted it."[240] Having lobbied successfully, Millar got the assignment as Assistant Chief to D.A. Henderson, in his second stint as Chief, in the first year and as Chief the second.

Langmuir had written a position description that outlined all the responsibilities but left the procedures up to the Chiefs themselves. This was consistent with Langmuir's belief that bright and energetic people needed little direction and could be relied upon to exhibit resourcefulness appropriate to the situation.[241] Anything else they could figure out for themselves. Recruiting was a very important part of the job and, according to Millar,

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[239] Millar, Interview with author, 16 September 2005.
[240] Ibid.
[241] Schaffner and LaForce S19.

was handled carefully. The inflow of officers into the program at this time was dependent on its being an alternative to the military draft. Langmuir was scrupulous in following the guidelines laid down by the Selective Service law. Langmuir wanted the Chief to see to it that no officer was stationed anywhere near his draft board. Millar said that the purpose was to clearly show that EIS service was an assignment, not just a way to avoid the draft and stay close to home. "[Langmuir] was concerned that any perception of program abuse would jeopardize the entire program."[242] Langmuir was also focused on recruiting the best and brightest prospects available. In addition to relying on personal recommendations, Langmuir had an associate in Washington, D.C. who would scour the rosters of USPHS hospitals for likely prospects and forward the information to Atlanta. The Chief, at this point, would follow up by contacting the prospect. One of those recruited and selected by Millar was a young physician working in one of those hospitals on Staten Island, N.Y. named Bill Foege. After serving as a field officer in Colorado, Foege (EIS '62) went on to be pivotal in the smallpox eradication effort, first as an officer in the field, then program director for West Africa, and ultimately became CDC Director (1977-83).[243]

For Millar, there were the usual duties for a Chief: coordinating the training program for new officers and organizing the spring conference. The EIS formed a "wives' club" to assist in those ways and, according to Millar, took pride in their involvement, lending a "family" feeling to the program. "My wife [Joan] handled the catering for events," Millar said.

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[242] Ibid.
[243] "Past CDC Directors/Administrators," <http://www.cdc.gov/about/pastdirectors1.htm> (4 February 2006).

The Chief's role was defined by Langmuir to provide great operational flexibility. As a result, Millar recalled, the Chief was to do "whatever Alex wanted done." For Millar, one of those tasks was representing the CDC EPO at the semi-annual meeting of the Council of State and Territorial Epidemiologists (CSTE). For the young Chief, it was a chance to meet important people in state public health. He also managed to pick up information that proved useful to officers in the field. Millar, for example, knew to tell anyone assigned to work in a specific western state health department that it was necessary to obtain all important and timely decisions from the head of epidemiology *before* lunch, as a drinking problem rendered him ineffective after that time of the day.[244]

That flexibility extended to the outbreak investigations the Chief was required to perform. Millar remembered going to London in 1961 for a smallpox outbreak of some 50 cases with the index case having arrived from Pakistan. This brought him into contact with such luminaries as A.W. Downey, at the time considered the world's leading pox virologist, and Dr. George McDonald of the London School of Hygiene and Tropical Medicine. This last encounter inspired Millar to enroll at the school.[245] Another result of that assignment was Langmuir's telling him, "Keep on eye on smallpox around the world. See if you can make any sense of what's happening."[246] When CDC made the commitment to the smallpox eradication program in 1966, Millar was able to contribute a great store of knowledge about the disease to the CDC/WHO team. "I had come back from that [London outbreak investigation] trip as an expert on smallpox."

Musing on other ways that being Chief was an asset to him professionally, Millar mentioned being the EPO liaison to the American Epidemiology Society where he gave

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[244] Millar, Interview with the author, 16 September 2005.
[245]Ibid. He earned a doctorate in public health from the London School in 1966.
[246] Etheridge 188.

presentations. Working closely with Langmuir, he was able to interact with people in public health at Langmuir's level, which he considered invaluable experience in how public health operated in the U.S. He remembered that for all his toughness and drive, Langmuir was very personable, and very "human." "For example, he kept candy bars in one of his top desk drawers," Millar said. "Whenever Joan would show up with our son, Alex would give Stuart a candy bar and sit him on his knee and make a fuss over him. Alex had lost one of his own [five] children. She was 8 or 9 years old and [had been] mentally retarded. It was because of some kind of accident."[247] Frankly admiring of Langmuir, Millar thought him a brilliant and impressive figure. "Alex had an almost clairvoyant skill in academic epidemiology. It intrigued me that he could look at the development of an epidemic and predict the size. He used stochastic processes;[248] he had learned calculus using slide rules."

During his time as Chief, Millar and the EIS were confronted with two major issues: What would be the EIS role in international health and how should the program approach non-infectious diseases? The answers were to participate internationally using the relationship of the states as a guide and allowing requests to come through USAID and other federal agencies willing to fund them. The commitment to smallpox eradication starting in 1966 helped to establish policies and procedures for international involvement. It was also decided at CDC that non-communicable diseases were to become part of the surveillance and response process. Langmuir himself felt especially committed to work on family planning.[249] By 1967, a group of non-governmental experts in the family

[247] Millar, Interview with author, 16 September 2005.
[248] For a detailed explanation, see Stroup and Smith S29-S33.
[249] Family planning became the life's work of another Chief, Douglas Huber, the first of the post-Langmuir era. Douglas Huber, Interview with the author.

planning field concluded that the 8 EIS officers assigned to evaluate that aspect of public health constituted the largest number of professionals working in that area within the USPHS.[250] There were also the usual battles over politically-charged funding. Millar recalled that Langmuir was very attentive to the problem of funding the program and its officers. It was at these times that Millar found Langmuir to be most resilient. "To all the difficulties we encountered, Alex's response was, 'Well, we'll pick up the pieces in the morning.' It was his favorite phrase."[251]

In assessing the value of the Chief's position to public health, Millar thought that the EIS was the best program of its size in the history of U.S. public health. Because of the Chief's pivotal role in the internal workings of the EIS, Millar said that "you cannot talk about the EIS in the absence of this position." As he made plain in his recounting, the role had a significant effect on Millar's own considerable public health career.[252] The role of the EIS Chief underwent a change, however, that portended its eclipse during the 1970s.

In 1963, Alexander Langmuir created two branches within the EPO: Investigation Branch under Philip Brachman (EIS '54) and Surveillance Branch under D. A. Henderson (EIS '55).[253] As a result of turning over these aspects of the program to his protégés, Langmuir distanced himself somewhat from the officers in the field.[254] As this

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[250] Carl W. Tyler, "Contributions of Alexander D. Langmuir to the Epidemiologic Study of Population Change and Family Planning," *American Journal of Epidemiology*, 144; no. 8 (Supplement), S51.
[251] Millar, Interview with the author.
[252] A consultant in public health today, Millar was a program director of the smallpox eradication effort as well as a former Director of the National Institute of Occupational Safety and Health. In the course of his career in the USPHS, he held a series of senior positions within the CDC. *2002-2003 EIS Directory*, (Washington, DC: U.S. Government Printing Office, 2003) 361.
[253] The branches were actually for bacterial and viral diseases, respectively, as they reflected the specialties of the two former EIS officers. Conrad, Interview with the author, 2 May 2005.
[254] "The experience was never the same after Alex stopped having telephone conferences in his office with the officers in the field." Millar, interview with the author, 16 September 2005.

change occurred, the role of the Chief became even more important to the officers out on assignments. Langmuir's choice in 1964 of Eugene J. Gangarosa, M.S., M.D., (EIS '64) reflected that concern.

Gene Gangarosa's career in public health is that of a "builder of institutions." Knowing that they are only as good as the talent working in them, his role as EIS Chief would be marked by the search for the best people available to staff the EIS. A veteran of World War II, he was involved with the post-war occupation of Italy. It was there that he saw the effects of a devastated public health infrastructure. As the German Army retreated up the Italian Peninsula, it destroyed the roads, bridges, gas and electric lines, and disrupted food and water supplies in order to slow the Allied advance. The city of Naples, where Gangarosa was stationed, was especially hard hit. He saw firsthand what diseases a contaminated public water supply could inflict upon a population. The cause of clean water as a deterrent to diarrheal diseases became his special interest. After the war, he entered the University of Rochester through the G.I. Bill for undergraduate work and stayed to earn his M.D. in 1954. "To be successful as the EIS Chief," he said, "having management experience is key."[255] Along with the creation of the two branches, the emphasis upon management experience in his Chiefs seemed to mark a decisive shift in Langmuir's thinking. His choices for that role made it apparent that the Chief would now need to have experience coming *into* the program, and not just acquire it on the job, as the classes were larger and the responsibilities included overseas response. Gangarosa, therefore, would seem an excellent selection. His background was in academe and he came to the EIS with international experience.

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[255] Eugene J. Gangarosa, M.S., M.D., Interview with the author, 11 April 2005.

Upon completion of his residency at Tripler Army Hospital in Hawaii and his residency at Walter Reed Army Hospital, Gangarosa became Assistant Professor of Medicine & Microbiology at the University of Maryland. While involved with a U. Md. program in Pakistan and Thailand studying cholera, he considered applying to the EIS. Contacting a former classmate, D.A. Henderson, then head of surveillance and a former EIS Chief himself, Gangarosa was interviewed by Alex Langmuir who liked him and made him EIS Chief for a year. Langmuir's instructions were to support officers in the field. In addition to that, he was heavily involved in recruiting. It was here that he showed the ability to pick subordinates and create a functioning staff, a skill that served him well when he later became Dean of American University in Beirut, Lebanon (1978-81), then Director of the master's degree program in public health at Emory University's Department of Community Health (1990-91), and as Director of the International Health Track at the Emory School of Public Health (1991-92).[256] Eager to work in the functional branches of CDC on water-borne disease problems, Gangarosa, however, left his mark on the EIS. As a talent spotter, he was exceptional. His recruits and selections included the future EIS Chiefs J. Lyle Conrad (EIS '65), later head of State Branch for 27 years; Michael Gregg (EIS '66), with whom he worked in Pakistan, was for 21 years the editor of *Morbidity & Mortality Weekly Report*; Bernard Challenor (EIS '65), the first African American EIS Officer; Ralph Henderson (EIS '65), principal in malaria and immunization programs at CDC as well as smallpox eradication; and Alan Hinman (EIS '65), principal in the smallpox eradication campaign.[257] Langmuir reluctantly let him go. EIS's loss was the CDC Enteric Disease Branch's gain. Later, while Dean of American

[256] *2002-2003 EIS Directory*, (Washington, DC: U.S. Government Printing Office, 2003) 233.
[257] Gangarosa, Interview with the author, 12 April 2005.

University in Beirut, Gangarosa continued to "talent-spot" for the CDC.[258] Notable recruits of that time are former EIS officers and current CDC staff Dr. Hani Atrash, Director of Program Development for the National Center on Birth Defects and Developmental Disabilities; Dr. Muin Khoury, Director of the Office of Genomics and Disease Prevention; and Dr. Rima Khabbaz, Director of the National Center for Infectious Diseases.[259] A tireless and energetic advocate for prevention of enteric diseases, Dr. Gangarosa and his wife, Rose, are currently administrating a non-profit foundation the purpose of which is to promote "point-of-use" clean water devices in countries lacking clean water distribution. On the occasion of his retirement from the CDC in 1977, the EIS house publication printed the text of the citation he received when was awarded the CDC Medal of Excellence shortly before. Among the many achievements and contributions noted, including his role as a teacher, was his work furthering the "surveillance and investigative capabilities for enteric diseases" and his insistence upon "epidemiologic relevancy … in the prevention of human disease."[260] Gangarosa is an exemplar of the dedicated and skilled officers who assumed the Chief's role since 1951.

The next Chief was one of those young officers recruited by Gangarosa. Lyle Conrad (EIS '65) came to the program better prepared than most for the role into which he would be drafted. In 1964, Alex Langmuir made a lecture and recruiting trip to his alma mater, Harvard University. While there he met Conrad, a former Peace Corps physician in Nigeria where he was in charge of preventive and curative medicine for 500 Peace Corps volunteers, and current student in epidemiology at the School of Public

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[258] Ibid.
[259] Various pages, http://www.cdc.gov, 4 February 2006
[260] Philip Brachman, "Dr. Gangarosa Retires," *EIS Bulletin August 1977*, 3.

Health. Conrad was inspired to apply to EIS and was eventually assigned to be Assistant Chief at the conclusion of the match program for his incoming EIS class in 1965.[261] Conrad approached the job with an understanding of what it was to be assigned far from home after the sheltered and strictly regulated world of medical training. Having management experience while in the Peace Corps was undoubtedly attractive to Langmuir.[262] By the 1960s, Langmuir had decided who would be an ideal candidate. In describing Langmuir's strategy for recruiting, Conrad said, "He wanted physicians with two years in general medicine or pediatrics. He didn't want people who were 'board certified' because, he believed, they would not be likely to stay in public health as their minds were made up before coming into the EIS. Langmuir did not want surgeons. He also didn't want those who held the Master's in Public Health (MPH) degree because the schools of public health did not teach *field* epidemiology and that was what the EIS did. He also sought laboratorians, statisticians, engineers, and nurses, but few of them joined."[263] Conrad discovered that Tom Chin (EIS '54), a very capable outbreak investigation officer, was an important supervisor in the EIS along with D.A. Henderson, who ran Surveillance Branch, and Philip Brachman, Chief of the Investigation Branch. Chin had responsibility for the Puerto Rico; Anchorage, Alaska; and Phoenix, Arizona field stations as well as the Kansas City station where he was based. His careful supervision and support of his officers in the field served as a model for Conrad and later supervisors charged with managing EIS officers located in states during investigations.[264]

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[261] "Challenor and Hinman got my first choices!" Conrad, Interview with the author.
[262] Gene Gangarosa noted in the recruitment process that Conrad showed "good interactive skills" to go with the Peace Corps management experience. Gangarosa, Interview with the author, 12 April 2005.
[263] Conrad, Interview with author, 2 May 2005.
[264] Ibid. "Field supervising on an outbreak the way ADL wanted it done was difficult and took a lot of time."

At the time Conrad was Chief, the EIS classes had been approximately 30-35 officers in size. Approximately one-third of the officers were assigned to places outside Atlanta, and two-thirds to the headquarters. Once they had been assigned and started to go on outbreak investigations, the potential for conflict with supervisors in the states or the CDC branches was greatest. It was then that the role of the EIS Chief was most important. Langmuir wanted each officer on an outbreak investigation to have someone in Atlanta to "talk them through" the investigation if necessary. Sometimes this would be the disease-specific senior officer while at other times it fell to the Chief EISO, depending upon who was available.[265] Being able to manage the problems was crucial to making the officers' two-year experience a success.

It is worth noting that at this time the EIS was not as well-known or as popular as it is today. Recruitment was still dependent on the specter of the military draft. Langmuir had hoped that the two-year experience would persuade at least some of the EIS officers to make public health their career. The fair and quick resolution of conflicts was important to this process. According to Conrad, some of the problems included assigning one officer to an outbreak when maybe three wanted to go. Another issue was who would be the first author on a paper resulting from an investigation and the determination as to whose investigation it was. There might be conflicts with state or local health officers that would require the diplomatic skill of the Chief to satisfactorily resolve. For many of the officers, the EIS was their first professional job. They would need to be advised as to how to comport themselves when interacting with peers and superiors. They needed to fully understand the relationship of their federal agency with their state counterparts. The Atlanta supervisor was the headquarters person most likely to facilitate that process as

[265] Ibid.

well as intervene when conflicts arose.[266] Langmuir, by this time, was more remote from the officers as Millar suggested was true after the creation of the Investigation and Surveillance branches. By February 1966, 20 additional positions for state-based officers supported by measles control funding necessitated a second round of recruiting more officers both before and after the April EIS conference. This then led to the establishment of the Field Services Division with Lyle Conrad as one of its founders. This was consistent with Langmuir's view that the state experience mattered a great deal to the program, the individual officers, and epidemiology as practiced in the states.

In his second EIS year, Conrad became Deputy Chief, Field Services Division and learned even more about the problems of recruiting quality officers in large enough numbers. Although it was not yet reflected in the makeup of the classes, Conrad asserts that Langmuir wanted more women and minorities in the EIS. Indeed, he saw the importance of having officers from all backgrounds. The accomplishment of that end was, however, not easy. In the mid-sixties, it was very difficult to get African Americans to relocate to the Atlanta area, which still featured elements of its segregationist past. The '65 class had the first African American officer.[267] The first Native American officer did not join until 1978.[268] Making visits to medical schools at that time was somewhat haphazard, being dependent on available money and time. The Chief had to rely principally on an EIS alumnus's or alumna's reference. Some efforts did not prove successful but had to be done. In his first year, Conrad "went to the American Public Health Association conference and I would man the CDC desk/booth for 5-6 days. … My

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[266] Ibid.
[267] Ibid. At schools such as Howard University Medical School, prospects asked for guarantees that they would not be assigned to the South. Given the nature of EIS response to outbreaks, this could not, of course, be given.
[268] Ibid. Jeral L. Ahtone, M.D.

second year, I was asked to do it again. It did not stimulate interest in the EIS."[269] Langmuir, nonetheless, insisted that medical professionals should be directly involved in recruiting other medical professionals.[270] Conrad provided a glimpse into the administrative demands of this activity. "We got about 120 letters a year. Of those, about 60 might be truly interested in the EIS. ... While interviewing at their expense in Atlanta, they had to be seen by at least one senior officer. Langmuir had developed a rating system for them. He reviewed all applications and wanted to see by whom they were recommended." Retention of officers following their two-year service was also a persistent problem. Up to the early 1970s, the vast majority of officers left the CDC after their tour of duty finished, the lure of academe and private practice being the chief reasons. The recruitment and retention issues would change as the reputation of the EIS grew.

As with all EIS Chiefs, Conrad was also assigned to outbreak investigations and to do anything else Langmuir needed done. One such assignment, having to do with immunization training, turned out to be a very interesting and unexpected experience. In the fall of 1965, some Peace Corps volunteers needed to be trained in immunization techniques for upcoming two-year assignments to India. It was decided by the Peace Corps to have them learn by immunizing the population of Leslie County in eastern Kentucky against measles.[271] Langmuir assigned this project and attached visiting fellow S.K Sengupta, an Indian civil servant and staff physician from their surveillance and

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[269] Ibid.
[270] This concept was to be tested during the lean budget years of the 1970s after Langmuir retired.
[271] J. Lyle Conrad, Unpublished manuscript, 2005. Langmuir was focused on 3 major disease areas during the 5 years that Conrad worked with him: influenza and other airborne disease such as measles, rubella, and tuberculosis; cholera and other water-borne diseases; and problems of demography, such as the worldwide population increase.

epidemiology unit in New Delhi, to Conrad for this mission. Sengupta would provide the volunteers with information about what they might face in India. Upon arrival in Leslie County, Conrad and Sengupta discovered that the Frontier Nursing Service (FNS), a British mission effort to the U.S., was providing health care to this remote area. The FNS presence consisted of a single doctor to deal with emergencies for the 20,000 people in Leslie and Clay Counties and nurse practitioners running a series of 20 or so clinics. In addition to providing an important experience for the Peace Corps volunteers, the successful immunization effort done largely through the FNS series of clinics proved that measles could be controlled and even eradicated if the will to do so were present. A full 90% of the county's children were reached.[272] Other training duties included setting up the space to hold the first "Tuesday Morning Seminars" featuring reports from officers returning from outbreak investigations.[273] At this time, Langmuir also created an EIS graduation certificate for all alumni to post on their office walls. It came out in April 1966.[274]

Langmuir's concern about measles led to a new development in EIS during the summer of 1966 that would change Conrad's career path at the CDC. Alex Langmuir's concern for the control of airborne diseases such as measles led to the proposal for a branch of the EPO to be established in partnership with Dr. Robert Freckleton of the CDC's Immunization Program. Langmuir and Freckleton thought that the time was right to decisively control measles in the United States.[275] Approximately one-half million

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[272] Ibid. Measles disappeared from the counties for a few years but returned as the vaccinations were not continued. Measles was not banished until the state participated in the measles control program of the 1970s.
[273] The seminars are still held every Tuesday at CDC as of March 1, 2006.
[274] Conrad, Interview with the author, 2 May 2005.
[275] Etheridge 168-170.

cases were reported each year with around 500 child fatalities[276]. In order to make sure that any vaccination campaign was successful, more epidemiologists would be needed at the state level.[277] John Witte (EIS '63), a pediatrician, asked Conrad if he were interested in joining him in setting up a State Services Branch in EPO. The purpose would be to use immunization money to support the addition of perhaps 20 EIS officers to be stationed in the states to assist with measles outbreak control with the further happy result of them being in place for whatever else needed epidemiological response. Conrad, who believed in epidemiological practice centered in the states, was delighted with the idea.

The role of Chief EISO, subordinate as it was to Langmuir's vision, became less appealing for someone wishing to make his own way in epidemiology. Langmuir thanked him for his year as Chief and gave his blessing to "State Branch" as it was consistent with Langmuir's own belief in the need to work at the "ground level" in public health. So it was that Conrad's experience as Chief contributed to the formation and direction of the State Branch which thrives, still, within the EIS. That the care and supervision of officers in the field was vital to their effectiveness and retention was illustrated some thirty years later upon the occasion of Conrad's retirement from his position as Director of Field Epidemiology. He received heartfelt tributes during that year's EIS Conference for his contributions to epidemiology, CDC and the EIS. Philip Landrigan (EIS '70) remembered the avuncular Conrad as a mentor and friend; always a source of support.[278]

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[276] It was thought that only about 10% of measles cases were reported at that time. Conrad. Interview with the author, 2 May 2005.
[277] Conrad, Interview with author. At this time, the EIS was assigning less than a half dozen officers to states. EIS assistance was provided mostly on the basis of situational requests for short periods of time.
[278] Philip Landrigan, "Remembering Uncle Lyle," *EIS Bulletin Fall 1995*, 4.

Today, almost half of the state epidemiologists are former EIS officers, many having started out in State Branch.[279] As Conrad recalled, "the year 1966 marked the start of the EIS drive to support the state health departments in a serious and sustained fashion. Today, forty or more officers are on duty in state and local health departments, improving our nation's disease surveillance capacity enormously."[280]

Lyle Conrad's successor as Chief, Mike Gregg, (EIS '66) came to the job with a different background and was faced with greater challenges, ironically, because of the success of his predecessors. Michael Gregg, M.D., was an Assistant Professor of International Medicine at the University of Maryland in the fall of 1965 and none too happy about it. He was somewhat disenchanted by the competitive pressure, lack of laboratory facilities, and much less support than he believed was necessary to perform well in the position. He had worked alongside Gene Gangarosa in West Pakistan for two years and knew Bruce Dull. Dull asked him to consider the EIS and so Gregg wrote a letter to Alexander Langmuir inquiring about admission to the epidemiology training program. Langmuir responded by offering Gregg the job as EIS Chief starting in July 1966.

Nineteen sixty-six was a momentous year for both the EIS and CDC as a whole. The new CDC Director, David Sencer, followed the recommendations of Alex Langmuir of Epidemiology and Bob Freckleton of Immunization in putting CDC's now-considerable weight behind a national program to eradicate measles. The funding was available due to renewal of the Vaccination Assistance Act of 1965. In the previous two

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[279] The current count is 26 EIS "alumni" out of 59 positions; some states having separate positions for communicable and non-communicable diseases, "Current State and Territorial Epidemiologists," http://www.cste.org/members/state_and_territorial_epi.asp. 5 February 2006.
[280] Conrad, Interview with the author, 2 May 2005.

years, almost 1,000 children died from measles. That death toll was thought to be unconscionable at a time when the means to eradicate measles was available.[281] Langmuir and Freckleton joined forces and with Sencer's political acumen proceeded to place more EIS officers in state health departments than ever before. The positions of 20 new officers in both 1966 and 1967 specifically allocated for state service increased the Chief's workload in officer recruitment, selection, and assignment as the EIS doubled to 70 officers per year. Management in the field would come from the new Field Services Division (FSD).[282]

It is here that the Chief's role changed again, in a way that an outside observer might miss. Gregg was technically not an EIS officer in that he did not go through the "match" program or the summer training. He was also not in the rotation for field assignments. Langmuir designated him Chief and wanted him to concentrate on alleviating the EPO administrative workload.[283] In discharging his duties, Mike Gregg saw advantages in working under Langmuir. He expected that he would learn from someone who had mastered the administrative aspects of running a well-regarded teaching program. This would include creating courses; organizing and publicizing conferences; and recruiting, interviewing, and selecting people. It was good training in administration for the Chief, but the opportunity was available in some measure because of Langmuir's reluctance to perform certain tasks.[284] He wanted, for example, a Chief upon whose judgment he could rely when it came to interviewing people. As Gregg put

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[281] Etheridge 168-170.
[282] Conrad spent his last six months as Chief EISO working with the 20 new officers arriving in July 1966. Conrad, Interview with the author, 2 May 2005.
[283] Michael B. Gregg, M.D., Interview with the author, 9 September 2005. "Langmuir was strict about who was and who was not an EIS officer… I didn't satisfy the requirements so ADL didn't consider me an EIS officer. Once when EIS officers were given certificates, I was given one by mistake. ADL 'razored' out the 'EIS Officer' and inserted 'Chief.'"
[284] Ibid. "Alex wanted a Chief who would do the work he didn't want to do"

it, "He didn't want to interview everyone. He wanted me to screen the candidates for 'good ones.'"[285]

The increase in officers saw Gregg going out to the field frequently. The need was for better scientific and medical support for the officers in the states even given the support from the FSD. "Either the state epidemiologist was too busy or not knowledgeable enough, particularly in the area of statistics," said Gregg. "Some states had only minimal staff. In those days, the state epidemiologist was not a particularly important position. The position of 'health officer' was more important."[286] His and others' assistance to the officers was not all scientific. The relationship between the officer and the state supervisor was very important. They should communicate well. In order to assess the situation and to make any adjustments, Gregg's technique was to first casually visit with the state supervisor to establish a comfortable relationship. Next, he would visit the officer to hear what he had to say. Finally, he would return to the supervisor to discuss what he had heard. "I wanted to be sure the officer had a good mentor."

In July 1966, the State Branch, with Witte and Conrad, was able to provide advice and consultation assistance to the officers stationed in the field but Gregg was on his own to look out for officers from Atlanta who were sent out on investigations. Langmuir wanted the Chief to make sure officers stationed in the field and in the Atlanta headquarters were busy and learning epidemiology. With the extraordinarily large class

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[285] In an interesting aside to the author, Gregg said that his father, Alan Gregg, was Director of Medical Sciences for the Rockefeller Foundation and worked extensively with the schools of public health. After the Second World War, the senior Gregg offered Alex Langmuir a job in the hope that Langmuir would eventually succeed him. Langmuir said that the office on the 55th Floor of the Rockefeller Bldg. in NY was too far from the action, and so declined. Gregg, Interview with the author, 9 September 2005.
[286] Ibid.

in 1966, the Chief was kept very busy, though not with participation in investigations. The position, at this point, was becoming more administrative than "hands-on." Gregg noted that Langmuir was becoming more remote. Langmuir's secretary adopted a protective stance and tended to shield him from the outside, although he always took time to visit with officers.[287]

After two years in the Chief EISO job, Gregg moved on to be the editor of the *MMWR* (Morbidity & Mortality Weekly Report). He credits his time as Chief with helping him in his work as editor. The varied experiences of the officers he managed gave him a deeper appreciation of substantive articles and his ability to judge their worth. About the effect of being Chief, he said, "It was good in that I was exposed to a variety of assignments … I knew what to expect from EIS officers when asking them to write an article. The exposure helped me to appreciate what should or should not go into the articles." He got the editor's position through a bit of serendipity. To show what he was doing as Chief, Gregg wrote an article and sent it to Langmuir just at the time that he was looking for an editor. "Alex wrote back, 'Mike: I didn't know you could write! How would you like to be editor of MMWR?' He applied gentle pressure. He was always fair."[288]

When he retired from the CDC in 1989, Nancy Binkin (EIS '80) writing in the *EIS Bulletin* called Gregg a "CDC legend." Dr Binkin lauded him as the keeper of CDC's institutional memory and the person who, as Deputy Director of the Bureau of Epidemiology (1970-81) and the Epidemiology Program Office (1981-89), smoothed the EIS leadership transition from Alex Langmuir to Phil Brachman to Carl Tyler. To

[287] Ibid.
[288] Ibid.

MMWR he brought the "Editorial Notes" that accompany each article that "greatly increased the lay audience's comprehension of the MMWR" in addition to raising the number of subscribers from 20,000 in 1967 to more than a half million by 1988 when he left.[289] A consultant in epidemiology, Dr. Gregg continues to engage students today as he did throughout his career at CDC.[290] Ever the teacher and humanitarian, his closing remarks to the author included an appraisal of the current method by which EIS officers track patient records from investigation outbreaks. The use of computers, he said, may distance officers from the human aspects of outbreaks. Begin with paper, he advised; it brings the officer closer to recognition of the *individuals* who constitute the population under investigation.[291] Dr. Gregg was the last Chief to have spent his entire tenure under Langmuir.

"I was a kid from Altoona, PA who had gone to medical school. I was always interested in international health. I wanted to 'see the world.'"[292] As a third-year medical student, Bob Sharrar (EIS '67) got that opportunity. A summer elective in 1965 took him to a mission hospital in West Pakistan. It was there that he met and worked with Mike Gregg while serving at the Lahore Research Center studying parasites and clinical nutrition. After returning to the U.S., he finished medical school, completed an internship at N.Y.'s Bellevue Hospital, and applied to the USPHS to become a CDC epidemiologist. It was then that he received a call from EIS Chief Gregg asking if he would be interested in joining the EIS to work in a state health department in general epidemiology and on measles control. Sharrar became an EIS officer in the large (67 officers, coincidentally)

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[289] Nancy Binkin, "Michael B. Gregg: A CDC Legend Retires," *EIS Bulletin November 1989*, 4.
[290] Ibid. In 1984, Gregg received the Philip Brachman Award in recognition of outstanding achievement in the education of EIS officers.
[291] Gregg, Interview with the author, 16 September 2005.
[292] Robert G. Sharrar, M.Sc., M.D., Interview with the author, 14 September 2005.

1967 class. After spending a year in Des Moines, Iowa, Alex Langmuir appointed him Assistant EIS Chief. Unlike his predecessor, Sharrar was an EIS officer.

The EIS also sent him to investigate shigella[293] in Ohio, tuberculosis in Washington, DC, family planning in South Georgia, and food relief during the Nigerian-Biafran War.[294]

His duties included those usual for the Chief: planning the spring conference, setting up training, and recruiting. What Langmuir seemed to be especially interested in at that time, however, was someone skilled in reviewing qualifications and screening candidates. "Alex wanted people with specialties that fit with epidemiology. My role was to balance the need for skills with the quality of the people and the places they were needed. ... We vied for the services of officers with other branches of CDC. Alex would negotiate with the branch chiefs." After his time as Chief, Sharrar continued in public health, holding epidemiology directorships within the Philadelphia City Health Department and supervising field officers. In 1976, he and his officers contributed to solving the mystery of Legionnaires' disease during the outbreak at the Bellevue-Stratford Hotel.[295] He has since gone on to positions of responsibility for vaccine development ("…something close to my heart…") and product safety at the pharmaceutical firm, Merck & Co. Sharrar's position as Chief was unique in that he served in the last year of Langmuir's directorship and the first year of his successor, Philip Brachman. He told an interviewer that his contribution to public health has been

[293] The *Shigella* is a family of bacteria that can cause diarrhea in humans. They are microscopic living creatures that pass from person to person. http://www.cdc.gov/
[294] Sharrar, Interview with the author, 16 September 2005.
[295] Etheridge 257-267.

his interest in vaccine development and safety; work that began while he was an EIS officer.[296]

As with all the Chiefs, Sharrar was profoundly influenced by the position's responsibilities and its proximity to Langmuir. When asked about the effect of being Chief under Langmuir on his professional life, he said, "This has been a powerful influence on me. He is one of my mentors. I think of him often. In fact, I have a framed picture of him in my office, signed by him, hanging on the wall."[297]

To the end of the 1960s, Langmuir used the Chief's position to further the goals of the EIS. He put his stamp on the position and its occupants as he did upon all aspects of field epidemiology both at CDC throughout the U.S. as a whole.[298] With the passing of the decade and of Langmuir into "retirement,"[299] the Chief's role would change even more than it did in 1963 with the establishment of the surveillance and investigation branches, and the 1966 establishment of the State Services Division, dividing the incoming classes into "house" and "field." The 1970s would present new challenges that would change the EIS and the CDC.

The CDC's mission in the 1970s had become one of prevention, not just disease control. The EIS would be sought to help anticipate crises, not just react. The addition of the National Institute of Occupational Safety and Health (NIOSH) gave the CDC entry into an important and emerging area of public health: the workplace. At this time, chronic disease epidemiology came into its own. Major events of this decade included the last

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[296] Sharrar, Interview with the author.
[297] Ibid.
[298] Schaffner and LaForce passim.
[299] Langmuir remained a force in public health after his retirement from CDC. He became Visiting Professor of Epidemiology at both Harvard Medical School (1970-1977) and Johns Hopkins University of School of Hygiene and Public Health (1988-1993). A definitive biography of him remains to be written. "Alexander D. Langmuir – A Brief Biographical Sketch," *American Journal of Epidemiology*, 144; No. 8 (Supplement), p. S1-S3.

wild polio case reported in the U.S. (1979) and the worldwide eradication of smallpox (1977).[300] It was also a time when nature struck back in the form of new infectious diseases such as Lassa fever, Ebola hemorrhagic fever, and Marburg hemorrhagic fever. The year 1970 saw the retirement of Alex Langmuir from the CDC. Langmuir had created the EIS to match Joseph Mountin's vision. He had also created the Chief's position and hand-picked the officers to fill it. After Langmuir's departure, the Chief's role would be different.

Although he did not serve as Chief under Alex Langmuir,[301] Dr. Douglas Huber's (EIS '70) position was very much like those belonging to the era of the EIS founder. It could be said that his tenure was the last of the Langmuir-type Chiefs. His duties were the same: recruiting, selecting, planning the conference, organizing training, and taking care of the Atlanta officers assigned to investigations. Huber hadn't considered the Chief's position until encouraged to seek it by outgoing Chief, Robert Sharrar. "Bob sort of 'drafted' me into the position."[302] Once in the job, though, Huber found it had certain advantages. The Chief got to see what was going on all across the EIS and CDC public health programs. He felt he developed close connections with other officers in his class because of the Chief's position as well as with the incoming class through his recruiting activities. Being close to the surveillance publication, *MMWR*, was another "plus" that accrued to being Chief that Huber mentioned in an interview.

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[300] Wilson, "The EIS in the 1960s."
[301] "I was not interviewed by Alex Langmuir who was wrapping up his career and retiring later that year. I was interviewed by Phil Brachman who was to succeed Langmuir." Douglas H. Huber, M.Sc., M.D., Interview with the author, 28 April 2005.
[302] Ibid.

He was influenced by Brachman to the extent that one of his investigations resulted in a paper published in the Journal of the American Medical Association[303] and the establishment of a drug abuse epidemiology section, which was favored by the new Director of the Bureau of Epidemiology.[304] "Deaths from [heroin] drug overdoses had gone from 3-5 per year to 20. This investigation … was front-page news in Atlanta. Autopsies were not definitive so that necessitated many interviews with family members, friends, and survivors. Another benefit of the effort was the opportunity to create a dialog with the state public health department people. The conclusion was that an increase in the strength of the drug dosage was the cause of the deaths."[305]

Although the role entailed a great deal of extra work, Huber was glad to have been Chief. He thought one of the best things about it was the exposure to a single overseas outbreak that played an important part in his career. International health work is what motivated him to join the EIS in the first place, but he had been a bit disappointed that few opportunities arose. "One notable instance," he recalled, "however, was the investigation of an outbreak in Guam. I returned the 'long way' through South Asia. This afforded me the chance to see what was going in Bangladesh, and other parts of Asia in family planning, smallpox, and other areas of public health."[306] Huber's special interest today is family planning which necessitates frequent trips to Africa and Asia.[307] Other

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[303] Douglas H. Huber, Robert R. Stivers, and Larry B. Howard, "Heroin Deaths in Atlanta – An Epidemic," *Journal of the American Medical Association*, 1974; 228: 319-322.
[304] "Phil Brachman was good at 'nudging' people in new directions." Huber, Interview with the author, 28 April 2005.
[305] Ibid.
[306] Ibid.
[307] Dr. Huber provides medical services in Kenya through the support of the Episcopal Church. http://www.episcopalchurch.org/epgm_29270_ENG_Print.html?menu=menu29269 7 February 2006.

activities include consulting with the World Health Organization (WHO)[308] and reviewing, as a peer, techniques and procedures that affect reproductive health care.[309]

The major issue facing Huber as Chief was connected to working with the officers sent on outbreak investigation assignments. This involved confronting CDC division directors who felt they "owned" the Atlanta-based EIS officers. It had to be handled diplomatically as the officers needed to prepare the way for their careers within those divisions while meeting their EIS obligations. It was here that Huber got the opportunity to hone the administrative skills that would serve him well later in his career.[310] These occasions were also opportunities for the Chiefs to be influential in keeping the EIS and its officers focused on epidemiology. Handling the administrative tasks with professional aplomb smoothed the "ruffled feathers" of CDC division and branch heads as well as state supervisors, taking the pressure off the officers and easing tensions. Being the Chief benefited Huber and the EIS by forging strong relationships "with a highly collegial community of scientists who knew and liked each other." It also "benefited public health at home and abroad as it brought new recruits into EIS and then on to CDC, public health departments in the states, and international public health & medical organizations. The bonds forged were both personal and professional."[311] The work of the Chief would continue under Philip Brachman although EIS officers would not be the ones to do it.

Philip Brachman assumed the position of Director of the Bureau of Epidemiology in 1970 upon the retirement of Alexander Langmuir. He faced the difficulty of

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[308] "Expert Working Group Meeting to Update the Medical Eligibility for Contraceptive Use," www.who.int/reproductive-health/publications/mec/16_annex2.pdf 7 February 2006.
[309] *No-Scalpel Vasectomy: An Illustrated Guide for Surgeons,* 3rd ed.; (New York: EngenderHealth, 2003), x.
[310] Huber, Interview with author, 28 April 2005.
[311] Ibid.

maintaining the class sizes as budgets were being cut. A year later, it was decided that the Chief's job should be changed to "EIS Coordinator." EIS officers would henceforth concentrate on outbreak investigation and not be distracted by tasks that could be handled by non-physicians. As Brachman said in an interview, "It was an administrative position."[312] He assumed some of the tasks of the Chief himself, such as editing the *EIS Bulletin*. As the military draft was suspended in 1973, an important recruiting incentive was discontinued. The EIS's reputation and its network of alumni, however, helped to keep the applicant level steady. The most important reason for the continued flow of extraordinarily qualified people might have been the formalizing of the recruitment process. This was accomplished by the third Coordinator in the first four years of Brachman's tenure; Mary Moreman.

Moreman had risen in the ranks of CDC when it was difficult for women who were not M.D.'s to advance. A former administrative assistant, she took the Coordinator's job in 1974. She immediately improved the recruiting process by having marketing materials created. Up to that time, there had not even been a brochure available to distribute to prospective candidates! At this time, the Medical Elective in Epidemiology was established at CDC for senior year medical students. She recruited for that as well and noted that many of the students elected to apply to the EIS because of that experience.[313] She took advantage of the EIS veterans' ability to "talent spot," and combined it with her own efforts to establish a recruitment routine that was less haphazard than in the first two decades. "We relied on EIS alumni to facilitate recruiting

[312] Philip Brachman, Interview with the author, 14 April 2005.
[313] Mary Moreman, Interview with the author, 22 April 2005.

sessions around the country, and current EIS officers would accompany me on the recruiting trips."[314]

With the staffing shortage acute due to budget cuts, Moreman played an important role assisting Brachman and Gregg in organizing the spring conference. She also contributed by managing the logistics of the "match" process through which the officers' requests for assignment were processed. Being a non-physician seemed not to affect her relationship with the EIS program staff and the officers. "They saw me as approachable. I was a link to both Brachman and Gregg. I acted as a friend and confidant to the officers. They never saw me as a threat, and would tell me things they would never tell their supervisors."[315] In sum, Moreman provided the administrative expertise necessary to the position of Coordinator as Brachman was, in effect, his own Chief.

State Branch, as of 1966, was looking out for officers in the field assignments, reviewing monthly reports and manuscripts, and could provide experienced, professional advice when needed. Moreman could concentrate on discharging the position's administrative duties without the distraction of outbreak investigation. As a consequence, those processes were done with efficiency and dispatch. What was missing, however, was the benefit to the officers who would have held the position. The experience under the new EPO Director might have been different for a physician or a Ph.D. as Brachman's and Langmuir's personalities were markedly different. Nonetheless, if Huber's experience is any guide, the position could have offered an exposure to public health unlike any other in field epidemiology.

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[314] Ibid.
[315] Ibid.

Moreman continued her work in the program until 1991. The classes of this period continued to be filled with outstanding and diverse candidates. They include current CDC officials such as Claire V. Broome, M.P.H., M.D. (EIS '77), Senior Adviser for Integrated Health Information Systems; Walter W. Williams, M.P.H., M.D. (EIS '81), Associate Director for Minority Health; Jose F. Cordero, M.P.H., M.D. (EIS '79), Director of the National Center on Birth Defects and Developmental Disabilities; and Stephen B. Thacker, M.Sc., M.D. (EIS '76), Director of the Office of Workforce and Career Development and a former director of EPO.

Moreman's contribution to public health, she said, was in the support she gave to the officers. She was recognized in 1986 with the Brachman Award from the EIS Alumni. To an interviewer she said "My experience with the EIS program was a rewarding and fulfilling one. I still maintain contact and friendship with a number of former officers. They had a positive impact on my life as well."[316] The return of physicians filling the role of Chief would have to wait for Brachman's successor as Director of the Epidemiology Program Office,[317] Carl Tyler (EIS '66), in 1983.

The 1980s was a decade in which environmental and lifestyle concerns came to the fore in disease control and prevention. The first five pneumocystis pneumonia cases from Los Angeles in 1981 were reported by Wayne Shandera, an EIS field officer.[318] The following year the cause of it would be named AIDS. The EIS Bulletin referred to it as the pandemic of the century.[319] Other activities included greater focus on the environment

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[316] Ibid.
[317] Renamed from the Bureau of Epidemiology in 1981. *Epidemic Intelligence Service 2002-2003 Directory* 152.
[318] McKenna 109.
[319] Rachel J. Wilson, "The EIS in the 1980s: Broadened Perspective in a Newly Found Diversity," *EIS Bulletin Summer 2001*, 1, 5-6.

in places such as Love Canal, NY, investigating the health effects of toxic wastes located close to residential areas and in the areas around the Mt. St. Helen's volcanic eruption. Product safety concerns arose in cases of toxic shock syndrome related to women's sanitary apparel and aspirin's effects on Reye's Syndrome.[320] The EIS program evolved from a largely male, Caucasian, physician-dominated organization to one that included more women, minority groups, and health professionals with other advanced degrees. These changes reflected those in the CDC overall and in the society as a whole.[321]

When Tyler took over from Brachman, he initially performed some of the same functions. He edited the *EIS Bulletin* which, before Brachman, was the purview of the Chief. Although he appreciated the work done by the coordinators and continued to rely on them, he instituted what is actually three levels of EIS leadership. The first is the Director of the EPO itself. This position interacts with the highest levels of CDC management and is responsible for overall direction of the EIS program as one among many. At the next level is the Director of the EIS, colloquially referred to as the "Chief." This position is concerned with setting policy and allocating budget. The third level is that of a medical professional similar to that of a chief resident in a teaching hospital. This position would perform day-to-day, hands-on duties such as application reviews, the interview process for new officers, and assisting the officers in reaching deadlines. While not officially designated Chiefs, Tyler placed a series of physicians into these leadership positions between himself and the coordinator. This may be explained by his having been an EIS veteran who "grew up" under the Langmuir system. (Mike Gregg was appointed Chief at the same time Tyler joined the EIS.) His intention was to fill the gap between the

[320] Etheridge 304 – 308.
[321] Wilson, "EIS in the 1980s," 1.

non-professional coordinators of EIS and his first level leadership with credible professionals of sound scientific understanding and background.[322] He wanted to avail himself of those who would understand the bigger picture of how the EIS related to public health from the highest to the lowest levels.

Ward Cates and Richard C. Dicker were among those that Tyler brought to the EIS leadership level when he became Director of EPO in 1983. They were, for all intents and purposes, his "functional chiefs."[323] They performed many of the duties familiar to the Chiefs of the Langmuir era. They coordinated the choice of courses for the summer training and served with the group that selected the investigations to be presented at the spring conference. They helped to decide who would serve where in the match process as officers vied for their assignment choices. Mary Moreman was still in place to ably assist the EIS program through her administrative expertise, but the influence of physicians such as Cates, Dicker, and Rick Goodman[324] was in the ascendancy as it had been under Langmuir. As Dicker said to an interviewer, "Carl [Tyler] wanted people with the same background; EIS veterans with that common experience."[325]

Of the people who were "functional" Chiefs under Tyler, Richard Dicker came to epidemiology naturally as he greatly enjoyed problem solving and found rote memorization tedious. Good at mathematics as an undergraduate, he suffered the first two years of medical school as he was required to memorize and rarely to think. "Thinking was discouraged," he recalled. At the end of his second year, however, he fortuitously

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[322] Richard C. Dicker, M.Sc., M.D., Interview with the author, 9 February 2006.
[323] Thacker, Interview with the author.
[324] Richard A. Goodman, J.D., M.P.H., M.D., (EIS '78) served as Assistant Chief in the Epidemiology Studies Branch; editor of the MMWR from 1988 – 1998; and continues today as Senior Advisor for Science & Policy for the Financial Management Office at the CDC.
[325] Dicker, Interview with the author.

took a "throwaway" course in epidemiology in which the professor gave the students population health problems to solve. "I loved it!" Aware of his student's aptitude, the professor, Barry Levy (EIS '73), recommended Dicker for an elective in epidemiology at the CDC the following year. While there, he became aware of, and interested in, the EIS. After his residency in Portland, Oregon, he applied and was accepted as an EIS officer, class of 1980. In his third year at CDC, following EIS training, Tyler tapped him for the Acting Chief position with the Statistics Branch and in 1991 became Chief of Epidemiology Training Activity. In the late 1980s, he wrote the second edition of *Principles of Epidemiology*,[326] a standard EIS training work. When asked about his contribution to public health Dicker stated that he was "one step removed" from original research. "I didn't discover [something like] the harmful effects of lead," he said, "but my contribution come from the people I trained. I was a role model, teacher, and trainer in practical epidemiology."[327]

Considering the effect that being a "functional" Chief had on his career, Dicker felt that his tenure cemented a loyalty to the EIS and field epidemiology. Having spent ten years in various capacities with the EIS, he came to know virtually every person who came through the program in those years. It is, to him, an enormous network. He pointed out that the EIS has the advantage of being able to cross all the centers, institutes, and offices at the CDC. The criticism of the agency in the 1990s, and today, is that the specialty areas are "stovepiped," to use former CDC director Dr. William Roper's[328] term. These areas of expertise tend to pursue their goal of bettering public health in

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[326] "EIS Salutes Outgoing Team," *EIS Bulletin Winter 1994-95*, 3.
[327] Ibid.
[328] William L. Roper, M.D., M.P.H., Dean of the School of Public Health at the University of North Carolina at Chapel Hill, was CDC director from 1990 to 1993. Past CDC Directors, http://www.cdc.gov/about/pastdirectors3.htm 19 February 2006.

relative isolation. This runs contrary, however, to the spirit of public health, which is strongly multi-disciplinary.[329] The investigative spirit of the EIS helps it to cross those institutional boundaries and to keep it vital. "My own activity in reviewing [for publication] papers [on outbreak investigations produced by the officers] allowed me to see what was going on throughout the CDC."[330]

In a similar way, the other physician that helped bring medical professionalism to the management of the EIS under Tyler was also concerned to expand the activity of EIS officers. Willard "Ward" Cates, M.P.H., M.D., M.A., (EIS '74) assisted EPO Director Tyler in expanding educational opportunities for EIS officers after the two-year training course was concluded. Cates was more responsible than anyone for the establishment of the Chief Resident for the Preventive Medicine Residency (PMR) Program[331] within the CDC.[332] The program's intent is to prepare physicians to be public health leaders through exposure to the multiple disciplines that contribute to public health practice. He also established the third-year position within the EIS's Division of Training that has evolved into the position of Chief of the EIS. This position is different from the one that Langmuir created in that it was less for promising officers in the incoming classes than a job for "third-year" officers. It was "a position that would deal with planning, administration, and teaching."[333] The position would one day be assumed by Polly Marchbanks and Douglas Hamilton and be designated "Chief, EIS Program."

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[329] Bernard J. Turnock, "Human Resources in Public Health," *Public Health: What it is and How it Works*, (Gaithersburg, Md: Aspen Publishers, 2001), p. 209.
[330] Dicker, Interview with the author.
[331] "Preventive Medicine Residency (PMR) and Preventive Medicine Fellowship (PMF): Developing Public Health Leaders," http://www.cdc.gov/epo/dapht/pmr/pmr.htm 10 February 2006.
[332] Thacker, Interview with the author.
[333] Willard (Ward) Cates, Jr., M.P.H., M.D., M.A., Interview with the author, 20 December 2005.

Cates had come to public health through his service in the U.S. Army during the Vietnam era. He earned a Master's in Public Health while in medical school. ("I was interested in public health even then!") He discharged his service obligation from his days in college ROTC as a preventive medicine physician in the Army. Cates spent a number of years in both family planning and HIV/AIDS at the CDC.[334] When EPO Director, Steve Thacker, created the Division of Training, he tapped Cates to be Director. He brought the EIS program and the Preventive Medicine Residency together during his three-year tenure.[335] Considered a world expert in abortion safety and surveillance, Cates is now President of the Institute for Family Health, a non-profit organization funded by USAID and the NIH to deal with HIV prevention, contraception, and other family health issues. At the end of the decade, a new head of epidemiology at the CDC would firmly re-establish the Chief's position. It also would not be the temporary position that Langmuir had established but rather a career option for former officers with an interest and aptitude for the work.

"As any good EIS alum knows, public health is anything but predictable."[336] The 1990s saw the emergence of new diseases such as Hantavirus pulmonary syndrome, influenza A [H5N1], and Nipah virus, which kept the EIS on its investigative toes during the decade. In response, the CDC created a new peer-reviewed, online journal, *Emerging Infectious Diseases*.[337] EIS leadership saw that existing channels of communication must work more effectively and there was a need to open new channels through innovations such as the Internet. The Chief's position was affected by the personnel changes in the

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[334] Ibid.
[335] "EIS Salutes Outgoing Team," 3.
[336] Rachel J. Wilson, "The EIS Program in the 1990s," *EIS Bulletin Fall 2001*, 1, 5.
[337] "Emerging Infectious Diseases," http://www.cdc.gov/NCIDOD/eid/ 14 February 2006.

1980s toward a more diverse workforce as was true in the society as a whole. Upon assuming the directorship of the EPO in late 1989, Thacker addressed the role of diversity in an interview. "…achieving diversity in our EIS Classes will help us to reach different segments of the population…improve our training activities at CDC, and our sensitivity to issues in other populations." In thinking about the role of minorities and women within the EIS, he said, "I believe [our attention] to this has been reflected already with the EIS officers we have successfully recruited who have come from different minority groups and, certainly, with the increasing number and percentage of officers who are women."[338] The effort at creating a more diverse workforce within EIS resulted in the choice of the first woman, who was also the first non-physician, to assume the role of Chief.

When interviewed about being the first woman Chief, Polly A. Marchbanks, Ph.D., M.S.N., (EIS '85), echoed the words of EPO head Thacker about diversity: "…it means that doors are opening for people from diverse backgrounds and orientations." She also went beyond that to what would become an important and controversial issue for her and the EIS during her tenure. "It's meaningful to be the first woman, but it's personally more meaningful to be the first non-physician."[339] Marchbanks understood that as Chief, she would exercise influence over the officers' experience. She saw it as an opportunity to not only train top-notch epidemiologists but also future public health leaders. She saw that the EIS needed to be eclectic to meet the demands of epidemiology and public health. This meant applying fairness to recruiting and selection. The EIS needed to be a

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[338] Stephen B. Thacker, "Thacker Returns to EPO at the Helm," interview by M. Christine Cagle, *EIS Bulletin November 1989*, 1-4.
[339] Polly A. Marchbanks, "Polly A. Marchbanks (EIS 1985) – First Woman EIS Chief," interview by Carlos Alonso, *EIS Bulletin February 1992, Special Conference Issue*, 1-4.

place where Ph.D.s, and not only physicians, were actively encouraged and supported. Her "heightened sensitivity" to issues of fairness stemmed from the gender bias she faced as the only female physics and trigonometry student in her high school to the dismissive attitudes of her university professors when she expressed interest in the EIS.[340] She was quick to credit EIS veterans Willard "Ward" Cates, Herbert "Bert" Peterson (EIS '79), David Grimes, (EIS '75), and George Rubin (EIS '78) for encouraging her to apply to the EIS despite the discouragement she felt.[341]

This concern extended to the experience of the officers, once chosen. Marchbanks felt it was important to be accessible to the officers and that their professional goals had to be considered alongside the needs of the investigation assignment. The third phase of the EIS experience began at the conclusion of the two-year training course and centered on activities and information conduits. The *EIS Bulletin* was an important way for alumni to stay connected to the program and each other along with the spring conference and the Tuesday morning seminars.[342] To that end, Marchbanks wrote a column in the *Bulletin* every issue that she was Chief except for the few when she was away from Atlanta.[343] It was in the *EIS Bulletin* that she published a memo to officers, alumni, and selected CDC staff offering a preview of her tenure as Chief. After lauding the program and the staff with whom she worked, Marchbanks invited participation in the shaping the futures of both the Bulletin and the EIS as a whole. Her last point was an appeal for an open-minded approach to the way the EIS went about its business.[344] As her tenure progressed,

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[340] Ibid. 4.
[341] Ibid. 1.
[342] Ibid. 2.
[343] See issues of the *EIS Bulletin* from November 1991 through Fall 1994.
[344] Polly A. Marchbanks to EIS officers, alumni, and selected CDC staff, Open letter in the *EIS Bulletin Winter 1991*.

her attention would be focused on the recruiting, selecting, assigning, and even the remuneration of officers.

"[A] big issue was the equal pay for equal work thing. I considered it a professional victory. My advocacy for this was greeted by a whole spectrum of reactions." Marchbanks's belief that officers, regardless of physician vs. non-physician status, should receive equal pay caused a great deal of controversy and elicited intense emotional reactions. There were those who said things such as, "Go into the bathroom and cry," and "Physicians are valued more and should be paid more." She said in an interview, "I remember one day a man on a bicycle stopped and said 'thanks!' I didn't even know who he was! Other people were resentful of the situation. It was very emotional. People still bring this up to me." In challenging the status quo, Marchbanks was guided by a very simple principle: "Physicians in a training program [in which everyone starts at the same level] should not be making more money. They're all supposed to be learning epidemiology."[345]

True to another of her stated ambitions for the program, there was an increase in the number of non-physicians recruited and selected as officers while she was Chief. As she explained, "The EIS historically had been inclined to recruit more for infectious disease. So I was interested in officers for non-infectious diseases [in response to national trends]." Another result that benefited the program was that more Ph.D.s became interested in infectious diseases.[346] With the support of Division of Training Director, Ward Cates, Marchbanks also introduced the idea of competencies for officers. They included "Epidemiology," "Communication," and "Professionalism." Renamed "Core

[345] Marchbanks, Interview with the author, Atlanta, GA., 5 November 2005.
[346] Ibid.

Activities for Learning," they were announced in the EID Bulletin.[347] The last acknowledged, and sought to address, the problems between officers and supervisors that occurred during assignments.[348]

In looking back upon her experience as Chief, Marchbanks said her role was "… all about making the officers' experiences better." In addition to her success in emphasizing the value and participation of non-physicians, the introduction of the competencies, and the controversial "equal-pay-for-equal-work" provision, she took on other issues. She recalled supporting the idea that more officers should be allowed to travel to scientific conferences, though budgets would not permit it. She mentioned specifically the American Society of Epidemiology annual conference which she thought would be a great experience for officers. She regretted that budget constraints also affected the assignments that could be offered. True to Langmuir's insistence that the EIS epidemiological experience should be as wide-ranging as possible, she sent chronic disease-focused officers on more infectious disease investigations and vice versa when the budget permitted. She was appreciative of and valued the teamwork within the EPO that made serving as EIS Chief so exhilarating.[349]

Any summary of her tenure as Chief, the effect she had on the program, and her ongoing contribution to public health would note her attention to the quality and distribution of education and training for public health workers and her desire to always be trustworthy and credible. An expression of her commitment to both public health and to individual patients may be illustrated by an event that occurred when she was an EIS

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[347] They were formerly known as the "Professional Guidelines," Marchbanks, "Notes From the EIS Program," *EIS Bulletin March 1993*, 2.
[348] Marchbanks, Interview with the author.
[349] Ibid.

officer investigating the high prevalence of HIV/AIDS among residents of Belle Glade, Florida. A prostitute who had been reluctant to be interviewed appeared at the health department and asked "for the lady with a lot of gray hair." After completing the interview, Marchbanks asked why the woman had sought her out specifically. She replied "Word on the streets is that you're OK."[350] After holding the position for three years, Marchbanks moved to the Division for Reproductive Health.[351] In addition to her effect on the program as Chief, she was important as the culmination of the EIS's efforts to create more diverse officer classes; reaching out to women, minorities, and non-physicians. Her personal contribution was to fulfill the promise of that effort by extending opportunities to recruits and officers wherever and whenever she could. Her successor would follow in those footsteps while placing her own stamp on the program.

In the summer of 1994, Joanna Buffington, M.P.H., M.D., M.S., (EIS '90) was set to take over the position of "Medical Epidemiologist" in the EPO's Division of Training at CDC headquarters in Atlanta. She had just finished a CDC Preventive Medicine Residency assignment at the New Hampshire state health department as well as her Master's Degree in Public Health from Harvard University. She fully expected to be Chief Resident for the Preventive Medicine Residency (PMR) program, supervising six residents in state positions. She would also be the Assistant Chief for the EIS Program under Polly Marchbanks. She would have responsibility for the Fall Course for EIS officers. The Fall Course emphasized oral presentation and scientific writing skills and made instruction in them more easily available to officers.[352] As CDC had paid for the

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[350] "Truly it was a special moment," Marchbanks, Interview with Alonso.
[351] "EIS Salutes Outgoing Team" p. 3.
[352] One observer who attended the 2005 Spring IES Conference noted the consistently high quality of the oral presentations; a likely result of the Fall Course.

MPH, Buffington was required to serve two years at CDC. She expected to discharge that by assisting Marchbanks with the Chief's role. As Buffington recalled, "Six months into that, Polly left and I was in charge almost by default." She brought to the job the same orientation toward chronic disease that had motivated Marchbanks and was beginning to pervade the CDC. She sought to continue and even expand the effectiveness of her predecessor.[353]

Buffington's duties consisted of everything that Langmuir's Chiefs did, with the notable exception of outbreak investigation, and a lot of Langmuir's responsibilities toward the officers. She had charge of the summer and fall courses already as well as the supervision of the PMRs. She had also been doing recruiting, assessing, and selecting candidates, and evaluating the competency domains recently established under the Core Activities for Learning. To that was added deployment of officers to "epi-aids" events, planning and executing the spring conference and evaluating officer performances. Buffington also dealt with personnel problems. "There were only two but they were time consuming."[354] The EIS Chief was performing the tasks that originally defined the position even though it was not filled by a current officer. With all the duties assigned to her, Buffington years later in an interview mentioned something else she would have liked to accomplish. "I think it would be good to go back to the position later in my career. I would provide more mentoring opportunities. I would have a better perspective at longer distance from the beginning of my career."[355] This, perhaps, is the direction

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[353] It is interesting to note that Buffington, a physician, is on the opposite side from Marchbanks on the "equal-pay-for-equal-work" debate. Her belief is that an EIS physician-epidemiologist trainee is 4-5 years older than the typical Ph.D.-epidemiologist trainee on average and deserving of the higher pay scale for the skills that he/she possesses. Joanna Buffington, M.P.H., M.D., M.S., Interview with the author, Atlanta, 23 September 2005.
[354] Ibid.
[355] Ibid.

Langmuir had decided on when he confined Gregg to administrative duties and selected the experienced Gangarosa.

Of the effect that she had on public health through her activities as Chief, Buffington thought she had established a network of people in the states who were "passionate, outspoken, and reliable."[356] They were people who could be counted on to act in concert with federal public health in cases of outbreaks and other emergencies. She was also proud of the effect she had as a recruiter and selector. There are people, she said, who are engaged in public health that might otherwise have never entered the field but for her intervention. It illustrates the importance of having a Chief with experience of the CDC, the EIS, and public health when dealing with the wider variety of recruits than had been seen before the 1980s.

"Here's a story," she related, "that shows how important personal intervention is to the recruiting-interview-match process: A radiologist on Martha's Vineyard wanted to be in public health…She was not an obviously good candidate but was sincere in her interest… Anyway, she got into CDC and is doing public health." On another occasion "a pharmacist applied who was told he was not eligible. I looked as his C.V. and decided otherwise. He had a doctoral degree, PharmD, He'd been doing HIV and hospital public health. He eventually got into CDC's HIV program."[357] The position had been established as an administrative job worthy of long-term attention by a career staff member. For that reason, the addition of the "Professionalism" competency for EIS officers could also be said to apply to the Chief's position.

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[356] Ibid.
[357] Ibid.

Buffington's successor, Douglas Hamilton, would turn out to be the longest-serving Chief in the 50+-year history of the EIS. Hamilton would lead the EIS into the 21st century through the immediate threat of bio-terrorism in the aftermath of the inhalation anthrax outbreak of late 2001. The EIS, and its Chief, were returned to their origins by this emphasis. Epidemiologists will be the first line of defense in the event of a biological attack as Langmuir in 1951 said that they would be.

Chapter 5: The Chief in 2006 and the Outlook for the Future

As the previous chapter has suggested, the role of the EIS Chief has been influenced by political, social, and economic forces as well as intra-organizational trends and currents to say nothing of the effects of scientific development on the performance of the EIS. The purpose of this chapter is to examine the state of the EIS in the context of its current Chief and to examine what the position is likely to encounter in the years ahead. At the start of the 21st century, the premier field epidemiology training program in the world faces challenges both old and new. The increased public awareness of bio-terror threats has the EIS poised to address preparedness for that possibility as it had in 1951. The old adversary, influenza, is once again an ominous threat; this time in its avian form. In addition to bio-defense and investigation, there are many population health problems reflective of the drive to globalize in the midst of shifting political and cultural alignments in a less than stable post-Cold War world. If that weren't enough, there are always the budget battles and the political fight to keep the EIS "on track" to provide well-rounded epidemiology training. It is not, however, a grim picture by any means.

Despite the infectious and chronic disease problems the Chief must confront in an era of constrained budgets, he has the advantages that 50 years of service, achievement, and recognition have conferred on the program. Although the processes of selection and training are rigorous and the hours sometimes very long, there is no shortage of able people wanting to be EIS officers. While in another era, the Chiefs worried about drawing enough recruits with the necessary prerequisite skills with which to fill out a new group of trainees, the EIS receives anywhere from four to five times the number of

qualified applicants each year than there are places in the class.[358] The sense of camaraderie and shared commitment that are among the hallmarks of the program also helps to sustain EIS officers both in the field and in headquarters assignments. That adds up to a potent and effective force in the hands of an experienced and dedicated Chief. The current Chief of the EIS is Douglas H. Hamilton, M.D., a family medicine practitioner, Ph.D. microbiologist, and EIS veteran, class of '91, who began his EIS career as a field officer stationed in Connecticut. He is the heir to the position that was shaped by the people and events of the previous five decades of the EIS's existence. The EIS Chief is literally at the forefront of American field epidemiology. While somewhat self-effacing in discussing his role, Hamilton's challenges are as great, if not greater, than any of his predecessors. Part of his job involves coping not only with the changed world of "post-9/11," but also with a general global re-alignment.

As Hamilton was recruited into the EIS, the Cold War was ending. In 1991 the Soviet Union had broken up into a collection of states the boundaries of which were those of the former Soviet republics they had recently been. While this global re-alignment signaled the end of the competition between the world's nuclear-armed superpowers, the "victory" of democratic capitalism was not a foregone conclusion. Many observers saw the new "world order" as revolving around culture more than the old relationships of political convenience formed during the Cold War. Nations would now align themselves in a different way. The dangers of nuclear, biological, and chemical (NBC) warfare were no longer confined to two tightly-controlled blocs; one Western and market capitalist-oriented and the other driven by Communist ideology. Now the former republics of the Soviet Union, some of whom possessed weapons of mass destruction, were free to align

[358] Douglas H. Hamilton, M.D., Ph.D., Interview with the author, Atlanta, GA, 29 December 2005.

with whomever they wished. Some contained sizable populations of Muslims. Since the founding of Israel in 1948, the Arab Muslim world had clashed repeatedly with the West. The possibility that these weapons could fall into the hands of rogue states or, worse, stateless terrorists, began to concern public health leaders as well as defense strategists. The problem especially concerns the EIS when thinking about biological warfare. In some ways, this part of the job is a "throw-back" to an earlier time.

Our national system of surveillance has been seen as a reliable first line of defense against natural outbreaks and biological attack since the 1950s. The system was the brainchild of Langmuir and his protégé, D.A. Henderson, still the only officer to be appointed Chief for two non-consecutive stints and a strong advocate for bio-defense.[359] Continual surveillance would keep the country's food and water supply safe. "Bio-preparedness," as it has been termed, is therefore an important part of the Chief's job when training epidemiologists. Said Hamilton, "We had always incorporated some bio-weapons training for our officers [in the summer course] prior to 2001. After that, we expanded the time devoted to training."[360] Once alerted to the possibility of a biological incident, the EIS would almost certainly be asked to assist in the investigation. The Chief, then, would assign the necessary officers if they were not already there.

Following the September 11, 2001 attacks on the World Trade Center in New York City and the Pentagon building in Washington DC, the threat seemed to become more likely. The cutaneous anthrax outbreaks that originated in letters sent to news organizations postmarked September 18, 2001 and the inhalation anthrax spores later sent to the Washington, D.C., offices of U.S. Senators Patrick Leahy (D-Vermont) and

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[359] Garrett *Betrayal of Trust* 489-94.
[360] Hamilton, Interview with the author.

Thomas Daschle (D-South Dakota) confirmed this. Although still unsolved with no suspects named, they were the first high-profile biological warfare attacks of the post-Soviet era. After the EIS concluded its part in the investigation, EIS Chief Hamilton responded by increasing the amount of time spent on bio-terror investigation and defense procedures during the EIS Summer Training Course.[361] When thinking about the weighty responsibility he would bear should another incident occur, Hamilton can look to the past for a precedent. In 1951, biological attack and defense were on the minds of citizens and legislators as well as public health officers.[362]

The present concern about bio-terrorism echoes some of the worries that were evident to public health practitioners in the first years of the Cold War. The Epidemic Intelligence Service founder, Alexander Langmuir, was instrumental in alerting the nation to the possibility of "germ warfare" as it was then called. Indeed, the origin of the EIS and whole system of national surveillance were the result of the country's increased concern about biological threats to national security. "When Alex Langmuir asked for funding for an EIS, he was laughed at until he said that the Russians are doing it and that we should be prepared," said Hamilton. "He [then] got all the money he needed."[363] Alex Langmuir, indeed, secured funding by convincing Congress and the American people that "germ warfare" was a reality and that only field epidemiologists could protect the country in the case of a biological attack. He employed the relatively new medium of television to get his message across to the ordinary citizen.[364] He saw a chance at the same time to

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[361] McKenna 21-5.
[362] In 1968, EIS officer Tom Török, investigated an intentional food poisoning incident in Oregon carried out by a radical religious sect. The EIS also investigated a similar incident in Utah in 1987. *Ripples in the Water of Epidemiology.*
[363] Hamilton, Interview with the author.
[364] Fee and Brown "Bioterrorism" 721-6.

make sure epidemiology would grow in size and effectiveness. For Assistant Surgeon General Joseph Mountin to realize his dream of "centers of excellence" in public health around the relatively new Communicable Disease Center (CDC), there needed to be a great many more trained epidemiologists than existed at that time. They would be needed to combat both infectious and chronic diseases. Langmuir, as has previously been noted, had developed a plan to train them but needed the funding. The Cold War and recent "hot" war in Korea focused public attention on national defense. Langmuir knew that if the public were concerned about "germ warfare," Congress would fund the EIS. Without the fear of biological vulnerability, the program might never get the money it needed. Once funded, Langmuir was intent upon getting that funding renewed annually. A CDC Epidemiologic Services internal memo listing the duties of the new officers, dated September 1951, stated

> (6) TO SERVE AS AUDITORS OR JUNIOR CONSULTANTS TO BIOLOGICAL WARFARE DEFENSE COMMITTEES OF STATES AND STRATEGIC CENTERS WITHIN THEIR AREAS OF ASSIGNMENT.[365]

Thus it was made clear from the start that meeting the biological warfare defense needs of the country would be a stated goal of the EIS. In 2001, the EIS responded to both the terrorist attacks on September 11 and the anthrax outbreaks a few weeks later. While the officers performed well in the emergency situations, the Chief knew that success would bring problems just as surely as failure. Monitoring opinion in the Congress, by "watching C-SPAN [Cable-Satellite Public Affairs Network dedicated to airing non-stop government proceedings and public affairs programming[366]] on my computer," Hamilton heard frequent references to the need to "build up CDC in general

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[365] Internal memorandum, "The Epidemic Intelligence Service of CDC," September 1951, 2.
[366] C-SPAN - Wikipedia, the Free Encyclopedia" <http://en/wikipedia.org/wiki/Index_case 24 January 2006.

and the EIS in particular." However good it sounded, the Chief was mindful of his mother's dictum, "Be careful what you wish for!" In reviewing the strategy for dealing with an increased class size, one result of new appropriations, he was worried about the "strings" attached to the funding: being asked to put additional officers in field positions. That provision would strain the "match" program whereby officers were allowed to request assignments, and created a concern for morale. Another problem was that not every state had the "epidemiologic infrastructure" to ensure the proper training environment. Hamilton thought that to prepare some states for EIS officers, CDC would have to assign experienced personnel for perhaps years, which was what the Division of Field Services had been doing since 1966.[367] Bio-terror defense had become necessary for a single superpower coping with a confusing and threatening world.

"Globalization" in general presents a great many health problems and opportunities. The current trend toward globalization has affected the distribution of health care and public health services around the world. The immediacy of public health issues related to this trend is summed up in the view of former Surgeon General, C. Everett Koop: "Economic globalization cannot take place if the health of developing nations is not tremendously improved. These nations are too sick to contribute to economic globalization; only the globalization of good health can change that situation."[368] This presents a challenge to EIS leadership as the perceptions and effects of disease change. For Hamilton, it is important to keep the program focused on epidemiology in its totality.[369] The ills of a globalizing and modernizing world will

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[367] Douglas H. Hamilton, "Notes from the EIS," *EIS Bulletin Spring 2002*, 25.
[368] C. Everett Koop, "Forward" *Principles of Public Health Practice*, by F. Douglas Scutchfield and C. William Keck (Clifton Park, NY: Delmar Learning, 2003), xi-xii.
[369] "My job is … to keep epi[demiology] training broad-based." Hamilton, interview with the author.

require different responses.[370] The previous trend in public health was to progress from struggle with virulent pestilential diseases largely controllable through sanitary engineering and quarantine to coping with the chronic illnesses of advanced societies.[371] Infectious diseases were perpetually a problem in lesser developed countries but the essential technology and science were there to bring them under control. As affluence spread over time, the problems would be solved. Except for Africa, this has largely been the case. Countries in Asia and Latin America have seen great gains in public health as their living standards have risen. Singapore is a case in point.[372] Infectious disease pandemics, threatening advanced nations as well as developing ones, however, are making a comeback.

According to World Health Organization (WHO) communicable diseases expert, David L. Heymann, M.D., (EIS '76) Executive Director of the Communicable Disease Cluster at the World Health Organization, the past 30 years have witnessed the resurgence of infectious diseases.[373] This resurgence is occurring in an era characterized by three important aspects of globalizing economies: increased trade, the migration of populations, and the movement of capital. Each presents both problems and opportunities for public health organizations. More trade and migration from poorer, infectious-disease ravaged countries to advanced, but unwary, nations will test the global surveillance system. Public health is also seen to have strategic geopolitical implications.[374] The

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[370] The EIS admission of its first lawyer in 2002 was acknowledgment of the legal ramifications of attending to outbreaks; especially issues of jurisdiction. McKenna 7.
[371] This should not be overstated. Diseases of environmental pollution have made sanitation again important in post-war America. Sexually-transmitted diseases always warrant concern. Duffy 299-300.
[372] Yergin and Stanislaw 183.
[373] David L. Heymann, "Infectious Disease Threats to National and Global Security," *Human Insecurity in a Global World*, (Cambridge, Massachusetts: Harvard University Press, 2003) 196-201.
[374] Laurie Garrett, *HIV and National Security: Where are the Links? A Council on Foreign Relations Report*, 2005.

conditions under which the EIS are called upon to investigate have changed accordingly. If the EIS merely investigated, solved the immediate problem, and moved on, the changes happening in a world defined by culture instead of ideology would be less troubling. The history of the EIS, however, is of a program whose agents, the officers in the field, recommend changes necessary to prevent the health problem from occurring.[375] When the recommendation for prevention is outside the realm of sanitary engineering and other prophylaxis, it becomes a policy issue for the Chief to consider. Globalization presents the EIS with potentially very different challenges on top of all the familiar ones.[376]

Raised standards of living have been the greatest contributors to improvements in the overall health and longevity of populations.[377] That the health of a population could decline rapidly when exposed to infectious diseases at a time of extreme emergency and extraordinary disruption has often been demonstrated in times of war and natural disaster. In the early part of the twentieth century, H1N1 influenza killed as many as 50 million people world wide in the wake of the Great War. One of the greatest public health disasters in history, however, the Black Death of the 14th century, was the result of increased contact and extensive travel along the trade routes from China to India and on to Europe. The virulent bubonic plague destroyed one-third of the population from India to Iceland. Though no great pandemic followed World War II, by the 1970s and into the 1980s, new infectious diseases caught public health experts by surprise. By the early 1960s, people around the world were anticipating the control of infectious disease in

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[375] A report from EIS officer, Suzanne Smith, M.D., in 1982 which included recommendations to prevent injuries incurred in recreational all-terrain vehicles (ATVs) was the basis for legislative change at the state level. Thacker, conversation with the author 22 December 2005.
[376] As public health professionals, they will be challenged to implement the core functions: assessment of needs, policy formation to meet them, and assurance that they are met. Turnock 325.
[377] Duffy 313.

advanced countries as a prelude to conquering them worldwide. There is evidence that complacency had afflicted contagious disease experts.[378] The "bugs," however, showed they were not leaving quietly and our technological advancement has contributed to making us more vulnerable to them.[379]

Infectious diseases can be spread from continent to continent, traveling undetected within a 36-hour period to anywhere in the world since the advent of inter-continental jet travel. Greater connectivity bringing greater access has brought recognition of how the spread of communicable illness is aided by modern transportation.[380] It is perhaps no surprise that the "index case" (the person to whom the origins of an epidemic can be traced) for HIV in the U.S. was believed, erroneously as it turned out, to be a gay flight attendant.[381] Thus the global air travel network was understood to represent, for good *and* for ill, a shrinking world. The spread of new (HIV, hemorrhagic fevers, SARS) and old (tuberculosis, MRSA) infectious diseases are the direct result of increased travel and wider transportation connections. Severe Acute Respiratory Syndrome (SARS) spread from China to Toronto by air, which led to the quarantine of patients and healthcare workers as recently as 2003.[382]

Globalization, however, also brings other problems related to population health. The diseases of advanced countries are spreading to countries recently developed. "Peripheral countries" in addition to the advanced, industrialized nations, are finding that

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[378] Garrett *Coming Plague* 49-53.
[379] Jonathan Mann, "Preface;" Garrett *Coming Plague* xv-xvii.
[380] Heymann 201.
[381] The myth was fostered by the Centers for Disease Control and Prevention's study of the AIDS crisis. The epidemiological findings of Dr. William Darrow and his associates pointed to a single person spreading the virus to multiple partners. Darrow later repudiated the study which later work showed to be flawed. "Index Case - Wikipedia, the Free Encyclopedia" <http://en/wikipedia.org/wiki/Index_case (17 January 2006).
[382] University of North Carolina at Chapel Hill, *SARS: When a Global Outbreak Hits Home*, 2003, webcast.

the change to a physically less-demanding urban existence invites the kinds of health problems that accompany increased longevity paired with sedentary lifestyles.[383]

Many chronic diseases were once thought to be endemic only to advanced industrialized countries. They were considered to be the result of poor "lifestyle" choices by people whose selections were uninformed or simply more convenient. The infectious diseases that have traditionally concerned public health practitioners, such as yellow fever or measles, tended to manifest debilitating symptoms almost immediately necessitating prompt attention and, in turn, facilitating patient compliance in treatment and care.

Obesity is a health problem the effects of which are cumulative and drawn out, making it difficult to treat. Obesity is now a global problem. It has been noted that the year 2000 was the date that the world's overweight population exceeded the number of people estimated to be underweight.[384] This is a remarkable statistic that, while a measure of some success in the distribution of foodstuffs, is of concern to health officials.[385] A recent EIS investigation of obesity trends in the U.S. population found that, contrary to current popular belief, there were no differences in obesity levels on the basis of either income or ethnic group.[386]

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[383] Christine McMurray and Roy Smith, *Diseases of Globalization: Socioeconomic Transitions and Health*, (London: Earthscan Publications, 2001) 3.
[384] The Chief approved the selection of obesity to be an extra session at the 2005 EIS Conference, devoting five separate reports to the topic. "Concurrent Session H2: Super Size Me: Obesity/Physical Activity," Conference Program 64-66.
[385] Michelle A. Mendez, Carlos A. Monteiro, and Barry M. Popkin, "Overweight Exceeds Underweight Among Women in Most Developing Countries," *American Journal of Clinical Nutrition*; 81: 714-21.
[386] Allison A. Hedley and Cynthia Ogden, "More for the Money? Differences in the Prevalence of Adult Obesity by Income Level – United States, 1999-2002," 54th Annual Epidemic Intelligence Service (EIS) Conference, April 11-15, 2005 (Washington, D.C.: Department of Health and Human Services, 2005) p. 33.

In other areas of chronic diseases, there is much that epidemiologists can do, and have done, in controlling their occurrence as well as documenting their origins and charting their clusters. Chronic diseases are more intractable than many infectious diseases and less susceptible to legislative remedy.[387] The U.S. is a leader in the dissemination of health-related information and per capita income yet evidence shows growing early onset of non-communicable diseases because of unhealthy lifestyle choices. [388] The EIS has investigated the prevalence of such diseases as asthma, Type II diabetes, links between family history, coronary heart disease, and adult obesity. Chronic Disease Epidemiology is an example of a direction in public health practice historically advocated by CDC epidemiologists. Such programs were part of EIS founder Alexander Langmuir's vision which he pushed from the early days of CDC .[389] Hamilton sees his role as continuing the tradition of training in this important area. The annual EIS conference provides a forum for reporting on chronic disease investigations. In 2005, conference participants delivered investigation reports on chronic diseases in 36 out of the 125 scheduled oral and poster presentations, working out to more than 1 in 4.[390] The program, the content of which is determined in large measure and approved by the Chief, gives the assembled officers, former officers, new recruits, and the media an overview of federal public health aid to the states and to people around the world. The Chief thus

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[387] An exception to this rule is progress in the control of diseases related to the consumption of tobacco products in the United States, in particular, the smoking of cigarettes. "The Percentage of U.S. Adults Who Smoke Continues to Decline." Overseas, however, smoking is still a major health hazard. <http://www.cdc.gov/tobacco/data/research_international/wntd2005_pressrelease.htm>

[388] McMurray and Smith, 10-11.

[389] Godfrey Oakley, Jr. and Clark W. Heath, Jr., "Cancer, Environmental Health, and Birth Defects – Examples of New Directions n Public Health Practice," *American Journal of Epidemiology*, v. 144, No. 8 (Supp) S58-S64.

[390] This does not include the "Latebreaker" reports given on the last day of the conference. 54th Annual Epidemic Intelligence Service (EIS) Conference Program, (Washington, D.C.: U.S. Department of Health and Human Services, 2005)

helps to provide highlights of the breadth of epidemiologic investigations at CDC. With some notable exceptions, most of the infectious disease outbreaks affected much smaller populations in developed countries than the chronic aliments studied.[391] This is decidedly not the case in lesser developed nations.

Developing countries are still ravaged by infectious diseases. Malaria is still a danger to some 41% of the world's population causing up to 2.7 millions deaths a year, mostly in African children. Diarrheal diseases caused by unclean water are thought by the World Health Organization to affect some 4 billion people each year and cause 2.2 million deaths, mostly in children.[392] Public health observers such as Heymann see problems as having emerged as early as the 1970s. Summarizing the threats, Garrett writes about increasing anti-microbial resistance (AMR) as old pathogens adapt and mutate rendering current medical treatments ineffective placing great stress on the pharmaceutical industry to come up with ever-newer and more effective drugs.[393] She also chronicles the rise of "new" infectious diseases in the last 30 years such as the filoviruses which cause the Ebola and Marburg hemorrhagic fevers; arenaviruses, the most prominent of which causes Lassa fever; and retroviruses such HIV that compromise the human immune system response and leave it open to opportunistic infections. HIV infection is a particularly difficult pathogen to isolate within populations because it is a slow-acting disease unlike the hemorrhagic and other fevers. At the 2005 EIS Conference, six presentations were devoted to HIV-related topics.[394]

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[391] Ibid.
[392] <http://www.who.int/water_sanitation_health/diseases/diarrhoea/en/> (16 January 2006)
[393] Garrett *Betrayal of Trust*
[394] *54th Annual Epidemic Intelligence Service Conference Program*

Globalization offers incentives for those with skills in demand. In an unwelcome situation for developing countries, physicians are leaving for high-paying jobs in the developed world. A recent study published in the New England Journal of Medicine revealed that between 23% and 28% of physicians in the United States, the United Kingdom, Canada, and Australia are international medical graduates. Less-developed countries accounted for 40% to 75% of the international physicians that were studied. Most came from India, Pakistan, and the Philippines. The study concluded that the physician "brain drain" left the home countries with "weakened physician workforces" less able to respond to HIV, AIDS, and other pressing medical needs.[395] The implication of the report is that the need for EIS activity in other countries as part of international aid efforts, such as the recent Ebola outbreak in Angola, will likely continue. This lack of trained medical personnel, in what used to be called the "Third World," has the potential to strain the EIS officer corps and to require the Chief to balance the needs of domestic and foreign assignments with officer availability.

Another development affecting the assignment of officers abroad has recently emerged. Western health workers on international health missions in both developed and developing countries have encountered problems related to ethnic conflict. EIS officers in the field have experienced this first-hand and have reported on it. Dr. Tami Zalewski (EIS '03) conducted an investigation of the nutritional situation as it affected refugees in the Darfur Region of Sudan. Since December 2003, violent political turmoil has led to ethnic conflict with accusations of genocide. The EIS report called it "the worst humanitarian crisis in present times." EIS Officer Zalewski was part of a joint United Nations World

[395] Fitzhugh Mullan, "The Metrics of the Physician Brain Drain," *New England Journal of Medicine*, 353; 17: 1810-1818.

Food Program emergency nutrition survey conducted among the 1.2 million internally displaced persons and the 400,000 crisis-affected residents of the area. The report called for immediate distribution of properly fortified rations with special attention to the needs of children aged 6-59 months. In the question and answer period that followed, Dr. Zalewski, a U.S. Army veterinarian, noted the security situation for humanitarian workers was uncertain as peace talks between the warring factions had not ended the violence and the Sudanese government had not intervened effectively.[396]

In May 2005, a month after Dr. Zalewski's report, Dutch physician, Paul Foreman, of the international medical society, *Doctors Without Borders*, (Medecins Sans Frontieres) was arrested by the Sudanese for issuing a medical report on documented rapes in the troubled region.[397] This incident has exacerbated concern over health workers' vulnerability. Where formerly international health personnel often found themselves in the middle of ethnic and cultural conflict, they are increasingly the targets of disaffection. One CDC field epidemiologist involved in the "Stop Transmission of Polio (STOP)" effort at eradication of the disease noted that some of the Indian Muslims were reluctant to participate, believing that the polio vaccine would cause children to be infertile.[398] Another CDC field investigator reported that he has recently begun encountering increased anti-American or anti-Western feeling on his trips, most recently in the Congo.[399] In an interview, Hamilton acknowledged that while such clashes do

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[396] Tami Zalewski, L. Talley, and M. Brennan, "Emergency Nutrition Assessment – Darfur, Sudan, 2004," 54th Annual Epidemic Intelligence Service (EIS) Conference, April 11-15, 2005 (Washington, D.C.: Department of Health and Human Services, 2005) 61.
[397] "Darfur Conflict - Wikipedia, the Free Encyclopedia" <http://en/wikipedia.org/wiki/Darfur_conflict> (17 January 2006).
[398] Christine Zahniser czahniser@cdc.gov "Re: STOP Polio Campaign question," 2 November 2005. Personal e-mail (2 November 2005).
[399] Darin Carroll dcarroll@cdc.gov "Re:Question about the Marburg virus outbreak in Angola," 26 October 2005. Personal e-mail. (24 October 2005)

occasionally occur, it didn't seem to be so serious a problem at this time that it would necessitate more emphasis in training.[400] He did, nevertheless, note in an article in *The EIS Bulletin* his concern about such situations. In response to the report of an EIS officer faced with a hostile crowd during the anthrax crisis, he acknowledged that it turned out well, "despite [officers] being assigned tasks for which we don't adequately prepare them (i.e. "risk communication" to an angry mob) …"[401] None of these developments, however, has affected the flow of qualified candidates for admission to the EIS.

As has been noted in the previous chapter, recruitment has always been an important part of the Chief's job. At the program's inception, Langmuir made sure that physicians eligible for the military draft could opt for service in the EIS as a way of meeting their obligation under that law. Today, even without the doctor draft and with budget cuts that severely restrict recruiting, the EIS Chief and staff review around 300 applications for positions in each year's class.[402] The higher public profile of the CDC, the last decade's increased recruiting efforts directed toward Ph.D.s, and the network of former EIS officers worldwide making recommendations has more than alleviated the recruiting problems caused by spending cuts. The majority of the Chiefs interviewed for this study spoke of receiving recommendations from former officers or told of how they learned of the program from alumni who, over the years, have proven to be enthusiastic boosters of the program. The Chiefs themselves noted that the networks they established and sustained throughout their tenures proved fruitful. It is worth noting that current Chief Hamilton himself was recruited informally by a former officer. As he tells it, "I

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[400] Hamilton, Interview with author
[401] Hamilton, "Notes from the EIS," *EIS Bulletin Spring 2002*, 25.
[402] "The recruitment of officers has remained relatively stable. We've done less active recruiting because of budget cuts." Hamilton, Interview with the author.

went to a 20th anniversary high school reunion and met a physician who was also in the PHS. He mentioned that he was a former EIS officer and described the program. It sounded OK. ... It appealed to me because in addition to the medical training in family medicine, I was also a Ph.D. in microbiology. I saw a chance to combine both interests."[403] He has said that the selection of an EIS class "involves striking a delicate balance between the qualifications of the individual candidates and the need of the agency for officers to match in all of the CIOs [CDC Centers, Institutes, and Offices]." In the "house" publication, *The EIS Bulletin*, Hamilton annually discusses the make up of the incoming class. The recruiting class of 1999 was typical in that it consisted of 74 officers and included 43 physicians, 12 veterinarians, 17 doctoral-level scientists, and two nurses.[404]

An increasingly inter-connected world offers opportunities as well as challenges and the EIS is well-prepared for overseas assignments. Since 1958, the EIS has extended its mission to include foreign countries.[405] Not only has the EIS performed its epidemiological services in other countries, it has recruited officers from abroad in increasing numbers presenting the Chief with the additional task of selecting annual class members from among these applicants. Incorporating foreign officers into EIS helps to ensure a "global network of field epidemiologists" as part of CDC's plan, "Preventing Emerging Infectious Diseases: A Strategy for the 21st Century."[406] Along with the establishment of Field Epidemiology Training Programs (FETP)[407] in other countries

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[403] Hamilton, Interview with author..
[404] Hamilton, "Notes from the EIS," *EIS Bulletin*, Spring 1999, 2.
[405] Joanna J.Buffington, Pekka Nuorti, Stephen B. Thacker, "Training of Non-U.S. Citizens in the EIS, 1975-1998," *EIS Bulletin*, Summer 2000, 1, 24-7.
[406] *Morbidity and Mortality Weekly Report*, September 11, 1998; 47: 1-14.
[407] The Chief has little to do with the FETP programs which mirror EIS training and so will not be covered here. Hamilton, Interview with author.

since 1975, the recruitment and training of foreign officers helps keep the EIS part of a global surveillance network.[408] Managing disease outbreaks caused either intentionally, through a bio-terrorist act, or in the normal course of human interaction requires identical preparation. Heymann has stated that participation in global public health to "strengthen capacity to detect and contain naturally caused outbreaks" is the only rational way to defend the world against the threat of a bio-terrorist attack." He refers to this as "dual-use defense."[409] The current EIS Chief's program management emphasis is concurrent with Heymann's recommendations. As Hamilton put it, "My job is to help hold the line [in the face of budget cuts and political pressure] to keep epi training broad-based and to maintain the historical perspective."[410] This charge is not easy to execute in the face of political pressure.

Hamilton notes the politicization of the EIS, and the CDC in general, since the mid-nineties. "The Directors from outside the CDC don't have the same appreciation of EIS as those who grew up with it or in it. I think they need to have a better appreciation of it in order to continue its work [at its current high level]." He worries that the "trend is to fit EIS into whatever health need fits the political direction of the day."[411] The focus of the current U.S. administration in foreign policy has been the "War on Terror." This has affected the perception of the EIS. "There are some that would make the EIS the 'bio-terror investigation branch.' Our focus is to avoid becoming a 'one-topic' program."[412] And then there are the budget battles.

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[408] Heymann 205-6.
[409] Ibid., p. 195-6, 203.
[410] Hamilton, Interview with the author.
[411] Ibid.
[412] Ibid.

"The biggest factor affecting our future is budget cuts," Hamilton noted one day. Classes had been averaging around 70 or so officers when he began as Chief in 1998. The emergency funding in 2001 allowed an additional 14 officers to be assigned to states starting with the class of 2002, boosting the total to 89, the largest in the history of the program.[413] The classes stayed around 80 though with the fiscal year 2006 budget cuts, the incoming class in July will be smaller. "We'll be around 60, best case," he said.[414] Further discussing budget issues, Hamilton said that investigations within the U.S. are met by the EIS budget while international requests are funded mostly by USAID (United States Agency for International Development). One of the effects of the reduced budget allocation was the need to stop publishing *The EIS Bulletin*. "We get about $12 million, 85% of that goes to salaries. That leaves only 15% for operating expenses." When asked about the effect of the funding decrease on training, Hamilton said, "We may change some aspects of training but not because of budget cuts… The EIS needs to grow and adapt to changes in the public health world so we do a systematic re-evaluation of the training."[415]

A recent variation in the normal EIS routine was due to the current bio-terror threat, again a major concern of public health. It resulted in a major change in the Summer Training Course starting in 2002. The course was lengthened from 3 weeks to 4 with the extra week held at the Nobel Training Center in Anniston, Alabama where the officers experienced responding to a simulated bio-terrorist attack. It was made more realistic by having the officers wear the somewhat cumbersome "Level C" protective suits. The additional sessions were on other personal protective equipment, collaboration

[413] Hamilton, "Notes from the EIS," *EIS Bulletin Fall 2002*, 12.
[414] Subsequent to that interview, the funding was provided for a class of 70 officers for 2006.
[415] Hamilton, interview.

with law enforcement, risk communications, and expanded training on potential terrorist nuclear, biological, and chemical weapons. Training was also introduced for a new smallpox response team as fears grew that the virus, which now only exists in two laboratories, might somehow fall into the wrong hands and be turned into a weapon. The occasion provided Hamilton with an opportunity to connect the class with the history of one of CDC's finest moments. The smallpox response training was delivered by EIS veterans, F. Michael Lane, M.D. (EIS '63) and Stanley Foster, M.D. (EIS '62) who were instrumental in eradicating smallpox in the 1960s and 1970s.[416] Though it is important to provide continuity in training, the Chief must necessarily alter it, as with the extra bio-terror courses, in order to meet the expectations of the American people as expressed through their representatives, the Congress.

Hamilton is also concerned to make the program better and will not hesitate to make changes when officers and staff recommend improvements. An innovation that occurred on Hamilton's "watch" was the series of "in-house" site visits similar to the regular visits to supervisors and co-workers undertaken by state branch to officers in the field. The Atlanta-based officers requested an evaluation similar to that of officers in field locations. "These visits have proven to be useful in helping us identify concerns of both the officers and the supervisors," Hamilton wrote. He also noted that one direct result of the new activity was the reinstitution of formal training sessions for EIS supervisors in the Atlanta branches.[417]

The venerable Epidemic Intelligence Service is in its 55th year. Founded in time of war, both "cold" and "hot," it has served in many capacities all over the globe. The

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[416] Hamilton, "Notes from the EIS," *EIS Bulletin Fall 2002*, 12.
[417] Hamilton, "Note from the EIS," *EIS Bulletin*, *Winter 2001*, 17.

program continues to grow and change while staying firmly rooted in the tradition of field epidemiology training as prescribed by its founder, Alexander Langmuir and envisioned by Joseph Mountin, "Father of the CDC," in the 1940s. The role of the EIS Chief has evolved with the organization. The Chiefs have been men and women of differing personalities and various strengths. They have come from different backgrounds and have served under very different Directors of Epidemiology and Training. The one constant has been their presence in relation to the officers both in-house at the Atlanta headquarters and stationed in the field. The people in this little-known role have had a far-reaching effect on the program and its officers. This was brought home in the fall of 2001. The terrorist attacks, both suicide and anthrax, presented the EIS with almost simultaneous major crises. Hearing from the Chief how it was handled offers some insight into how the role is performed under pressure and illustrates the importance of the person "on the spot."

The EIS normally holds a Tuesday Morning Seminar on an epidemiology topic every week. Just prior to the opening of the session on September 11, 2001, Hamilton was informed by Epidemiology Program Office (EPO) Director Dr. Stephen Thacker that an airplane had struck one of the World Trade Center office towers in New York City and what did he want to do. Thinking it was a "nut in a Piper Cub [small airplane]," Hamilton elected to say nothing and to start the seminar. When midway through the question-and-answer session he was told about the strike against the Pentagon, the seminar was canceled. Everyone rushed to watch the television news. Recalling the moment, the Chief said, "Like most Americans I was shocked, confused, and nervous." Soon, all "non-essential" staff members were asked to leave the building. The head of CDC's

Emergency Operations Center (EOC) requested that EPO maintain a 24 hours-a-day, seven-days-a-week presence in the EOC. Manning the EIS desk, Hamilton recalls, "That was the beginning of what was a seven-week-long scheduling marathon" at the time and, after a slight break, continued for longer than that. He assigned two officers to the EOC whom he eventually detailed to New York later that day. When the request came in two days later for 20 officers to do epidemiologic surveillance, Hamilton sent out an e-mail message alerting the EIS to the possibility that volunteers might be needed. A bit worried that they might not be forthcoming, he hinted in the message that he would have to assign people to the mission if enough did not "step up." Failing to get volunteers and needing to assign officers was "something I had not had to do in 4 years." By the time the actual request for 34 officers reached his desk on Thursday, 120 officers had volunteered. As he proudly recalls, "On that day, with the exception of military aircraft on patrol, there were only two airplanes in U.S. airspace; Air Force 1 and the plane carrying EIS officers [to New York City]." In all, 75 officers were deployed to NYC and 122 of the 146 officers were on post-"9/11" assignments.[418]

The Chief, it seems, is also the historical memory of the EIS Program. In the aftermath of the "9/11" activities, Hamilton remembered Langmuir's early efforts. As he said in the quarterly *EIS Bulletin* that fall, "It's ironic when you consider that one of the big sticks that Alex Langmuir used to get the EIS off and running was the threat of clandestine attack with biological weapons. Now, after 50 years of training 'applied epidemiologists,' the current EIS officers had to face that eventuality … and they have risen to meet the challenge magnificently."[419] Langmuir had also created the role of the

[418] Hamilton, "Notes from the EIS," *EIS Bulletin*, *Fall 2001*, p. 20.
[419] Ibid.

Chief to guide the program as well as the individual officers. The judgment Hamilton subsequently rendered in an interview about the EIS could have been said of the Chief's position in general and his own performance in that specific crisis. "Alex Langmuir was a pretty smart guy!"[420]

[420] Hamilton, Interview with the author.

Bibliography

Primary Sources

Brachman, Philip. "Phil Brachman (EIS '54)," interview by Valerie R. Johnson, *EIS Bulletin, Fall 2000*.

Hamilton, Douglas H., "Notes from the EIS," *EIS Bulletin*, *Spring 1999*.

_____., "Notes from the EIS," *EIS Bulletin*, *Winter 2001*.

_____., "Notes from the EIS," *EIS Bulletin, Spring 2002*.

_____., "Notes from the EIS," *EIS Bulletin, Fall 2002*.

Henderson, Donald A., unpublished audiotaped interview by Mark Pendergrast, 2005.

Huber, Douglas H., Robert R. Stivers, and Larry B. Howard, "Heroin Deaths in Atlanta – An Epidemic," *Journal of the American Medical Association*, Vol. 228, 1974.

Langmuir, Alexander D., videotaped interview in the "Leaders of American Medicine" series, National Library of Medicine and National Audio-Visual Center, March 1979.

_____., "The Langmuir Tradition," interview by Suzanne Hewitt, *EIS Bulletin, June 1991*.

Marchbanks, Polly A., "Polly A. Marchbanks (EIS 1985) – First Woman EIS Chief," interview by Carlos Alonso, *EIS Bulletin, February 1992, Special Conference Issue*.

_____., "Notes From the EIS Program," *EIS Bulletin, March 1993*.

Marine, William, "Bill Marine (EIS '59)," interview by Valerie R. Johnson, *EIS Bulletin, Fall 2000*.

Ripples in the Waters of Epidemiology, produced by Lou Boviero, Two hours, CDC Broadcasting, 2001.

Snow, John, *Snow on Cholera*, New York: Hafner Publishing, 1965.

Thacker, Stephen M., "Thacker Returns to EPO at the Helm," interview by M. Christine Cagle, *EIS Bulletin, November 1989*.

Author Interviews

J. Donald Millar
J. Lyle Conrad
Stephen B. Thacker
Joanna J. Buffington
Polly A. Marchbanks
Douglas H. Huber
Michael B. Gregg
Robert A. Sharrar
Mary Moreman
Willard Ward Cates
Richard C. Dicker
Eugene Gangarosa
Douglas H. Hamilton

Secondary Sources

Articles

"Alexander D. Langmuir – A Brief Biographical Sketch," *American Journal of Epidemiology*, Vol.144, No. 8, (Supplement), 1996.

"EIS Salutes Outgoing Team," *EIS Bulletin, Winter 1994-95*.

"History of CDC," *Morbidity and Mortality Weekly Report*, U.S. Centers for Disease Control and Prevention; Vol. 45, 1996.

Binkin, Nancy. "Michael B. Gregg: A CDC Legend Retires," *EIS Bulletin, November 1989*.

Brachman, Philip. "Dr. Gangarosa Retires," *EIS Bulletin, August 1977*.

Buffington, Joanna J.; Pekka Nuorti, Stephen B. Thacker, "Training of Non-U.S. Citizens in the EIS, 1975-1998," *EIS Bulletin*, *Summer 2000*.

Dull, H. Bruce, "Laboratory Problems," *EIS Bulletin, July 18, 1958*.

Fee, Elizabeth, and Theodore M. Brown, "Preemptive Biopreparedness: Can We Learn Anything from History?" *American Journal of Public Health*, Vol. 91, No. 5, 2001.

Foege, William, "Alexander Langmuir – His Impact on Public Health," *American Journal of Epidemiology*, Vol.144, No. 8, (Supplement), 1996.

Foster, Stanley O., and Eugene Gangarosa, "Passing the Epidemiologic Torch from Farr to the World," *American Journal of Epidemiology*, Vol.144, No. 8, (Supplement), 1996.

Hammer, Gwen, "Gumby Goes Global," *EIS Bulletin, Spring 2001*.

Johnson, Valerie R., "The 1950s: From the Outset, CDC's Disease Detectives Were Trained to Meet Any Epidemic Challenge," *EIS Bulletin, Fall 2000*.

Landrigan, Philip, "Remembering Uncle Lyle," *EIS Bulletin, Fall 1995*.

Langmuir, Alexander D., "The surveillance of communicable diseases of national importance," *New England Journal of Medicine*, Vol. 268, 1963.

Mendez, Michelle A., Carlos A. Monteiro, and Barry M. Popkin, "Overweight Exceeds Underweight among Women in Most Developing Countries," *American Journal of Clinical Nutrition*; Vol. 81.

Mohr, Henry, "Will America Be Able to Treat Its Battlefield Wounded?" *Heritage Backgrounder No. 398*, December 18, 1984.

Mullan, Fitzhugh, "The Metrics of the Physician Brain Drain," *New England Journal of Medicine*, Vol. 353, No. 17, 2005.

Nathanson, Neal, and Russell E. Alexander, "Infectious Disease Epidemiology," *American Journal of Epidemiology*, Vol.144, No. 8, (Supplement), 1996.

Neill, William A., "An EIS Batting Average," *EIS Bulletin July 1956*.

_____., "How Long Will it Take to do How Much?" *EIS Bulletin January 15, 1957*.

Oakley, Godfrey, Jr., and Clark W. Heath, Jr., "Cancer, Environmental Health, and Birth Defects – Examples of New Directions n Public Health Practice," *American Journal of Epidemiology*, Vol.144, No. 8, (Supplement), 1996.

Schaffner, William, and F. Marc LaForce, "Training Field Epidemiologists: Alexander D. Langmuir and the Epidemic Intelligence Service," *American Journal of Epidemiology*, Vol.144, No. 8, (Supplement), 1996.

Starko, Karen M., C.G. Ray, L.B. Dominguez, W.L. Stromberg, and D. F. Woodall, "Reye's syndrome and salicylate use," *Pediatrics*, 1980, Vol. 66.

Stroup, Donna F. and Jack C. Smith, "Statistical Methods in Public Health: The Influence of Alexander D. Langmuir," *American Journal of Epidemiology*, Vol.144, No. 8, (Supplement), 1996.

Tyler, Carl W., "Contributions of Alexander D. Langmuir to the Epidemiologic Study of Population Change and Family Planning," *American Journal of Epidemiology*, Vol.144, No. 8, (Supplement), 1996.

Wilson, Rachel J., "The EIS in the 1960s: EISOs Serve Their Country and Improve Health around the Globe," *EIS Bulletin Winter 200*1.

_____., "The EIS in the 1980s: Broadened Perspective in a Newly Found Diversity," *EIS Bulletin Summer 2001*.

_____., "The EIS Program in the 1990s," *EIS Bulletin Fall 2001*.

Books

EIS Directory, 2003-2005, Washington, D.C.: U.S. Government Printing Office, 2005.

No-Scalpel Vasectomy: An Illustrated Guide for Surgeons, 3rd ed.; New York: EngenderHealth, 2003.

Barry, John M., *The Great Influenza: The Epic Story of the Deadliest Plague in History,* New York: Penguin Books, 2004.

Brown, E. Richard, *Rockefeller Medicine Men: Medicine and Capitalism in America*, Berkeley: University of California Press, 1979.

Burton, Margaret E., *The Assembly of the League of Nations*, New York: Howard Fertig Inc., 1974; first published 1941.

Chen, Lincoln, Sakiko Fukuda-Parr, and Ellen Seidensticker, eds., *Human Insecurity in a Global World*, Cambridge, Massachusetts: Harvard University Press, 2003.

DeSalle, Rob, ed., *Epidemic! The World of Infectious Disease*, New York: New Press.

Duffy, John, *The Sanitarians: A History of American Public Health*, Chicago: University of Illinois Press, 1990.

Etheridge, Elizabeth W., *Sentinel for Health: A History of the Centers for Disease Control*, Berkeley: University of California Press, 1992.

Farmer, Paul, *Pathologies of Power: Health, Human Rights, and the New War on the Poor*, Berkeley: University of California Press, 2003.

Garrett, Laurie, *The Coming Plague: Newly Emerging Diseases in a World Out of Balance*, New York: Penguin Books, 1994.

_____, *Betrayal of Trust: The Collapse of Global Public Health*, (New York: Hyperion Books, 2000)

_____, *HIV and National Security: Where are the Links? A Council on Foreign Relations Report*, New York: Council on Foreign Relations, 2005.

Kiple, Kenneth F., ed., *Cambridge World History of Human Disease*, New York: Cambridge University Press, 1993.

Kluger, Jeffrey, *Splendid Solution: Jonas Salk and the Conquest of Polio*, New York: G.P. Putnam's Sons, 2004.

McKenna, Maryn, *Beating Back the Devil: On the Front Lines with the Disease Detectives of the Epidemic Intelligence Service*, New York: Free Press, 2004.

McMurray, Christine, and Roy Smith, *Disease of Globalization: Socioeconomic Transitions and Health*, London: Earthscan Publications, 2001.

McNeill, William H., *Plagues and Peoples*, New York: Anchor Books, 1976.

Osamnczk, E. J., *Encyclopedia of the United Nations and International Agreements,* Philadelphia: Taylor & Francis, 1985.

Paul, John R., *A History of Poliomyelitis*, New Haven: Yale University Press, 1971.

Porter, Roy, *The Greatest Benefit to Mankind: A Medical History of Humanity*, New York: W.W. Norton & Co., 1997.

Rosen, George, *A History of Public Health*, Baltimore: The Johns Hopkins University Press, 1993.

Scutchfield, F. Douglas, and C. William Keck, eds., *Principles of Public Health Practice;* 2nd ed.; Clifton Park, NY: Delmar Learning, 2003.

Teutsch, Steven M., and R. Elliott Churchill, eds., *Principles and Practices of Public Health Surveillance*, 2nd ed.; New York: Oxford University Press, 2000.

Torrence, Mary E., *Mosby's Biomedical Science Series: Understanding Epidemiology*, St. Louis: Mosby, 1997.

Turnock, Bernard J., *Public Health: What It Is and How It Works,* Gaithersburg, MD: Aspen Publishers, 2001.

Walters, F.P. (Francis Paul), *A History of the League of Nations*, New York: Oxford University Press, 1952.

World Health Organization, *The First Ten Years of the World Health Organization*, Geneva, Switzerland: WHO/Palais des Nations, 1958.

Yergin, Daniel and Joseph Stanislaw, *The Commanding Heights: The Battle for the World Economy*, New York: Touchstone, 2002.

Web Sites

C-SPAN - Wikipedia, the Free Encyclopedia; Available from http://en/wikipedia.org/wiki/Index_case; Internet; accessed on 24 January 2006.

Current State and Territorial Epidemiologists; Available from http://www.cste.org/members/state_and_territorial_epi.asp; Internet; accessed on 5 February 2006.

Epidemic Intelligence Service of the U.S. Centers for Disease Control and Prevention; Available from http://www.cdc.gov/eis/about/about.htm; Internet; accessed on 28 August 2005.

Expert Working Group Meeting to Update the Medical Eligibility for Contraceptive Use; Available from www.who.int/reproductive-health/publications/mec/16_annex2.pdf; Internet; accessed on 7 February 2006.

Global Polio Eradication Initiative/History; Available from http://www.polioeradication.org/history.asp; Internet; accessed on 8 September 2005.

Office of Communications. National Institute of Neurological Disorders and Stroke. National Institute of Health, "Reye Syndrome;" Available from http://www.ninds.nih.gov/disorders/reyes_syndrome/reyes_syndrome.htm; Internet; accessed on 9 October 2005.

Past CDC Directors/Administrators; Available from http://www.cdc.gov/about/pastdirectors1.htm; Internet; accessed on 4 February 2006.

Preventive Medicine Residency (PMR) and Preventive Medicine Fellowship (PMF): Developing Public Health Leaders; Available from http://www.cdc.gov/epo/dapht/pmr/pmr.htm; Internet; accessed on 10 February 2006.