

SECTION 1

# **The Commission System**

1940-1972

## PART I

### The Genesis of the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Military

The noble cause of preventive medicine was served by the concept and formation of the Armed Forces Epidemiological Board. There were many contributors, but four men were directly responsible for the Board's genesis. The war in Europe (1938–1940) raised the specter of epidemic diseases such as influenza, typhus fever, malaria, and yellow fever, ancient diseases that had ravaged mankind, military and civilian alike. Brigadier General James S. Simmons, MC, U.S. Army, Chief of Preventive Medicine in the Office of the Surgeon General during World War I, and his deputy, Colonel Stanhope Bayne-Jones, MC, U.S. Army, were well aware of the medical handicaps that previous military officers had faced, in particular, their inability to control infectious diseases. General Simmons conceived the idea of a board of civilian medical advisors to the military. Colonel Bayne-Jones agreed; there was an urgent need to prevent infectious diseases in the army. Their careful planning and choice of civilian leaders were crucial to the success of the fledgling Board.

Dr. Francis G. Blake, Chairman of the Department of Medicine at Yale University School of Medicine, contributed his counsel; he and General Simmons were the founding fathers of the Board. Dr. Colin M. MacLeod, then Professor and Chairman of the Department of Microbiology at the New York University School of Medicine, also made notable suggestions during the early days. When the Armed Forces were rapidly expanded in 1940 and recruits throughout the United States were assembled into large military camps, the memory of the millions of **deaths** from influenza and pneumonia **during** World War I haunted the founders. They knew that it was imperative for this country's most competent civilian specialists to work alongside military medical and scientific officers in a joint effort to prevent catastrophic outbreaks of disease. They knew that epidemics have influenced military history as profoundly as military encounters have.

To achieve a cooperative and effective apparatus, their initial plan in 1940 was to establish a civilian board to investigate and control influenza and other epidemic diseases in the army. The recommendation to establish such a board was made in late December 1940, and on 11 January 1941 the Department of War approved the establishment of a "Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army." Colonel Bayne-Jones was appointed the first administrator (later known as the executive secretary), and he served as General Simmons's executive officer, organizing and administering the Board after its inception.

On 27 December 1940 the Surgeon General of the Army, based on a memorandum dated ten days earlier, recommended to the Secretary of War that he establish a civilian board to make available the appropriate scientific resources of the country and to assist in the control of epidemic diseases. This recommendation was approved. It, and the authorizing letter, follow:

### **JAMES STEVENS SIMMONS, M.D.**

Following his graduation from the University of Pennsylvania School of Medicine in 1915, J. Stevens Simmons took postgraduate training in bacteriology, attended the Army Medical School for a year, and was commissioned as a first lieutenant in the U.S. Army in 1916. He pursued his interests in laboratory medicine as a clinical pathologist in various Army posts, including Texas, Hawaii, the Philippines, and Panama. Not only did he keep abreast of microbiology and preventive medicine, he also earned a Ph.D. from George Washington University in **1934**, and a doctorate from the Harvard School of Public Health in **1939**. His research extended throughout the field of tropical diseases.

With the advent of World War II, he was selected to serve in the Surgeon General's Office as Chief of the Preventive Medicine Service. At this time, he and his Deputy, Stanhope Bayne-Jones, discerned the need for a board comprised of civilian academic medical scientists who could advise the Army on controlling infectious diseases among military personnel. The subsequent establishment of the Army Epidemiological Board and its Commissions was a landmark in the history of epidemiology in America.

During the war, and for a short time thereafter, General Simmons participated actively in the activities of the Board and made significant contributions. He was then invited to become Dean of the Harvard School of Public Health, a position he held for eight years.

### STANHOPE BAYNE-JONES, M.D.

B. J. was recognized as a wise man with unflinching integrity. During World War II, he served as Deputy **Director of Preventive Medicine under General Simmons, and as Director of the US. Army Typhus Fever Commission.** In addition to these responsibilities, he, along with General Simmons, saw that a board consisting of lay scientists could serve the Army. This Board was the forerunner of the AFEB. B. J. served as the Board's first administrator and also as its President, and participated actively and effectively in all its activities.

This simple example illustrates his character: One night during World War II, B. J. went, after midnight, to Washington National Airport to receive special hyperimmune pertussis serum for the infant son of one of his junior officers. Most would have sent an aide; B. J. went himself.

B. J. lived a productive life. He was the first professor of bacteriology at the University of Rochester School of Medicine and Dentistry. He then served as professor of bacteriology at Yale University School of Medicine and Dean of the Medical School. He was a writer, an epidemiologist, an administrator, and a General in the Army. He insisted that a professional must accept responsibility and complete his assignments. B. J. was a godfather of the AFEB, a coordinator of research who understood the need to maintain a sequential record of events.

**FRANCIS GILMAN BLAKE, M.D.**

When he rebuilt the Yale University School of Medicine, Dean Milton Winternitz was fortunate to attract **Dr. Francis Blake**, a Harvard Medical School graduate, to New Haven. Schooled in internal medicine, Dr. Blake ultimately chaired the Department of Medicine at Yale for three decades, and he simultaneously served the School of Medicine as its Dean. Francis Blake was the complete physician, an academician in the fullest sense; he was a teacher who taught by precept, a clinician accomplished in diagnosis, and a leader in curative and preventive medicine. Additionally, he was an accomplished clinical investigator and researcher in infectious diseases, particularly influenza, pneumonia, viral diseases, and the scrub typhus fevers.

It is no surprise that the original AEB succeeded; it was blessed with the membership of accomplished clinicians and medical scientists such as Stevens Simmons, Stanhope Bayne-Jones, and Colin MacLeod, and the presidential leadership of **Francis Blake**.

SUBJECT Establishment of a Board for the Investigation of Influenza and Other Epidemic Diseases in the Army

TO: The Adjutant General

1. The present expansion of the Army has been accompanied by an increase in influenza and other acute respiratory diseases among troops. In certain localities these diseases have reached epidemic proportions, but fortunately they are still relatively mild and their mortality is low. However, if we may judge from the experience of previous mobilization, this comparatively favorable condition probably will not continue. As larger numbers of selectees are brought together, the rapid passage of infection from one individual to another will probably cause an increase in prevalence, virulence, and fatal complications. In fact, the possibility cannot be ignored that the Army may again be confronted by another pandemic of influenza of the virulent type which caused such a large proportion of the total deaths among our troops during the last war.

2. During that period, one of the important agencies utilized in the campaign against infectious disease consisted of special boards composed of the most competent specialists available in the country, either military or civilian, whose function it was to study such conditions among troops and to advise the Surgeon General as to methods of prevention and treatment. An outstanding example was the "Pneumonia Board" appointed in 1918 (Special Order 118 W.D. 20 May 1918). This Board, which met at irregular intervals in Washington at the call of the Surgeon General, not only rendered advisory service of inestimable value, but organized and directed the studies of groups of expert epidemiologists, bacteriologists, chemists, and pathologists, who were sent to certain camps and hospitals to investigate and combat this disease.

3. Since the World War, our knowledge of the acute respiratory diseases has been increased enormously. We now know that certain of the interpandemic types of influenza are caused by filterable viruses and as these viruses can now be isolated it seems probable that eventually it may be possible to develop specific methods for their prevention. In view of the progress made recently in the study of these diseases, which are of such vital importance to the health and welfare of American troops, it is considered of urgent importance that the Army make immediate arrangements to utilize every scientific facility available in this country in a concerted effort to control these diseases and to reduce their mortality to a minimum.

4. With this objective in view, authority is requested for the Surgeon General to appoint and maintain a board for the investigation of the etiology, epidemiology, prevention, and treatment of influenza and other acute epidemic diseases in the Army; this board [is] to consist of such prominent physicians and other scientists as may be required from time to time, regardless of whether or not they are in the military establishment or other Federal Services or civilians not in the employ of the Federal Government. Because of the rapidity with which the respiratory diseases strike and the explosive nature of certain of the epidemics, it is essential that the organization of the board be made flexible and that its activities not be hampered by unnecessary administrative delays.

5. It is therefore recommended that this board be formed essentially as follows:

**A. Organization and Personnel.**

That the board consist of (1) a central body of such scientists and technicians as may be required, which will meet at the call of the Surgeon General; (2) an additional group of such expert scientists and technicians as may be required as consultants, who will meet with the central body when called on individually by the President of the Board; and (3) investigative teams, the number to be determined by the disease situation, each consisting of three or more scientists and technicians, who may be sent for temporary duty at military stations when deemed advisable by the Surgeon General for the study and control of epidemics. It is important that the total personnel for the board not be limited at this time, but that it be subject to change from time to time as the Surgeon General may deem necessary to meet any emergency disease situation which may arise in the Army.

**B. Status of Civilian Personnel.**

That the civilian members of the board who are not Federal employees be paid transportation expenses and \$20.00 per day while on temporary active duty at meetings or on investigative assignments with military organizations.

**C. Procedure.**

That the central body of the board hold meetings from time to time, at time and places designated by the Surgeon General, in order to study the available current information concerning epidemic disease in the Army, and to formulate and recommend to the Surgeon General plans for its further study and control.

***D. Control.***

That when the Surgeon General selects a team to investigate an epidemic at a military station, the personnel of the team will be ordered to report to the proper local authority for temporary duty and will remain under that authority until the work is completed. The investigators will conduct their studies according to instructions from this office with as little interference as possible with the routine care of the sick. They will have the privilege of direct communication with the Surgeon General through technical channels on technical matters, and all other communications will be routed through regular military channels. A final report of the results of each investigation will be submitted to the Surgeon General through the main body of the board.

6. The establishment of this board will make available to the Army the scientific resources of the country to assist in the program for the control of influenza and the other epidemic diseases which will undoubtedly arise in our expanding Army. Incidentally, its existence will undoubtedly be a matter of great satisfaction to the citizens of the country, who remembering the tragic experience of the Army with influenza in 1918, are so vitally concerned over the possibility of a repetition of that experience. Therefore, from the viewpoints both of developing an effective agency for the study and control of this disease and the national morale, authority for the immediate formation of this board is urgently requested.

*James C. Magee*  
Major General, U.S. Army  
The Surgeon General

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War Department, AGO  
January 11, 1941

TO: The Surgeon General

The plan outlined in the basic letter for the establishment of a board for the investigation of influenza and other epidemic diseases in the Army is approved, except that civilian members of the board who are not Federal employees will be paid not to exceed \$20. per diem for any person so employed and necessary traveling expenses.

*A. P. Sullivan*  
Adjutant General  
1 Encl.  
Cy of Ind to the Budget Officer for the War Department

Until 1942, the newly established Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army was attached to the Preventive Medicine Division of the Office of the Surgeon General in the Department of the Army. In this division, the affairs of the Board were administered through the civilian Board on Epidemics section of the epidemiology branch. (In 1942, and until the Army Epidemiology Board was organized in 1944, the deputy chief of the Preventive Medicine Division administered the Board.)

The original seven members of the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army were: Dr. Francis G. Blake, President, and Drs. Oswald T. Avery, Alphonse R. Dochez, Ernest W. Goodpasture, Kenneth F. Maxcy, O. H. Perry Pepper, and Andrew J. Warren, all of whom were distinguished civilian physicians and medical scientists. The first meeting of the Board was in Washington, D.C. on 6 February 1941. In addition to the seven members of the Board, there were also 104 Commission members, a total of 111 civilian specialists in infectious diseases attached,

through the Board, to the Office of the Surgeon General, all of whom held appointments as consultants to the Secretary of War.

#### THE ORGANIZATION OF THE ORIGINAL COMMISSIONS IN 1941

The original plan contemplated using Commissions to study special medical problems, with Board and Commission members serving as consultants to the military. (This was not unique; a similar group, the Pneumonia Board, had functioned effectively during World War I.) These civilian investigators would engage in field investigations of problems relating to epidemiology and preventive medicine. This Board and its Commissions differed from other advisory groups in that these civilians would participate actively in solving medical problems related to the military. They were to perform their research in civilian laboratories under contract; in the field, their work would be performed in collaboration with established military channels.

The initial recommendation for the establishment of the Commissions and their mission guidelines, which were prepared by Colonel Bayne-Jones and were approved by the Board and submitted by Dr. Blake to the Surgeon General in June, 1941, follow:

It is recommended by The Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army to the Surgeon General, U.S. Army:

I. (a) That the Commission on Epidemiological Survey, Dr. Stanhope Bayne-Jones, Director, be authorized to undertake the following investigations for use in the prevention and control of epidemics, particularly of bacterial diseases transmitted via the respiratory tract but also of other communicable diseases under appropriate conditions.

1. Conduct periodic surveys throughout the year to determine the prevalence of hemolytic streptococci, influenza bacilli, meningococci or other pathogens, when indicated, in the upper respiratory tract of selected groups of soldiers in designated camps in the 1st Corps Area, 4th Corps Area, 9th Corps Area and Department of Puerto Rico, as set forth in detail in recommendations of the Commission under dates of February 21, 1941 (Appendix A) and March 19, 1941 (Appendix B). [NOTE: All the appendices and attachments referred to in this report have been omitted. TEW.]

2. Conduct similar periodic surveys in the Department of Puerto Rico with special reference to the prevalence of *Brucella* and enteric organisms.

3. Conduct an investigation of coccidioidal infection in personnel at Bakersfield and Taft Basic Aviation Training Center, California, 9th Corps Area, under the direction of Dr. Edwin W. Schultz and Dr. Charles E. Smith, as set forth in recommendation of the Commission under date of May 31, 1941 (Appendix B).

(b) That the budget for the Commission on Epidemiological Survey be in the total amount of \$57,375.00 as stated in Exhibit "A", prepared by the Fiscal Officer, S.G.O., and attached to the Minutes of the Third Meeting of the Board, June 19-21, 1941.

II. (a) That the Commission on Hemolytic Streptococcal Infections, Dr. Martin H. Dawson, Director, be called upon, when threatened or actual epidemics of hemolytic streptococcal infections occur in the Army, to undertake field investigations of these epidemics, with particular study of the types of hemolytic streptococcus concerned, the incidence of cross-infections, the efficacy of chemotherapy in the treatment of scarlet fever and such other studies as may be necessary to provide a basis for recommendation concerning methods of prevention and control.

(b) That the Commission be authorized to undertake interim investigations of the epidemiology of hemolytic streptococcal infections by (1) arranging for the manufacture and purchase of diagnostic typing sera, (2) establishment of one or more central grouping and typing laboratories and (3) assisting in collaboration with other Commissions and with the Army Medical School in the grouping and typing of streptococcus strains.

(c) That the budget for the Commission on Hemolytic Streptococcal Infections be in the total amount of \$78,600, as stated in Exhibit "A", prepared by the Fiscal Officer, S.G.O., and attached to the Minutes of the Third Meeting of the Board, June 19-21, 1941. (For further details, refer to the recommendations of the commission dated 27 May 1941)

The *Armed Forces Epidemiological Board*

The original members of the Board for the Investigation and Control of Influenza and Other Epidemic Diseases  
12-13 May 1942

Front row, left to right: Dr. Andrew J. Warren; Dr. Ernest W. Goodpasture; Dr. Francis G. Blake, President of the Board; Dr. Oswald F. Avery; Dr. Kenneth F. Maxcy; and Dr. A. R. Dochez.

Second row, left to right: Dr. O.H. Perry Pepper; Colonel James S. Simmons; and Lt. Colonel Stanhope Bayne-Jones, Administrator.

### **OSWALD THEODORE AVERY, M.D.**

**Dr.** Oswald Avery, or Fess, as he was **known** by his associates at the Rockefeller Institute of Medical Research, was a major contributing member of the original **AEB** and its Commissions on Pneumonia and Immunization. Perhaps he might be regarded as the dean of the original Board. His guidance and experience were of inestimable value.

Dr. Avery's comprehensive investigations of the pneumococci, their classification, and their immunologic relationships led to a wider basic understanding of heredity and environmental factors, as well as to a more advanced knowledge of the process of infection.

**ERNEST WILLIAM GOODPASTURE, M.D.**

Not only was Dr. Ernest Goodpasture the Distinguished Professor of Pathology and departmental chairman at Vanderbilt University School of Medicine, but he also served as Dean of that School of Medicine. Dr. Goodpasture's research included pioneer studies of the growth of viruses, bacteria, and rickettsia in the chick embryo, and the development of techniques for stimulation of such growth. These studies led to improved understanding of the host-parasite relationship and opened up a new chapter in the history of the conquest of disease through the development of better biological vaccines and deeper knowledge of pathogenesis. As a charter member of the original Board, Dr. Goodpasture gave wise advice and unstinting support to all Board and Commission activities.

### **KENNETH F. MAXCY, M.D.**

Without question, Kenneth Maxcy ranks among the top epidemiologists of the mid-twentieth century. His pioneering field and laboratory investigations helped clarify the roles of infectious agents and the epidemiological, environmental, and ecological aspects of many infectious diseases. In 1926, he proposed that "endemic" typhus had a murine reservoir, probably mice or rats, and that an insect vector, the flea, transmitted the rickettsial agent to man. This remarkably accurate prediction was demonstrated in 1930, and it clarified the nature of murine typhus. This was not armchair epidemiology, but a combination of field work, clinical observation, and laboratory investigation. Dr. Maxcy was a persuasive, objective teacher, who derived his epidemiological conclusions from factual observations, and was a most effective scientific writer. His door was always open to the young investigators who matured under his tutelage.

Dr. Maxcy was a wise choice as a pioneering member of the original Army Epidemiology Board. During World War II, he and Dr. Francis Blake visited New Guinea and its adjacent northern islands during the heat of the Pacific conflict. They carefully inspected the terrain where scrub typhus fever was infecting military personnel, and they made key recommendations regarding disease control based on their clinical and epidemiological observations.

Dr. Maxcy's later years were spent at The Johns Hopkins School of Public Health and **Hygiene as Professor of Epidemiology**. He was a wise and considerate man.

*The Armed Forces Epidemiological Board*

(Appendix B) and the minutes of the third meeting of the board, 19–21 June 1941).

III. (a) That the Commission on Influenza, Dr. Thomas Francis, Jr., Director, be organized into three teams, (1) an Eastern team with laboratory facilities offered by the Rockefeller Foundation, New York City, to serve the 1st, 2nd, 3rd, and 4th Corps Areas; (2) a Mid-western team with laboratory headquarters at the University of Michigan, Ann Arbor, Michigan, to serve the 5th, 6th, 7th, and 8th Corps Areas; and (3) a far Western team with headquarters in the Research Laboratory of the California State Department of Health, Berkeley, California, to serve the 9th Corps Area.

(b) That the Commission be called upon when threatened or actual epidemics of influenza arise in the Army, to undertake field investigations with the purpose of studying (1) different etiological and clinical types of influenza; (2) the chemotherapeutic prophylaxis of bacterial complications of influenza; (3) the epidemiological characteristics of the outbreaks; (4) the significance of various factors in immunity to influenza; and (5) such other aspects of influenza as may be necessary to provide a basis for recommendation concerning methods of prevention and control.

(c) That the Commission be authorized to undertake interim investigations as follows: (1) experimental trial of influenza vaccine should vaccine of promise be available and suitable opportunity arise; (2) studies of the efficiency of respiratory masks, samples to be submitted to the Surgeon General for approval; (3) laboratory studies of materials and samples collected in the field bearing on the etiology, epidemiology and immunology of influenza and its complications.

(d) That the directive on influenza proposed by the Commission under date of April 15, 1941 (see Appendix B) be approved.

(e) That the budget for the Commission on Influenza be in the total amount of \$63,700. as stated in Exhibit "A", prepared by the Fiscal Officer, S.G.O., and attached to the Minutes of the Third Meeting of the Board, June 19–21, 1941).

IV. (a) That the Commission on Measles, Dr. Joseph Stokes, Jr., Director, be called upon to undertake the following investigations in the field when epidemics of measles or mumps suitable for the proposed investigations occur in the Army: (1) the experimental trial of chemotherapeutic drugs (sulfonamides) for the prevention and treatment of bacterial complications of measles in selected camp hospitals; (2) study of the clinical, bacteriological and pathological aspects of the cases of measles included in the chemoprophylactic and therapeutic investigation specified under (1); (3) the treatment of cases of measles and measles encephalitis with large amounts (150–200 cc) of convalescent measles serum intravenously, should suitable opportunity for a controlled experiment arise; (4) trial of convalescent mumps serum for the prevention or amelioration of orchitis.

(b) That the Commission on Measles be requested to draft and submit to the Surgeon General a directive regarding the use of passive immunization against measles and that for immediate needs placental extracts of known potency and known lack of toxicity be obtained by the United States Army from commercial firms for passive immunization against measles, until present legal restrictions on the collection of blood from soldiers are removed or arrangements can be made for obtaining and processing convalescent measles serum from volunteers.

(c) That the budget for the Commission on Measles be in the total amount of \$18,900. as stated in Exhibit "A", prepared by the Fiscal Officer, S.G.O., and attached to the Minutes of the Third Meeting of the Board, June 19–21, 1941. (For further details reference is made to the recommendations of the Commission on Measles under date of March 16, 1941 (Appendix B) and the Minutes of the Third Meeting of the Board, June 19–21, 1941).

V. (a) That the Commission on Meningococcal Meningitis, Dr. Perrin H. Long, Director, [NOTE: John J. Phair, M.D., succeeded Perrin H. Long, the initial director, who resigned to join the Army Medical Corps. T.E.W.] be called upon when threatened or actual epidemics of meningococcal meningitis occur in the Army, (1) to act as consultants with respect to methods of control and (2) to conduct in selected cases investigations in the field concerning the prevalence of types of meningococci, epidemiological aspects of epidemic outbreaks, effects of chemotherapeutic agents (preferably sulfadiazine) upon the incidence and duration of the carrier state, and such other studies as may be necessary to provide a basis for recommendation concerning methods of control.

(b) That the Commission be authorized to establish a central laboratory at the Johns Hopkins University School of Hygiene and Public Health, Baltimore, Maryland, to act as a center for (1) studying the classification of meningococci, (2) receiving and typing strains of meningococci isolated from carriers and cases of meningitis, (3) standardizing typing sera and (4) maintaining and analyzing epidemiological, clinical and therapeutic records on meningococcal meningitis in the Army supplied to the Commission through the Preventive Medicine Division, S.G.O.

(c) That the budget for the Commission on Meningococcal Meningitis be in the total amount of \$21,800. as stated in Exhibit "A", prepared by the Fiscal Officer, S.G.O., and attached to the Minutes of the Third Meeting of the Board, June 19–21, 1941. (For further details refer to the recommendation of the Commission on Meningococcal Meningitis dated 26 April 1941 (Appendix B) and the minutes of the third meeting of the board, 19–21 June 1941.)

VI.1(a) That the Commission on Neurotropic Virus Diseases, Dr. John R. Paul, Director, be called upon for consultant clinical and laboratory diagnostic and advisory service when cases of neurotropic virus diseases as defined in the report of the Commission under date of March 17, 1941 (see Appendix B) occur in the Army.

(b) That the Commission be called upon when threatened or actual epidemics of neurotropic virus diseases occur in the Army to conduct epidemiological, clinical and pathological investigations in the field with a view to improving measures of control and for the accumulation of information about these diseases as they may appear in the Army camps.

(c) That designated members of the Commission be called upon and authorized to perform autopsies in the field in fatal cases of neurotropic virus diseases in so far as possible.

(d) That the Commission be authorized to make interim studies of sporadic cases of encephalitis by means of complement fixation and neutralization tests on samples of blood serum collected from the patient at time of diagnosis and three and eight weeks later, paralleling similar tests being done at the Army Medical School.

(e) That the Commission be authorized to conduct combined field and interim laboratory studies to test for the presence of neurotropic viruses in materials from patients, contacts, sewage, etc.

(f) That the budget for the Commission on Neurotropic Virus Diseases be in the total amount of \$12,975. as stated in exhibit "A", prepared by the Fiscal Officer, S.G.O., and attached to the Minutes of the Third Meeting of the Board, June 19–21, 1941. (For further details refer to the recommendations of the Commission on Neurotropic Virus Diseases dated 17 March 1941, and revised 15 July 1941, Appendix B.)

VII. (a) That the Commission on Pneumonia, Dr. Colin M. MacLeod, Director, be called upon when epidemics of primary or secondary bacterial pneumonia occur in the Army, to conduct investigations in the field to determine the nature of the infecting agent or agents, the epidemiology of the disease and its clinical and pathological characteristics and to make such other studies as may be necessary to provide a basis for recommendation concerning methods of control, these field investigations to be made independently or in collaboration with the Commissions on Influenza, Measles, or Hemolytic Streptococcal Infections as determined by the particular situation.

(b) That the Commission be called upon in the case of non-bacterial pneumonia to make field studies of the disease and be authorized to conduct further interim studies of materials collected in the field in collaboration with designated civilian laboratories, such as the laboratories of the International Health Division of the Rockefeller Foundation in the case of "virus pneumonia" or the laboratories of the U.S. Public Health Service in the case of rickettsial infections.

(c) That the Commission be authorized to undertake the following interim investigations in civilian laboratories with the purpose of determining whether improved methods for the control of pneumonia and its complications may be discovered (1) immunological classification of *Hemophilus influenzae*; (2) preparation and trial in civilian volunteers of antigens for active immunization, particularly against pneumococcus Types I, II and V, and *Hemophilus influenzae*; (3) local use of sulfonamides, gramicidin, and penicillin in the treatment of empyema.

(d) That the budget for the Commission on Pneumonia be in the total amount of \$33,850. as stated in Exhibit "A", prepared by the Fiscal Officer, S.G.O., and attached to the Minutes of the Third Meeting of the Board, June 19–21, 1941. (For further details refer to the recommendations of the Commission on Pneumonia dated 6 June 1941 (Appendix B) and the minutes of the third meeting of the board, 19–21 June 1941.)

VIII. (a) That a Commission on Cross Infections in Hospitals be established and authorized to study methods for reducing the hazards of cross infection in hospital wards with special emphasis on aerosols and ultra-violet radiation but also on other procedures.

(b) That the personnel of this Commission be comprised of Consultants selected from the already established Commissions and Dr. William F. Wells, Associate Professor of Research in Air-borne Infection, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania.

(c) That the budget of the proposed Commission on Cross Infections in Hospitals be in the total amount of \$41,150. as stated in Exhibit "A", prepared by the Fiscal Officer, S.G.O. and attached to the Minutes of the Third Meeting of the Board, June 19–21, 1941.

### **THOMAS FRANCIS, JR., M.D.**

Thomas Francis graduated from Yale University School of Medicine where he was a protégé of Dr. Francis Blake, who introduced him to the field of infectious diseases, particularly influenza and pneumonia. This relationship led to Dr. Francis's being "passed on" to serve under Rufus I. Cole, chief of the hospital of the Rockefeller Institute in New York. At the Rockefeller, Francis worked with Thomas M. Rivers, William T. Tillett, Oswald T. Avery, Homer T. Smith, Colin MacLeod, Joe Smadel, and Frank Horsfall. His interests were directed to the field of virology and, specifically, to influenza. He is credited with having been the first scientist to isolate the influenza virus in this country, in 1935. His contributions to the field of influenza research included his clarification of the antigenic shifts that characterize this complicated virus. He directed the Department of Epidemiology in the School of Public Health at the University of Michigan, where he gained national prominence when he designed the trials for, and analyzed the results of, the Salk poliomyelitis vaccine. Jonas Salk was one of his proteges.

In 1941, Thomas Francis was chosen to be the first Director of the Commission on Influenza of the AEB. The contributions of this Commission to the prevention and control of influenza with biological vaccines is a remarkable achievement in American medicine. He was proud that his associate, Dr. Fred Davenport, succeeded him as Director of the Commission on Influenza. From 1958 to 1960, Dr. Francis was President of the AFEb.

### **JOSEPH STOKES, JR., M.D.**

Joe Stokes was the ideal pediatrician. Trained in bedside pediatrics and experimental medicine related to children, Joe made lasting contributions to the field of infectious diseases. The Henry Phipps Institute of the University of Pennsylvania was his professional home. Because of his exceptional background and devotion to his work, Joe Stokes was selected to direct the first Commission on Measles and Mumps of the AEB. He performed some of the pioneering work involved in vaccine development, and showed the importance of immune serum in the prevention of measles, mumps, and pertussis. He was a charter member of the Commission on Cross Infections in Hospitals. He was a clinical pediatrician who used the laboratory to fill the gaps in knowledge that he observed in infectious diseases.

Joe Stokes's contributions to the Board and its Commissions were vital to their success. Francis Blake, Stanhope Bayne-Jones, and Aims McGuinness all leaned heavily on him for help and advice. A contribution of inestimable significance to the Board, not previously divulged, occurred soon after the beginning of hostilities of World War II and the debut of the AEB. His interaction with Secretary of War Henry Stimson is recounted in Appendix 2.

**PERRIN HAMILTON LONG, M.D.**

After he graduated from the University of Michigan Medical School at Ann Arbor in **1924**, Perrin Long performed research in Germany and at the Rockefeller Institute for Medical Research on the benefits of antisera against pneumococci and other bacteria. He joined the faculty of The Johns Hopkins University School of Medicine in **1929** and was Professor of Preventive Medicine there from **1940** to **1951**. Dr. Long is credited with having introduced sulfonamides, which were the first effective antibacterial agents, to the United States.

He was appointed as the first Director of the Army Epidemiological Board's Commission on Meningococcal Infections. This service was short-lived, because he joined the Army Medical Corps as a Colonel in **1942**, and served as a medical consultant to the Chief Surgeon of the Mediterranean Theater. Perrin Long left Hopkins in **1951** to become Chairman of the Department of Medicine at the State University of New York, Downstate Medical Center, where he remained until his retirement in 1961.

### **JOHN R. PAUL, M.D.**

John R. Paul, Distinguished Professor of Epidemiology and Preventive Medicine at Yale University School of Medicine, was an important contributor to the AFEB and its Commissions. He faithfully attended all meetings, his presence alone lending stature to the proceedings. He directed the activities of several Commissions of the Board those on Viral and Rickettsial Diseases (before the formation of the Commission on Rickettsial Diseases), Neurotropic Virus Diseases, and **Virus** Diseases. He vigorously pursued the scientific programs that he directed, and the data derived from that research were of inestimable value to the military. Like other Board and Commission Members, he made numerous field trips; he went to Cairo and the Middle East in **1943**, and to Japan and Korea in **1953**, to study dengue, sandfly fever, and hemorrhagic fever. After World War II, Dr. Paul made valuable contributions to the knowledge of poliomyelitis.

### COLIN M. MACLEOD, M.D.

The list of Colin MacLeod's contributions to the activities of the AFEB and various of its Commissions is lengthy and impressive. At the Rockefeller Institute for Medical Research, he, his mentor Oswald T. Avery, and Maclyn McCarty worked with *diplococcus pneumoniae*; they were the first to demonstrate the genetic transformation of inheritable traits in the pneumococci. Dr. MacLeod and his associates demonstrated that a vaccine prepared from inactivated pneumococci conveyed immunity against infection with homologous types. Following his experience at Rockefeller, Dr. MacLeod organized and developed the Department of Microbiology at New York University, which became the training ground for some of the leaders in American medicine. Later, he became Professor of Research Medicine at the University of Pennsylvania School of Medicine. Soon thereafter he served in the Office of Science and Technology under President Lyndon B. Johnson.

It is doubtful that the AFEB would have been so successful without the help of Colin MacLeod. He chaired the original Commission on Pneumonia; was a contributing member of various of the Commissions, including those on Immunization, Epidemiological Survey, and sparked the work of many others; and he served as President of the Board from 1947 to 1955, when the AEB was reorganized as the AFEB. Colin MacLeod was the right person in the right job at the right time. The Board and its Commissions flourished under his leadership and they profited from his knowledge of microbiology, virology, and immunology. He was a pioneer who never ceased to contribute.

IX. That laboratory apparatus and supplies needed by Commissions of the Board for field investigations be assembled in each Corps Area Laboratory and be made promptly available to a Commission when the Commission is ordered to active duty for field studies.

X. That, if possible, all funds for the **work** of the Commissions, except pay for Consultants, per diem and travel, be made available in the form of grants-in-aid.

Respectfully submitted for the Board,

*Francis G. Blake, M.D.*, President  
Board ~~for~~ the Investigation and Control of Influenza  
and Other Epidemic Diseases in the Army

#### INTERIM REPORT OF THE ACTIVITIES OF THE COMMISSIONS

In May 1942, the Board recommended that a Commission on Acute Respiratory Diseases be established. Private funds totaling \$70,000 were contributed by the Commonwealth Fund and the A. H. Kellogg, John and Mary Markle, and Rockefeller foundations. The unit was established under the direction of Dr. John H. Dingle. Other Commissions that were established by the Board, and their original Directors, were: Cross Infections in Hospitals, Oswald H. Robertson, M.D; Epidemiological Survey, Francis G. Blake, M.D; and Tropical Diseases, Wilbur A. Sawyer, M.D.

An interim report of the activities of the Commissions from May 1942 to January 1943 was prepared by Colonel Bayne-Jones and Dr. Blake. Their report, which follows, provides valuable information on the field studies and personal contributions made by members of the Commissions:

Board for the Investigation and Control of Influenza  
and **Other** Epidemic Diseases in the Army  
Interim Report  
May 1942–January 1943

The following is a brief summary of the activities of the Commission of the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army since its last meeting on May 12–13, 1942.

#### I. General

**A.** Contracts. Commission contracts for 1943–43 were completed and approved the latter part of July, 1942.

**B.** Conferences. Conferences have been held from time to time in the Office of the Surgeon General for the purpose of discussing the work of the Commissions, planning field studies, etc.

**C.** Commissions in Army Medical Corps for Consultants. In recent months a number of Commission members of military age have resigned to accept commissions in the Army or Navy Medical Corps. In order to conserve the expert services of Commission members and to prevent disruption of the work of the Board, recommendation was made on November 16, 1942, to Brigadier General Miller Grieve White, Assistant Chief of Staff G-1, that a special allotment of twenty-five medical officers unrelated to the requirements for troops be authorized, these officers to be attached to the Office of the Surgeon General, Preventive Medicine Division, and that whenever necessary, members of Commissions of the Board be commissioned at appropriate grades and so attached. This recommendation was approved by the Secretary of War on December 7, 1942. Members of Commissions who have been offered the opportunity to apply for a commission under this allotment, and who have accepted, are Dr. Aims C. McGuinness, of the Commission on Measles and Mumps; Dr. Norman Plummer, of the Commission on Influenza; and Dr. Albert B.

Sabin and Dr. Murray Sanders, of the Commission on Neurotropic Virus Diseases. It is expected that several more will be commissioned in the near future.

D. Primary Atypical Pneumonia. Since research on atypical pneumonia has been carried on by members of the Commission on Acute Respiratory Diseases, Influenza, and Pneumonia, the work done on this disease is being summarized under a separate heading.

1. The report of Dr. John H. Dingle and his associates on the study of atypical pneumonia at Camp Claiborne, Louisiana, from December 1941 to May 1942, entitled "Primary Atypical Pneumonia, Etiology Unknown," was completed last fall, and on November 10 was passed for publication by the Bureau of Public Relations of the War Department. The manuscript was submitted to War Medicine and accepted for publication. It is expected that it will appear in an early issue.

2. A conference on atypical pneumonia was held on September 24, 1942, at the Rockefeller Institute for Medical Research in New York, in order to exchange information with a view to promoting further studies of this disease. The conference was attended by Colonel J. S. Simmons, Colonel S. Bayne-Jones, Dr. O. T. Avery, Dr. Francis Blake, Dr. John H. Dingle, Dr. Monroe D. Eaton, Dr. Thomas Francis, Jr., Dr. Frank L. Horsfall, Dr. Colin M. MacLeod, and Dr. Thomas M. Rivers.

3. Field Trips. Investigations of atypical pneumonia were made at the following Army posts:

a. Brookley Field, Alabama, August 16-19, 1942, by Dr. A. E. Feller.

b. Chanute and Scott Fields, Illinois, September 12-15, 1941, by Dr. A. E. Feller.

c. Air Force Station, Sioux Falls, South Dakota, November 13-21, 1942, by Dr. Colin M. MacLeod (see Commission on Pneumonia).

d. Maxwell Field, Alabama, November 23-December 4, 1942, by Dr. John H. Dingle and other members of the commission on Acute Respiratory Diseases.

## II. Commissions: Interim and Field Studies

### A. Commission on Acute Respiratory Diseases

In accordance with the recommendation of the Board at its meeting on May 12-13, 1942, and after approval by the Surgeon General on June 23, 1942, application was made to the Commonwealth Fund, the W. K. Kellogg Foundation, the John and Mary R. Markle Foundation, and the Rockefeller Foundation, for funds to support an investigation of acute respiratory diseases in troops under the auspices of the Board. As a result of these applications, a total fund of \$70,000. was obtained, and on July 24 recommendation was made to the Surgeon General that the Commission on Acute Respiratory Diseases be established at Fort Bragg, North Carolina, under the direction of Dr. John H. Dingle. Additional personnel of the Commission were subsequently added, as follows: Drs. Theodore J. Abernethy, George F. Badger, Alto E. Feller, Alexander D. Langmuir, James M. Ruegsegger, and Elias Strauss. Pending the construction of a Commission laboratory at Fort Bragg, the group spent August and September in Baltimore, completing the analysis of the data from the Camp Claiborne study and drawing up plans for the study at Fort Bragg. On October 19, the group began work at the Respiratory Diseases Commission Laboratory at Fort Bragg, North Carolina. The Commission is currently engaged in a study of the epidemiology, etiology, and clinical features of all admissions of respiratory illness to the Station Hospital from six Army organizations. The Commission has also made an investigation of atypical pneumonia at Maxwell Field, Alabama, in November, and an investigation of over-crowding in barracks and mess halls in relation to the prevalence of respiratory infection at Fort Bragg.

### B. Commission on Cross Infections in Hospitals

1. Chanute Field, Illinois. Field studies at Chanute Field have continued in accordance with recommendation of the Board. Studies on the effect of propylene glycol vapor on monkeys were instituted in June. The lungs of monkeys exposed to a fog of propylene glycol for three to four months appear no different from the lungs of normal control monkeys. More recently, it has appeared that triethylene glycol is superior to propylene glycol and plans are now going forward for a trial of this aerosol in barracks at Chanute Field. The Research Corporation of New York is collaborating in the engineering aspects of the investigation.

2. Acute Respiratory Infections Among Troops on Transports. On November 24, 1942, a conference was held at the Port of Embarkation in Brooklyn, New York, on the control of acute respiratory infections among troops on transports. This conference was attended by Colonel Bayne-Jones and Lieut. Colonel Lundeberg of the Surgeon General's

Office, Dr. Francis G. Blake, and Dr. O. H. Robertson and Mr. Theodore T. Puck of the Commission on Cross Infections in Hospitals, and officers of the Port Surgeon's Office. As a result of this conference, it was deemed advisable to postpone trial of aerosols on transports until more data [are] available from the projected studies at Chanute Field.

#### *C. Commission on Epidemiological Survey*

1. Bacteriological surveys in the First and Fourth Service Commands have been continued.
2. The study of coccidiomycosis in the Ninth Command under the direction of Dr. Charles E. Smith has been continued and extended according to recommendation of the Board. In addition, the West Coast Army Air Force Training Command has set up a control program for coccidiomycosis covering the entire West Coast. Dr. Smith was among those called in to formulate plans for this program.

#### *D. Commission on Hemolytic Streptococcal Infections*

1. The preparation of grouping and typing sera for hemolytic streptococci has been continued.
2. Dr. Paul L. Boisvert has started pilot experiments on the preparation of anti-streptococcal grouping and typing sera in chickens. The stimulus for these experiments came from Dr. John J. Phair, Director of the Commission on Meningococcal Meningitis, who found that excellent anti-meningococcal typing sera can be rapidly prepared in chickens.
3. On July 14, 1942, a preliminary report was received from Dr. Paul L. Boisvert on the studies on the streptococcal antifibrinolysin test made at Fort Sheridan, Chanute Field, and Scott Field by Dr. Boisvert and Dr. James D. Trask in May 1942. As a result of this survey it was felt that the antifibrinolysin test may offer a simple and rapid means of measuring the prevalence of Group A hemolytic streptococci in a military barrack or camp, but that more should be learned about the seasonal incidence of positive tests and the length of time a positive test generally persists.
4. An investigation of an outbreak of septic sore throat at Camp Stoneman, California, was made by Dr. Arthur L. Bloomfield and Dr. Lowell A. Rantz from June 20-23, 1942. Dr. Bloomfield and Dr. Rantz are continuing their studies of hemolytic streptococci in Army camps on the West Coast.

#### *E. Commission on Influenza*

1. An influenza vaccination study was instituted at Cornell University, Ithaca, New York, on November 19, 1942, under the direction of Dr. W. G. Smillie. By January 20, 1943, 3,000 vaccinations had been completed.
2. Another investigation of vaccination against influenza was started in November at the Eloise State Hospital and Infirmary, Eloise, Michigan, and at the Ypsilanti State Hospital, under the direction of Dr. Thomas Francis, Jr., 8,009 vaccinations have been carried out in the two institutions.
3. Virus studies are being continued by Dr. Francis in Michigan and by Dr. Monroe D. Eaton in California,

#### *F. Commission on Measles and Mumps*

1. In accordance with recommendation of the Board, a program of vaccination against measles [in] large groups of susceptible children in thickly populated districts of Baltimore and Philadelphia has been carried out under the direction of Dr. Joseph Stokes, Jr. in Philadelphia, and under the direction of Dr. Horace L. Hodes in Baltimore. Results of the Baltimore study as summarized by Dr. Hodes show that after vaccination of children, some signs of infection with measles were present in 46% of the children of 9 to 18 months of age, down to 18% of the children of 5 to 6 years of age.
2. An epidemic of measles in Philadelphia in December provided the opportunity for further studies on Cohn globulin by Dr. Stokes and his associates. Out of 28 children who were intimately exposed to severe measles and who were injected with globulin, 23 developed no measles, and 5 had very mild cases. At the present time, Dr. Stokes and his associates are studying in particular the effect of the injection of large doses of Cohn's globulin fractions given during the initial stages of measles at the first appearance of Koplik spots.
3. Dr. Sydney Gellis has been working on studies of the measles virus at the Squibb Institute for Medicine Research since November 1, 1942.
4. *Mumps*. On January 16, Dr. Aims C. McGuinness went to Camp Pickett, Virginia, to begin a study of cases of mumps at this post.

*G. Commission on Meningococcal Meningitis*

1. **Dr. John J. Phair**, Director, has found that excellent anti-meningococcal grouping and typing serum can be prepared rapidly in chickens.

2. The central laboratory of the Commission has been working on an experimental study of the possible development of a chick embryo virulence test for meningococci.

3. *Meningitis at Jefferson Barracks, Missouri.* As a result of a reconnaissance trip by Dr. John J. Phair from August 17 to 26, 1942, for the investigation of the occurrence of meningococcal meningitis in personnel stationed at Jefferson Barracks, Missouri, and Scott Field, Illinois, recommendation was made that a field observation station be set up at Jefferson Barracks, Missouri, by the Commission. The field laboratory was set up on September 28, 1942. The purpose of the study has been to determine if possible the factors influencing the continued occurrence of meningitis at this station and to collect material for interim studies of the Commission. Dr. Phair's report on the study at Jefferson Barracks emphasizes the three factors which aid the occurrence of meningococcal meningitis: crowded quarters, a high meningococcus carrier rate, and the continued addition of susceptibles (unseasoned recruits).

4. *Meningitis at Scott Field, Illinois.* On January 13, 1943, Dr. C. Phillip Miller went to Scott Field to investigate the rising incidence of meningococcal meningitis at this post. In his report of January 14, he stated that he did not believe these cases constituted an epidemic, but rather a seasonal rise which would probably continue for another month or so.

5. There has been a recent rise in the incidence of meningococcal meningitis throughout the country. Plans are being considered for further investigations at Jefferson Barracks or other posts. On January 9, Dr. Phair left for Fort Eustis, Virginia, for a survey there.

*H. Commission on Neurotropic Virus Diseases*

1. The experiments in Dr. Sabin's laboratory on methods of preparing mouse brain suspension containing the inactivated virus of (1) St. Louis, and (2) Japanese B encephalitis, have reached the stage where a field trial of these suspensions as immunizing agents seems feasible. A similar "vaccine" for use in humans against Western equine encephalomyelitis has been prepared from the allantoic fluid of the incubating hen's egg by a group of workers in Philadelphia (Dr. Henle and Dr. Leslie Chambers, under the direction of Dr. Joseph Stokes and Dr. Peter K. Olitsky) and it is felt that this vaccine is probably also ready for a field trial. It is proposed that the tests be made on 1,000 or more volunteers who live in areas where St. Louis and Western equine virus is endemic, or has been epidemic. Sharp and Dohme has offered to make up 1,000 units of each vaccine free of charge for the Commission, and it is proposed that the experiments be carried out in the spring when the trial vaccines should be ready.

2. *Lymphocytic choriomeningitis.* In accordance with recommendation made to the Office of the Surgeon General on December 1, 1942, an investigation of the prevalence of lymphocytic choriomeningitis as determined by complement-fixation tests was set up at the Children's Hospital in Boston under the direction of Dr. Charles A. Janeway. Plans for further studies in Army posts will be held in abeyance until the study of patients in civilian hospitals is finished and results show the desirability of carrying the experiments further.

3. *Dengue-like disease at Fort Bragg, North Carolina.* On September 4, 1942, Dr. John R. Paul, Dr. Norman Topping of the U. S. Public Health Service, and Major Cornelius Philip, Sn.C. went to Fort Bragg to investigate a dengue-like disease at that post. The name and type of disease and manner of spread was not determined. The disease differed in certain respects from other fevers (dengue, trench, Rocky Mountain spotted fever, typhus, tick-bite fever).

4. *Epidemic keratoconjunctivitis.* Dr. Murray Sanders, who was appointed to this Commission in October, has carried out extensive investigations of epidemic keratoconjunctivitis, or shipyard conjunctivitis, which has appeared in epidemic form both on the West Coast and in the East during the last few months. On December 4, 1942, a conference on keratoconjunctivitis was held in New York City for the purpose of giving information to medical officers concerned with the supervision of plans and arsenals. The proceedings of this symposium will soon be published. A circular letter about keratoconjunctivitis was issued by the Office of the Surgeon General, Preventive Medicine Division, January 11, for distribution to all medical officers in the U. S. Army.

5. *Poliomyelitis at San Antonio and Corpus Christi, Texas.* From December 25, 1942, to January 8, 1943, Dr. John R. Paul made an investigation of poliomyelitis at San Antonio and Corpus Christi, Texas. In his preliminary report on January 15, Dr. Paul states that while poliomyelitis has not been regarded as a military disease, the presence of an epidemic in a community so closely associated with the Army would cause concern to the officers and men of Fort Sam Houston. In this sense, poliomyelitis is a military disease with serious potentialities, particularly because of its

### **JOHN J. PHAIR, M.D.**

John Phair graduated from the University of Cincinnati College of Medicine in 1929. He served as an intern and resident in medicine at Cincinnati General Hospital. This was followed by a fellowship at the Rockefeller Foundation in 1932–1933. In 1933, he received his M.P.H. from The Johns Hopkins School of Hygiene and Public Health and received his doctorate in Public Health there in 1938.

Dr. Phair was an exceptionally well-trained epidemiologist; he had a broad range throughout microbiology. Like so many others with his background, he was served as a consultant to the Secretary of War from 1942 to 1946. During this period, he became closely identified with the AFEB and its Commissions. He was a charter member of the Commission on Meningococcal Meningitis and succeeded Perrin Long as its Director. He contributed to developing new knowledge of meningococcal, streptococcal, and respiratory tract diseases. Following World War II, he became Professor of Preventive Medicine at the University of Louisville School of Medicine, where he served **from** 1946 to 1949.

occurrence in a region where poliomyelitis had not been epidemic before.

### ***I. Commission on Pneumonia***

1. Study of the problem of immunization with pneumococcal polysaccharides by Dr. Michael Heidelberger is being continued.

2. Recommendation was made on January 13, 1943, that an investigation of atypical pneumonia proposed by Dr. Jacob Furth be authorized. This proposal has been approved and the study will be carried out at the Cornell University Medical College, beginning March 1, 1943.

3. An investigation of lobar and atypical pneumonia at the Air Force Station, Sioux Falls, South Dakota, was made by Dr. Colin M. MacLeod from November 13, 1942 to November 21, 1942. Dr. MacLeod studied the clinical nature of both the upper respiratory infections as well as the varieties of pneumonia admitted to the Station Hospital between August 22 and November 20, 1942.

### ***J. Commission on Tropical Diseases***

1. *Dysentery*. An investigation of dysentery at Indiantown Gap, Harrisburg, Pennsylvania, was made by Dr. Carl Ten Broeck, Dr. John B. Nelson, and Dr. Frederick B. Bang, from July 15-19, 1942. Beginning September 25, this same group began a month's study of dysentery in the Fourth Service Command. Investigation of dysentery in the First Division and Second Armored Division at Fort Benning, Georgia, showed that an epidemic of dysentery will, to a large extent, disorganize large bodies of troops. The following recommendations were made by Dr. Ten Broeck (1) that a more careful study be made of so-called common diarrheas to see in what proportion dysentery bacilli can be isolated, (2) that commanding officers and men be educated in camp hygiene.

2. *Typhus-spotted fever at Fort Sam Houston, Texas*. From July 18-25, 1942, an investigation of cases of typhus-spotted fever group at the Station Hospital, Fort Sam Houston, Texas, was made by Dr. Kenneth F. Maxcy, Dr. Norman Topping, and Dr. John C. Snyder. From the evidence available, it was concluded that none of the cases about which consultation was sought could be definitely diagnosed as typhus, Rocky Mountain spotted fever, or "Q fever. On the other hand, most of them resembled two other clinical syndromes, "pneumonitis" or "primary atypical pneumonia," or "tick-bite fever." Both of these identifications were tentative in the absence of laboratory tests.

### **III. Resignations:**

*Commission on Epidemiological Survey*: Dr. George Hartley, Jr., June 26, 1942.

*Commission on Hemolytic Streptococcal Infections*: Dr. M. Henry Dawson, Director, October 15, 1942. (Dr. Dawson resigned his directorship because of illness, but retains his status as Consultant and member of the Commission.) Dr. Francis F. Schwentker, October 1, 1942. Dr. C. V. Seastone, September 8, 1942.

*Commission on Influenza*: Dr. Gaylord W. Anderson, July 18, 1942. Dr. J. W. Brown, August 31, 1942. Dr. Yale Kneeland, August 31, 1942.

*Commission on Measles and Mumps*: Dr. E. S. Robinson, July 4, 1942.

*Commission on Meningococcal Meningitis*: Dr. Perrin H. Long, Director, August 31, 1942.

*Commission on Pneumonia*: Dr. J. F. Sadusk, Jr., July 4, 1942.

*Commission on Tropical Disease*: Dr. Thomas T. Mackie, Assistant Director, August 3, 1942. Dr. Frederick B. Bang, January 25, 1943.

### **IV. New Appointments:**

*Commission on Acute Respiratory Diseases*: (see page 2 for list of original personnel) Dr. Charles H. Rammelkamp, Evans Memorial Hospital, 65 East Newton Street, Boston, Massachusetts.

*Commission on Hemolytic Streptococcal Infections*: Dr. Chester S. Keefer (appointed Director, October 17, 1942).

*Commission on Measles and Mumps*: Dr. Sydney S. Gellis, Johns Hopkins University School of Medicine, Baltimore, Maryland.

*Commission on Meningococcal Meningitis*: Dr. John J. Phair.

*Commission on Neurotropic Virus Diseases*: Dr. Charles A. Janeway, The Children's Hospital, 300 Longwood Avenue, Boston, Massachusetts; Dr. Murray Sanders, Columbia University School of Medicine, New York City; Dr. Robert Ward, The Children's Hospital Research Foundation, Cincinnati, Ohio.

*Commission on Tropical Diseases:* Dr. Frederick B. Bang, Rockefeller Institute for Medical Research, Princeton, New Jersey; Dr. John B. Nelson, Rockefeller Institute for Medical Research, Princeton, New Jersey; Dr. John C. Snyder, International Health Division, The Rockefeller Foundation, New York City.

Francis G. Blake, M.D., President  
January 26, 1943

### **The Short-Lived Commissions**

Several of the original commissions were short-lived. Sometimes, the responsibility initially assigned was too diffuse for a commission to be efficient, and sometimes a commission's responsibilities could better be incorporated into that of other commissions. For example, the activities of the Commission on Pneumonia were transferred to the Commission on Acute Respiratory Diseases. The Commission on Tropical Diseases initially embraced the field including malaria, yellow fever, rickettsial diseases, and dysentery. Three of these illnesses — malaria, rickettsial diseases, and enteric infections — were assigned to new specific commissions. Other Commissions, such as those on Viral Diseases and Immunization, addressed the problem of yellow fever, and the Commission on Tropical Diseases was terminated. When he was Assistant Director of the Preventive Medicine Division in the Office of the Surgeon General of the Army, Colonel Stanhope Bayne-Jones prepared the following report on the short-lived commissions and their personnel, which is reprinted from the **Army Medical Bulletin** 64 and is dated October 1942:

#### **Commission on Cross Infections in Hospitals**

*Personnel:* Dr. Oswald H. Robertson, Director; Drs. Clayton G. Loosli, C. Phillip Miller, Francis F. Schwentker, Wilson G. Smillie, Joseph Stokes, Jr., and Mr. William F. Wells.

In recent years, new methods have been devised for reducing the numbers of pathogenic bacteria and viruses in the air of operating rooms, hospital wards, barracks, and school rooms. The actual sterilization of the air in occupied enclosures is within the range of possibilities. These methods give promise of greatly reducing air-borne cross infections.

The function of this Commission is to investigate the application of such methods to hospital wards and barracks under actual conditions of use in the Army. For these purposes, the Commission has been carrying out a field study at the Station Hospital at Chanute Field and has been continuing research with animals in laboratories at the University of Chicago and the University of Pennsylvania. The program for the current year includes:

(1) Study of the effects of ultraviolet light, under conditions of radiation, for its bactericidal action on air-borne microorganisms and for the prevention of spread of bacteria from patient to patient.

(2) Investigation of the pharmacological effects of propylene glycol vapor on animals and the ability of this vapor to destroy pathogenic microorganisms and viruses.

(3) When satisfactory evidence is obtained showing the propylene glycol vapor is not toxic, study of the activity of the vapor in the same manner in which ultraviolet light is being investigated.

(4) Study of the comparative effectiveness of both ultraviolet radiation and propylene glycol vapor on dust-borne bacteria.

(5) Investigation of the bactericidal and viricidal properties of other glycols.

(6) When deemed appropriate, the application of these measures for the control of air-borne infection to relatively isolated and fairly large non-hospitalized groups.

#### **Commission on Measles and Mumps**

*Personnel:* Dr. Joseph Stokes, Jr., Director; Drs. Sam S. Blackman, Jean V. Cooke, John F. Enders, Horace L. Hodes, Aims C. McGuinness, Charles F. McKhann, Morris Shaffer.

The Commission on Measles and Mumps, with headquarters at the University of Pennsylvania, Philadelphia,

**CLAYTON G. LOOSLI, M.D.**

After he qualified in medicine at the Chicago Medical School in 1934, Clayton Loosli interned on the Osler Medical Service at The Johns Hopkins University School of Medicine. He was a faculty member in the Department of Internal Medicine at the Chicago Medical School from 1938 to 1949, where he worked with O. H. Robertson on the mechanisms and spread of infections, particularly those of air-borne viruses and bacteria. From 1941 to 1946, Dr. Loosli served in the Office of the Surgeon General of the Army, where he progressed to the rank of Major. During this period, he gained valuable experience in the epidemic diseases of influenza, pneumonia, and air-borne infections.

He was a charter member of the original Boards Commissions on Cross Infections in Hospitals and Pneumonia. He was appointed to the AFEB's Commission on Influenza in 1948, and became a member of the Board in 1957. He made major contributions to the understanding of influenza and acute respiratory diseases.

After World War II, from 1949 to 1958, Dr. Loosli was Chief of the Department of Preventive Medicine at Chicago, and from 1958 to 1964, was Distinguished Professor of Medicine and Dean of the School of Medicine at the University of Southern California.

Pennsylvania, [was] concerned with problems of epidemiology, prevention, control, and treatment of these diseases. The two main features of its activities have been the collection and supervision of the processing of convalescent measles and mumps sera and the development of measles vaccine, with tests of the prophylactic value of this vaccine in civilian groups. With a number of projects under way, the approved program for the year 1942-43 includes:

- (1) Studies of the prevention and treatment, by means of chemotherapeutic agents, of bacterial complications of measles.
- (2) Attempts to control epidemics of measles by passive immunization with human immune serum or products of serum.
- (3) Study by tests in animals of the various available preparations of human immune substances, including human immune globulin prepared by ethanol fractionation.
- (4) Assistance in the treatment of cases of measles with convalescent measles serum or with immune globulin.
- (5) Assistance in the treatment of cases of measles encephalitis with convalescent serum or immune globulin.
- (6) Investigation of the protection afforded by immunization with active egg-passage measles virus among large groups of susceptibles in thickly populated districts in cities.
- (7) Study of the nasopharyngeal flora by aerobic and anaerobic methods for the possible isolation of a bacterium with synergistic action in measles.
- (8) Continuation of studies concerning the reactivity of the skin to injections of inactive measles virus grown in chick-embryo, making tests in immune and susceptible individuals. Studies for the determination of immunity [also include] precipitin tests, complement fixation tests, and other tests *in vitro*.
- (9) Study of postmortem material to determine bacterial flora and the distribution of measles virus in tissues and organs.
- (10) Study of the treatment of various stages and complications of mumps, including orchitis and meningo-encephalitis, with mumps convalescent serum.
- (11) Study of the use of the parotid gland of monkeys infected with mumps in complement fixation tests. This will be done under the direction of Dr. John F. Enders.
- (12) Collection and assistance in processing convalescent measles and mumps sera.

*Former member of this Commission: Dr. Elliott S. Robinson, Massachusetts State Antitoxin and Vaccine Laboratory, Jamaica Plains, Boston, Massachusetts. Resignation effective July 6, 1942. On active duty with Medical Corps, U.S. Army.*

#### **Commission on Pneumonia**

*Personnel: Dr. Colin M. MacLeod, Director; Drs. Theodore J. Abernethy, Jacob Furth, Michael Heidelberger, Clayton G. Loosli, Edward S. Rogers, James M. Rueggsegger, Wheelan D. Sutliff, William S. Tillett, W. Barry Wood.*

The headquarters of the Commission on Pneumonia are at the New York University College of Medicine. While some of its work has been conducted there, much has been carried on in cooperation with other Commissions and at other institutions. The initiation of investigations of atypical pneumonia was largely an undertaking of this Commission.

The approved program for 1942-43, essentially a continuation of current activities, includes:

- (1) Readiness to undertake field or laboratory investigations of pneumonias, as required by circumstances.
- (2) Continuation of studies on primary atypical pneumonia, etiology unknown.
- (3) Continuation of investigations of active immunization against pneumococcus, Types I, II, and V.
- (4) Study of the use of sulfonamides, gramicidin, and penicillin in the treatment of empyema.
- (5) Continuation of the study of improvement and standardization of culture media used particularly for isolation of pneumococci and streptococci.

*Former member of this Commission: Dr. Joseph F. Sadusk, Jr., Yale University School of Medicine, New Haven, Connecticut. Resignation effective July 6, 1942. On active service in Medical Corps, U.S. Army.*

#### **Commission on Tropical Diseases**

*Personnel: Dr. Wilbur A. Sawyer, Director; Drs. Frederick B. Bang, Mark F. Boyd, E. C. Faust, Henry E. Meleney, Karl F. Meyer, John B. Nelson, Lloyd E. Rozeboom, Julian M. Ruffin, George C. Shattuck, John C. Snyder, Fred L. Soper, Carl Ten Broeck.*

**JOHN ENDERS, Ph.D.**

No contributor to the activities of the Armed Forces Epidemiology Board and its Commissions commanded more **respect** than did **Dr. John Enders**. His pioneering **work** in mumps, enteroviral infections (particularly poliomyelitis), rubella, and measles have established an unforgettable niche **for** him in medical science. He was kind, generous, humble, and wise. Not the least of Dr. Enders's qualities was his interest in, and development of, scientists like Sam Katz, Carleton Gajdusek, Fred Robbins, and Tom Weller.

The Commission on Tropical Diseases was formed in January, 1942, and is still in the process of organization. Its program of studies within the extensive field of tropical diseases has not yet been mapped out. Malaria, yellow fever, rickettsial diseases, and the dysenteries will be of special concern to this Commission. Since July 1, 1942, several members of the Commission have made an intensive study of an outbreak of bacillary dysentery at an Army post. The results were applied practically at once and with beneficial results. This group will remain available for similar studies.

This Commission, under the direction of Dr. Sawyer, was the first in the field in the investigation of the outbreak of jaundice in the Army. It has made a large and highly significant epidemiological study of the disease and, through the International Health Division of The Rockefeller Foundation, has made available extensive facilities and the services of Staff members for etiologic and other investigations of this disease. Through the Board and several Commissions, thirteen investigators, with numerous assistants, have been working on problems of the outbreak of jaundice. They have conducted studies at Army posts and are continuing researches at Yale University, the University of Michigan, Vanderbilt University, the University of California, the Laboratories of the International Health Division at the Rockefeller Institute for Medical Research in New York, and at the Rockefeller Institute at Princeton. This investigation of jaundice provides one of the most striking examples of the mobility and coordination of the Board and its Commissions, working under the direction of The Surgeon General, on problems of importance to the Army.

*Former member of this Commission: Dr. Thomas T. Mackie, 16 East 90th Street, New York, N. Y. Resignation effective July 28, 1942. On active service in Medical Corps, U.S. Army.*

## THE 1943 ANNUAL REPORT

Colonel Bayne-Jones also prepared a comprehensive report of the activities of the Board and the laboratory and field investigations of its Commissions. That report, dated 31 January 1944, and a bibliography of work completed by specific Commissions, follows:

Subject: Report on Activities of the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army for the year 1 January to 31 December 1943

To: The Chief, Preventive Medicine Service

Established on 11 January 1941 by the Secretary of War on the recommendation of The Surgeon General, the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army completed its third year at the end of 1943. During the past calendar year, the Board and its ten Commissions responded effectively to all requests for assistance made by the Office of The Surgeon General, and, with the approval of The Surgeon General, initiated a number of extensive epidemiological investigations in this country and in overseas theaters. The activities of the Board and Commissions have increased every year since 1941. The record of the past year is characterized by exceptionally large and difficult undertakings, successfully carried out. The results have been of practical benefit to the Army and have increased scientific knowledge which has been shared with numerous agencies concerned with the study and control of infectious diseases among civilians and military forces. Since 1941, 52 articles have been published in medical and scientific journals and 30 additional manuscripts, released for publication during 1943, are in press or have been submitted to journals. A copy of the bibliography is attached.

### The Central Board

The membership of the central Board remained unchanged, as follows: Dr. Francis G. Blake, President; Drs. Oswald T. Avery, Alphonse R. Dochez, Ernest W. Goodpasture, Kenneth F. Maxcy, O.H. Perry Pepper, and Andrew J. Warren. While Dr. Blake was away on his mission to investigate scrub typhus in the Southwest Pacific Area, Dr. Dochez served as Acting President.

In addition to seven members of the central Board, there were 112 members of the ten Commissions, making a total of 119 specialists in infectious diseases attached through the Board to the Office of The Surgeon General. Of

### **KARL F. MEYER, D.V.M.**

Karl Meyer, like John Enders and John Paul, was a godfather of the AFEB and its Commissions. He insisted that clarifying the pathogenesis of pestilential diseases, and studying their environmental and epidemiological features, are the keys to understanding their control and treatment. Encephalitis, plague, brucellosis, psittacosis, leptospirosis, and poliomyelitis were some of his chief interests, and he tackled problems with excitement and enthusiasm.

K. F. was unmatched as a raconteur. His recollections from his vast experience made Board and Commission meetings unforgettable. Once, during a meeting at WRAIR, he spoke of the "traffic of saliva at a Mexican funeral" to illustrate the spread of *Yersinia pestis* that followed the kissing of the dead. Once he remarked that a patient in New Mexico did not die of plague but of "too many antibiotics." Another time, when discussing an early problem concerning polio vaccine, K. F. remarked, "All the others slopped in enough formalin to kill the virus, but they also killed the antigenicity."

K. F. was a field scientist whose vivid expressions and remarkable sense of history made him a stimulating teacher. He provided a clear view of the nature of problems and illuminated the route to their solutions. He directed the prestigious George Williams Hooper Foundation in San Francisco.

these, all remained as civilians except six who were commissioned in the Medical Corps under the special allotment of officers provided for the Board. All in these groups retained their status as Consultants to the Secretary of War.

This special allotment of officers for the Board, secured by Dr. Blake's presentation of the need in December 1942, has proved of great value to the Board and to the Office of The Surgeon General. During 1943, the scope of the allotment was extended to include officers of the Sanitary Corps and of the Medical Administrative Corps. The allotment provides for twenty-five officers. No attempt has been made to fill all positions, but the allotment has been used to meet specific needs. By the end of 1943, a total of thirteen officers had been brought in under this allotment (10 M.C., 2 Sn.C., and 1 M.A.C.). Of these, two Majors, M.C., have been transferred to other assignments—one to the Preventive Medicine Division to assist in administering the Board and one to Chemical Warfare Service, leaving, at the end of the year, eleven Medical Department officers assigned under this special allotment. After several rearrangements, the assignment of all Medical Department officers for the Board was transferred to the Respiratory Diseases Commission Laboratory at Fort Bragg, after that Laboratory was designated as a Class IV Installation under the jurisdiction of The Surgeon General, thus fulfilling the intention expressed in the original request for this special allotment for the Board.

The Board held its third annual meeting at the Office of The Surgeon General on 6-7 May 1943, and, in addition, held three special meetings, on 29 January and 16 July, at the Office of The Surgeon General, and on 4-5 November at the Respiratory Diseases Commission Laboratory at Fort Bragg. In addition, there were a large number of conferences with the President of the Board and with Directors and members of Commissions.

In addition to the office of the President in New Haven, Connecticut, the administrative office of the Board remained in the Preventive Medicine Division, immediately under the Director and his assistant. In spite of the complexity of problems and large amount of detail to be handled, the administrative procedures have remained as simple and direct as possible. Although considerable time has been required to organize and put in motion some of the larger projects, it has usually been possible to take action promptly and there has rarely been delay in making the services of the Board and Commissions available. All members have always been ready to undertake field work immediately upon request, in addition to the load of responsibilities they were carrying at their institutions. They have always made personal convenience and certain obligations secondary to their service to the Army. Throughout the Office of The Surgeon General, and in fact, throughout the Army, as well as in relation to civilian institutions, the widely extended contacts and associations of the Board and Commissions have been maintained and developed with an extraordinary degree of harmony and mutual assistance. Excellent relations were maintained with the officers of the Air Surgeon, the Ground Surgeon, with Surgeons of Service Commands, with posts and camps, and with authorities in several overseas theaters.

The central Board, or some of its members, participated actively in five investigations. These were as follows:

(1) *Troop Housing with Relation to Acute Respiratory Diseases.* Begun in December 1942, an inspection of conditions in barracks, mess halls, theaters, and post exchanges was completed in January 1943. The relationship of overcrowding to the incidence of acute respiratory diseases, including meningitis, was clearly brought out from the reports of visits to Army camps. Recommendations were made for the return to an allowance of 60 square feet per man in barracks. The situation was shown to be particularly precarious during the period of induction of large numbers of new recruits into the Army. The recommendation was not adopted by higher command. However, the immense amount of valuable information gathered was imparted at conferences following this investigation. Even without formal adoption of the Board's recommendations, this investigation was serviceable to The Surgeon General and had beneficial effects during the year.

(2) *The Outbreak of Jaundice in the Army.* The extensive epidemiological investigation of the outbreak of jaundice following vaccination against yellow fever was completed in association with the International Health Division of The Rockefeller Foundation, and a comprehensive report on jaundice in troops in the Western region of the country was prepared for publication. A number of lines of experimental research on jaundice were followed, with expectation of useful results in the future.

(3) *Training in Malaria and Tropical Diseases in Panama and Along the Pan-American Highway.* In February, Dr. Blake, Dr. Meleney, Dr. Wilburt C. Davison, and Mr. Archie S. Woods accompanied General Simmons and other officers on a survey of opportunities which might be developed for training medical officers in malaria and tropical disease control at Panama and along the Pan-American Highway. The arrangements for the travel of the civilian members of this mission were made through the Board. Definite increases in opportunities for such training, including the establishment of the Army School for Malariology, developed from this mission.

**ALPHONSE R. DOCHEZ, M.D.**

Dr. Dochez, a distinguished member of the Rockefeller group of medical scientists, was a charter member of the Board and served on several of its Commissions, including the Commissions on Pneumonia and Acute Respiratory Diseases. Dr. Dochez served as Acting President of the AEB for a short time while Dr. Blake was ill. With other Board members, Dr. Dochez served as a consultant to the Army Medical Department during an epidemic of atypical pneumonia at Camp Clayborne, and he gave wise consultative advice during an outbreak of an unknown febrile illness at Fort Bragg, North Carolina.

Dr. Dochez was a pioneer in the field of acute respiratory infections. He is credited as the first scientist to isolate the cold virus and transmit it to humans in a controlled environment. In New York, he worked on the specific identification of pneumococcal types and the biological activities of these microorganisms.

The senior staff of the Preventive Medicine Division, Office of The Surgeon General,  
U.S. Army, in World War II  
July 1943

Seated: Brig. General James Stevens Simmons.

Standing, from left: Dr. Thomas B. Turner, Dr. Gaylord W. Anderson, Colonel Karl R. Lundeberg, Colonel  
Williams. Stone, **Brig.** General Stanhope Bayne-Jones, Dr. Elliott S. A. Robinson, Colonel Arthur P. Long, and  
Colonel William A. Hardenberg.

Members of the **USA** Typhus Commission in New Guinea, 3d Medical Laboratory,  
Oro Bay, New Guinea, December 1943

Left to right: Captain Glenn Kohls, Sn.C., entomologist; Lieutenant John Bell, Sn.C., from the Rocky Mountain Laboratory; **Dr.** Kenneth Maxcy, epidemiologist; Dr. Francis G. Blake, technical director; Lt. Colonel Joseph F. Sadusk, Jr., MC, Commanding Officer of the Commission; and Colonel Francis E. Council, Commanding Officer, **3d** Medical Laboratory.

Dr. Kenneth Maxcy, left, **and** Dr. Francis Blake standing  
in Kunai grass near Dobodura, New Guinea, 1943

### JOHN HOLMES DINGLE, M.D.

John H. Dingle was the compleat physician, a man without jealousy who dedicated his life to helping others. One of a large family, the son of a North Dakota minister, he worked to pay his own tuition and was an honor graduate of Harvard Medical School, where he had the privilege of working with Hans Zinsser. His military record was excellent. He served as President of the AFEB and was a most effective contributing member to several of its Commissions. Like others, and in spite of his failing health, he made field trips to various parts of the world in the public interest. John was the first Director of the Commission on Acute Respiratory Diseases and he headed the work on acute respiratory diseases and atypical pneumonia at Fort Bragg during World War II.

At Case Western Reserve University School of Medicine, John organized and developed one of this country's best departments of preventive medicine. He planned the family studies there that established the relationship between streptococcal diseases and nephritis. John was a pillar of the pioneering studies at Warren Air Force Base that showed that penicillin and other antibiotics prevent rheumatic fever.

His life was full of accomplishments; every honor he received was earned and was bestowed by the donors with pride.

**O. H. ROBERTSON, M.D.**

Oswald Robertson was born in England and emigrated to the United States in 1888 at the age of two. His graduation from the Harvard Medical School in 1913 was followed by a fellowship in pathology at the Massachusetts General Hospital from 1914 to 1915 and training in bacteriology and pathology at the Rockefeller Institute for Medical Research from 1915 to 1917. Robertson was Professor of Bacteriology at the University of Chicago School of Medicine from 1927 to 1951.

He was an expert in experimental pneumonia, particularly the pathogenesis of airborne infections and the disinfection of air. From 1941 to 1945, Dr. Robertson was Director of the AEB's Commission on Airborne Infections. The work done by this Commission was of inestimable importance to the military, particularly with respect to better understanding the aerosol spread of infection and the development of better preventive methods. He was President of the Association of American Physicians in 1952.

### **CHARLES E. SMITH, M.D.**

After he graduated from Stanford University School of Medicine in 1927, Chuck Smith served his house officership in medicine and then received his D.P.H. from the University of Toronto in 1934. He returned to Stanford where he was promoted through the faculty ranks; in 1942 he was named Professor in the Department of Public Health and Preventive Medicine. In 1949, he assumed a similar post at the University of California School of Public Health; he was appointed Dean there in 1951.

During World War II, Chuck served as a consultant to the Surgeon General of the Army, and he was a consultant on epidemic diseases to the Secretary of War from 1947 to 1955. He was an original member of the Commission on Epidemiological Survey, appointed in 1951, and a member of the Commission on Acute Respiratory Diseases. Under his direction, valuable surveillance studies were conducted in the Ninth Service Command (Corps Area) on the prevalence of coccidiomycosis. These studies clarified the significance of positive skin reactions and the incidence of lung calcification, as separate from the Ghon lesions of inactive tuberculosis.

Chuck was an intrepid epidemiologist and a splendid teacher. He served as a member of the AFEB until 1964; he was also elected President of the American Epidemiological Society.

**CHESTER SCOTT KEEFER, M.D.**

Chester S. Keefer was a giant of modern medicine who was educated at The Johns Hopkins School of Medicine in the tradition of Osler and Welch. He taught and practiced their ideals of excellence throughout his life. The rock upon which he built his success was the Evans Memorial Department of Clinical Research and Preventive Medicine; many leaders of American medicine trained there under him. He was Chairman of the Department of Medicine, Dean of the medical school, and Director of Boston University Medical Center; his contributions to these endeavors continued for thirty years. Upon his retirement, he remained active as Emeritus University Professor and Wade Professor of Medicine.

The AFEB was privileged to have him as a member of its Commission on Hemolytic Streptococcal Infections, a position he assumed in October 1942. Dr. Keefer was a most effective contributor to Board activities

(4) *Bullis Fever*. From work started under the auspices of the Board, at the invitation of the Surgeon of the Eighth Service Command, an extensive investigation developed of the type of spotted fever which occurs in the maneuver area around Camp Bullis, Texas. The cooperation of the United States Public Health Service was readily secured. The results appear to indicate that the cause of so-called Bullis Fever has been found. The disease appears to be due to a tick-borne rickettsia. The investigation included new searches for chemical agents which may serve as tick repellents.

(5) *Scrub Typhus in New Guinea*. At the request of General MacArthur, a team of investigators was sent by the Office of The Surgeon General and the United States of America Typhus Commission to Australia and New Guinea to investigate mite-borne typhus, the so-called scrub typhus fever. Dr. Francis G. Blake, President of the Board, accepted the directorship of this special Commission, and Dr. Kenneth F. Maxcy, member of the Board, accepted appointment as epidemiologist. The other members were: Lt. Colonel Joseph F. Sadusk, M.C., Captain Glenn M. Kohls, Sn.C., and 1st Lieutenant E. John Bell, Sn.C. This group arrived in Brisbane on 3 October and reached Washington on their return on 21 December (except for Captain Kohls who remained in New Guinea to continue entomological studies). The Commission was highly successful. Epidemiological problems were worked out. Dimethyl phthalate was found to be a good mite repellent. Clinical and pathological observations were made. A number of strains of the rickettsia causing scrub typhus were brought back to this country for further study. Information on the way the disease occurs and recommendations for control measures have been furnished to the Surgeons of SWPA and CBI and will be made available to all medical officers.

### **The Commissions**

There were ten Commissions under the Board. The financing of the work of each Commission, with one exception, was effected through a War Department research contract with the civilian institution at which the Director of the Commission resided. Acute Respiratory Diseases was supported in part by grants from the International Health Division of The Rockefeller Foundation, the John and Mary R. Markle Foundation, the Commonwealth Fund, and the Kellogg Foundation. This Commission went on a contractual basis through Yale University on 1 July 1943 as far as certain salaries and research expenses are concerned. The maintenance of the Laboratory at Fort Bragg and numerous other expenses were borne by the Medical Department and the Post. These research contracts have gradually been liberalized and on the whole have worked out satisfactorily. It is to be pointed out again that the funds coming through the contracts for work of Commissions are far from representing the value of the tremendous institutional facilities which are put at the service of the Army through the Epidemiological Board.

Each Commission was engaged in research at its home laboratories and on field investigations. With ideas, activities and results constantly circulating between field and base, and between Commissions, it is pointless as well as impossible to try to separate all phases of this work. Furthermore, the work of each Commission was not always limited to the field indicated by the name of the Commission. Commission members are not so strictly specialized that they can or should be tagged and limited to fractional jobs. Advantage was taken of their abilities in the study and control of many kinds of infectious diseases, and work was authorized according to opportunities, facilities, and the capacities of the men concerned, regardless of Commission designations.

It is not possible in this type of report to review all the work of the Commissions. The following is a selective summary:

#### ***Commission on Acute Respiratory Diseases***

*Director: Dr. John H. Dingle*

*Headquarters: Respiratory Diseases Commission Laboratory, Fort Bragg, North Carolina*

The Laboratory of this Commission has flourished as a cooperative project of the Board, the Medical Department, the Fourth Service Command, and Fort Bragg. Without the hearty reception and support it has received from the Commanding Officer of the Post, the Commanding Officer of the Staff of the Field Artillery Replacement Training Center, the Surgeon of the Post, and the Commanding Officer and Staff of the Station Hospital, it could not have had the splendid facilities and opportunities for work which it has enjoyed. As previously noted, the Respiratory Diseases Commission Laboratory was designated as a Class IV Installation under the jurisdiction of The Surgeon General on 23 November. (See Circular No. 128, HQ ASF, 23 Nov 43.) The investigative program included (1) an attempt to survey the general situation with respect to respiratory diseases at Fort Bragg and (2) special studies. Studies in the Field Artillery Replacement Training Center were carried out to determine the incidence and behavior of acute respiratory disease in new recruits and to study the influence of certain factors, such as double bunking, which might have an

effect on the spread of the infections. Clinical studies again emphasized the fact that there are few differential characteristics except those due to severity in the group of cases now classified as common respiratory diseases. A close check was kept on the occurrence of meningitis, and the facilities of the Commission Laboratory were used in collaboration with the Medical and Laboratory Services of the Station Hospital.

Atypical pneumonia has been the subject of continuous investigation. In addition to clinical studies, two large experimental investigations were carried out in attempts to reproduce the disease. In cooperation with the Antilles Department Laboratory, attempts were made to reproduce the disease in the mongoose in Puerto Rico. These gave negative results. A preliminary experiment in human volunteers (conscientious objects) at Gatlinburg, Tennessee, however, has been most encouraging. It is felt that atypical pneumonia has been transmitted to healthy men, using secretions of the respiratory tract taken from patients with the disease. In collaboration with Dr. J. W. Beard and his staff at Duke University, the three known strains of influenza virus—human influenza viruses A and B and swine influenza—have been purified and concentrated. The physical and chemical properties of these purified viruses have been determined, and electron photographs of the virus particles obtained.

Influenza virus Type A was isolated from patients at Fort Bragg during the epidemic which occurred in November and December. Two types of streptococcal infection were studied. The first consisted of endemic types of respiratory infection characterized by exudative pharyngitis and tonsillitis. The second was an explosive food-borne outbreak of septic sore throat. Systematic studies of the bacteriology of the respiratory tract were continued, and the effects of penicillin therapy upon the bacterial flora of the upper respiratory tract were noted.

Cases of coccidiomycosis were discovered in an organization transferred to Fort Bragg following maneuvers in an endemic area in Southwestern United States. The survey is being extended.

Field studies on atypical pneumonia were made at Maxwell Field and on influenza at Camp Mackall.

#### ***Commission on Air-Borne Infections***

*Director: Dr. O. H. Robertson*

*Headquarters: University of Chicago, Chicago, Illinois*

The extensive investigation of the bacteriology of the air in barracks and in hospital wards was finished at Chanute Field in the fall. Much fundamental information has been gained with respect to cross infections in hospital wards and to the transmission of respiratory infections through air. Control measures can be based on some of the results of these studies.

On the negative side, sterilization of the air by ultraviolet light or glycol vapors does not appear to be practicable either in barracks or all hospital wards, or in theaters. In certain types of wards or rooms, where humidity and concentration of vapors can be accurately regulated, sterilization of the air by triethylene glycol may be practicable. Although the problem has been considered several times, no acceptable method of sterilizing the air on troop transports has been developed. The Commission's studies have shown that bedding, blankets and comforters harbor immense numbers of bacteria, including hemolytic streptococci. These are liberated in great numbers when blankets are shaken in barracks. Floor dusts also contain large numbers of bacteria. By oiling the floors and by impregnation of blankets and comforters, these sources of air-borne bacteria are almost eliminated. The methods are being tried out on a large scale at Camp Carson, Colorado.

This commission joined with the Commission on Hemolytic Streptococcal Infections in a combined attack on problems of rheumatic fever. The location of this work is at Camp Carson.

#### ***Commission on Epidemiological Survey***

*Director: Dr. Francis G. Blake*

*Headquarters: Yale University, New Haven, Connecticut*

By agreement with Stanford University, this Commission supervises the investigations and control of coccidiomycosis carried on by Dr. Charles E. Smith. Most of the known areas of infection in the West have been defined by this Commission and the results of these studies have kept the Army well informed. The information has been particularly useful to the Air Forces and Ground Forces. Coccidioidin for diagnosis has been supplied to both the Army and Navy. A diagnostic and consultative service has been maintained. This work is the focus of all the Army's investigative and control programs in this field.

By agreement with Harvard University, this Commission has direction over the continuous bacteriological survey of throat cultures which has been carried on in the First Service Command, at Fort Devens and Camp Edwards,

since 1941. The work on meningococcal carriers is the most significant outcome of these studies. The Commission has stimulated studies of hemolytic streptococcal infections in Puerto Rico and has stood ready to aid other Commissions.

***Commission on Hemolytic Streptococcal Infections***

*Director: Dr. Chester S. Keefer*

*Headquarters: Boston University, Boston, Massachusetts*

This Commission was mainly occupied with making surveys of streptococcal infections at camps in the Seventh Service Command and with organizing and putting into operation fundamental studies of the highly important problems of rheumatic fever. A survey of the occurrence of scarlet fever was made in February. Later, an important survey of streptococcal infections was made at Fort Francis E. Warren, Lowry Field, Buckley Field, and Camp Carson. From these surveys, followed by conferences, there developed a plan for a coordinated attack upon rheumatic fever and streptococcal infections. In this attack, the Commission on Hemolytic Streptococcal Infections was joined by the Commission on Air-Borne Infections. With unstinted cooperation on the part of the Surgeon, Seventh Service Command, the Commanding Officer of Camp Carson, Colorado, the Surgeon of that Post, and medical and line officers, laboratories were provided, ward facilities made available, and barrack bacteriological studies made possible through oiling of floors and impregnation of blankets and comforters. This work got under way at Camp Carson in December. If troop strength at the post is not reduced too greatly, substantial results are anticipated. These studies are somewhat parallel to similar investigations which are being carried out by the Office of the Air Surgeon. Information will be exchanged chiefly through the headquarters organizations of each group.

***Commission on influenza***

*Director: Dr. Thomas Francis, Jr.*

*Headquarters: University of Michigan, Ann Arbor, Michigan*

This Commission can record a year of extraordinary achievement providing information which promises to be of inestimable benefit to the Army and to the civilian population.

The chief achievement was the preparation of a vaccine against influenza containing both A and B viruses killed by formalin, the experimental testing of this vaccine in human volunteers (conscientious objectors), the vaccination of some 15,000 ASTP students at Army installations in a number of universities in different parts of the country, and the careful detailed observations on the vaccinated individuals and controls throughout the influenza outbreak of November and December 1943. This project required extensive organization. The Surgeon General approved making the vaccination compulsory for selected groups and this in turn was approved by the commanding directorate of the ASTP program. Put into effect in October on the basis of the preceding careful studies, it was in operation [when] influenza struck in November. The results obtained by vaccination indicate that a definite degree of protection was produced. Further developments are in progress. Early in 1943, a watch on influenza was established by the Commission for the purpose of detecting influenza as soon as it occurred at Army posts. Facilities of laboratories capable of identifying influenza virus and of making the necessary serological tests were placed back of this work. Influenza virus type A was first found in a small outbreak in March. In November and December, influenza virus was identified at camps in the 2nd, 3rd, 4th, 6th, 7th, 8th, and 9th Service Commands. It is believed that this Army work through the Commission was the only work of its kind done in the country. It furnished The Surgeon General and civilian agencies with precise and useful information.

During the outbreak of influenza, the Commission was always ready to furnish advice. The information it provided was used in weekly bulletins sent by The Surgeon General to the Secretary of War and the Chief of Staff. The Commission tested the method of passive protection against influenza by means of inhaled sprays of immune serum. The results were essentially negative. The Commission continued its interest in studies of atypical pneumonia and of jaundice.

***Commission on Measles and Mumps***

*Director: Dr. Joseph Stokes, Jr.*

*Headquarters: University of Pennsylvania, Philadelphia, Pennsylvania*

In the study of measles, the Commission clearly demonstrated the prophylactic value of human gamma globulin. Advances were made also in the development of a vaccine against measles.

**HARRY FELDMAN, M.D.**

There were those within the ranks of the AFEB who always responded to a request for help. Harry Feldman is among the top of those on this list of dedicated medical scientists and epidemiologists. For several decades, Harry served as a pillar of preventive medicine and medicine at the State University of New York Upstate Medical Center at Syracuse, New York.

Meningococcal and streptococcal diseases and toxoplasmosis were his specialties, but he was knowledgeable throughout the field of infectious diseases. Objectivity, calmness, and thoroughness were his trademarks. On numerous occasions, when sizable outbreaks of meningococcal and other infections occurred, he responded to emergency requests from the military. In 1963, on very short notice, Harry interrupted his schedule at Syracuse to evaluate an outbreak of meningococcal meningitis at the Naval Training Station in San Diego, California; his advice was of inestimable value to the Department of the Navy in limiting the outbreak. Again in 1966, Harry joined a hastily assembled army medical team at Fort Knox to investigate an outbreak of meningococcal meningitis, where, for the first time, sulfonamide-resistant strains were detected. Harry's work in the laboratory, in the field, in the lecture hall, and in the conference room marked him as a distinguished leader.

In the investigation of mumps, a notable advance was made by the development of a skin test for susceptibility to mumps, using as antigen material from the experimentally infected parotid gland of the monkey, and in improvements in the complement fixation test for resistance or susceptibility to mumps. By [these] means, it would be possible to pick out the mumps-susceptible individuals in an organization and make segregations if necessary. There were promising developments in preparing a vaccine for active immunization against mumps. Epidemiological studies of mumps occurring in the Army were carried out at Camp Pickett, Camp McCoy, and Fort Lewis. These were the first studies of this kind to be made in American troops in this war.

Mumps convalescent serum was collected for possible use in prophylaxis and therapy. The usual human gamma globulin was found to be without much promise in these respects.

The occurrence of a case of jaundice in a physician injected with mumps convalescent plasma collected by the Commission stimulated the interest of the Commission in problems of the cause, transmission and characteristics of homologous serum jaundice, and in the problems of the post-vaccinal hepatitis which occurred in the Army in 1942. To carry out the experiments, human subjects are required, as the lower animals are not susceptible. Studies were gotten under way at the Commission headquarters using volunteers drawn from groups of conscientious objectors. The disease has been transmitted experimentally to human beings.

#### *Commission on Meningococcal Meningitis*

*Director: Dr. John J. Phair*

*Headquarters: Johns Hopkins University, Baltimore, Maryland*

The Commission's laboratory assisted the Army Medical School in the identification and typing of meningococci isolated from cases of meningitis in soldiers. Several thousand cultures were studied and reported upon. This work, together with analysis of case histories and the effects of sulfonamide therapy, was brought to a conclusion.

When, during the 1942-43 outbreak of meningitis, it was discovered at several Army camps that sulfadiazine taken by mouth would promptly reduce or wipe out the meningococcus carrier state, it became important for The Surgeon General to know the proper minimal dosage of the drug and how it should be administered as a prophylactic against meningitis. The Commission undertook these detailed studies at Fort Meade, Maryland, with the cooperation of The Surgeon of the Third Service Command and commanding officers at the Post. It was determined that 2 grams of sulfadiazine in a single or divided dose were sufficient to clear up the carrier state. This work was coordinated with similar studies conducted by the Fourth Service Command Laboratory. On the basis of the results, Circular Letter No. 170, subject: Prophylaxis of meningococcal meningitis by use of sulfadiazine, dated 30 September 1943, was published by the Office of the Surgeon General. The studies were continued at Fort Meade to determine the mechanism of the action of sulfadiazine, to compare the efficacy of other sulfonamides, and to serve as a basis for further improvement in the chemoprophylaxis of meningitis. During the outbreak of meningitis in the Army, the advice of this Commission was sought repeatedly.

#### *Commission on Neurotropic Virus Diseases*

*Director: Dr. John R. Paul*

*Headquarters: Yale University, New Haven, Connecticut*

Poliomyelitis, lymphocytic choriomeningitis, and all types of encephalitis are the special subjects of investigation by the Commission on Neurotropic Virus Diseases. The Commission has brought together the best workers in the country on these subjects and has enlisted the active participation of associates and the facilities of the Rockefeller Institute for Medical Research. Its work is coordinated also with the Laboratory of Virus and Rickettsial Diseases at the Army Medical Center. In addition, the Commission worked closely with the National Foundation for Infantile Paralysis, through which supplementary funds were made available by grants to Dr. Paul.

In addition to diagnostic studies and investigations of the neurotropic viruses and pathological lesions produced by these viruses, the Commission has devoted much time and effort to the development of vaccines which may be suitable for use in immunizing soldiers against encephalitis. This work is progressing. In the northwestern and western regions of the country, epidemiological surveys were made. These surveys, [backed] by laboratory studies, have given new information about the animal reservoirs of encephalitis virus and the transmission of the infections by mosquitoes.

In April, the Commission, at the request of the Surgeon of the Middle East Theater, organized an expedition to investigate sand fly fever, infectious hepatitis, and poliomyelitis in Egypt and North Africa. The group sent out to do this work consisted of Dr. Paul, Director; Major Albert B. Sabin, M.C.; and Major Cornelius Philip, Sn.C. The

**WILBUR AUGUSTUS SAWYER, M.D.**

Wilbur A. Sawyer became Director of the State Laboratory of California in 1910 and continued in this position until 1915. He was then appointed Acting Executive Head of the California State Board of Health. During all this time he also held faculty positions at the University of California. Dr. Sawyer was an authority in the field of infectious diseases, and he devoted much time to the study of latent and carrier cases as sources of infection, particularly those of typhoid fever.

While he was at the Rockefeller Foundation, in 1941, he was also appointed to the AEB as Director of the Commission on Tropical Diseases. Originally, this Commission was called upon to conduct surveillance studies and render advice on such epidemic diseases as malaria, typhoid fever, dysentery, yellow fever, and rickettsial diseases. Because he was a strong leader and his background in epidemiology and preventive medicine was extensive, Dr. Sawyer was able to render needed advice to the Office of the Surgeon General of the Army.

Commission established a laboratory near Cairo shortly after arrival. During the year, sandfly fever was experimentally transmitted to human volunteers, dimethyl phthalate was found to be an effective repellent for the sandfly and much epidemiological and laboratory data [were] accumulated. The Commission assisted the Army in dealing with problems of sandfly fever not only in the Middle East, but also in Tunisia and in Sicily. In August, Major Sabin returned to this country with valuable material for use in a continuation of the studies at Cincinnati. Cases of poliomyelitis in the Middle East were investigated and material returned for further study at laboratories in the United States.

The hepatitis situation was defined as one of the major medical-military problems of the American and British Forces in North Africa and the Middle East. Aside from apparent transmission of the disease (accidentally) by injections of serum, the Commission abroad did not make a direct attack on the etiology of infectious hepatitis. It plans to carry such studies forward in this country. During the outbreak of poliomyelitis in Texas in 1942-43, Dr. Paul was called upon to make a survey and to advise health officers and the Surgeon of the Eighth Service Command on measures of control. The Commission's advice was utilized also by The Surgeon General in dealing with the outbreak of poliomyelitis which occurred chiefly among ASTP students in California, Texas, and Indiana last summer. It is greatly regretted that in the course of his investigations, Dr. John R. Paul became ill with jaundice about 1 December 1943. [NOTE: Fortunately, Dr. Paul recovered fully after a short convalescence. T.E.W.]

#### **Commission on Pneumonia**

*Director: Dr. Colin M. MacLeod*

*Headquarters: New York University, New York, New York*

Thus far, pneumonia, other than atypical pneumonia, has not been a large problem in Army Camps. The Commission has retained an interest in atypical pneumonia and has sponsored some etiological studies. Most of the work of the Commission has been carried out at its base laboratory where studies have progressed on the improvement of culture media, investigations of immunization against pneumonia, and the treatment of empyema with penicillin and fibrinolysin. Studies carried out by the Commission have shown that a prompt immunological response may be expected following a single dose of polysaccharides of Types I, II, and VII. The evidence is sufficiently good to recommend a trial of these polysaccharides at an Army post where the pneumonia rate has been relatively high.

Dr. MacLeod reported for duty at the Office of The Surgeon General, Preventive Medicine Division, on 5 August to assist in the administration of the affairs of the Board. He remained on duty at the office until 9 December. His services helped to carry the work through a difficult period and he contributed ideas, information, and help to the Epidemiology Branch and other Divisions of the SGO.

#### **Commission on Tropical Diseases**

*Director: Dr. Wilbur A. Sawyer*

*Headquarters: The Rockefeller Foundation, New York, New York*

There were four major projects of the Commission on Tropical Diseases. There were (1) field and laboratory studies of bacillary dysentery at Army camps, (2) an investigation of plasma levels of atabrine in soldiers on certain dosage regimes, (3) a survey of knowledge of leprosy, particularly in the Pacific Area, and (4) continuation of studies of post-vaccinal jaundice (previously mentioned under the section for the Board). In April, Dr. Carl Ten Broeck, with the concurrence of General King, was sent to Hawaii to investigate bacillary dysentery. He found that the previously troublesome conditions had been cleared up by excellent sanitary measures. His visit was useful to medical and laboratory officers to whom he brought information on new methods for carrier surveys and control treatments. Later in the year, at the invitation of the Surgeon, Eighth Service Command, Dr. Ten Broeck and Dr. Nelson investigated bacillary dysentery in camps of German prisoners of war in Texas. They found a high incidence of carriers and assisted in applying measures to cure these carriers and to prevent the spread of the disease. For the proper administration of suppressive therapy of malaria, it was urgently necessary to determine the plasma levels of atabrine attained in soldiers under active training, and under simulated jungle conditions, when these men were given the recommended dosages of 0.4 and 0.6 gram of atabrine per week. With the cooperation of HQ, Army Ground Forces, HQ, Armored Command, the Post Surgeon of Fort Knox, and the Commanding Officer, Armored Medical Research Laboratory, a large and intensive investigation of the problem was carried out successfully during the period from early August to 20 November 1943. Dr. James A. Shannon supervised the work for the Commission on Tropical Diseases. The experimental subjects were 250 soldiers from various units of the Armored command at Fort Knox. The results of the study have been made available in a comprehensive report which has been distributed

widely to other investigators in this country and in England, to Chief Surgeons in malarious areas overseas, and to various Divisions of the Office of The Surgeon General. The report presents the information desired on atabrine plasma levels and indicates new lines of research to be followed for the improvement of suppressive therapy of malaria.

Troops in the Pacific Area, Africa, and the Middle East will inevitably come in contact with leprosy. For the estimation of the risk of infection, however minimal it may be regarded, and for the information of all medical officers, it was necessary to undertake to assemble all available information on the geographical incidence of the disease and to issue such directives as would seem appropriate.

This project of a world survey of leprosy was undertaken by the Commission on Tropical Diseases with the help of Mr. Perry Burgess, President of The American Leprosy Foundation and a member of this Commission. Valuable information has been provided and Circular Letter No. 180, on the subject of Leprosy, was issued [on] 30 October 1943.

Composed of experts on many phases of tropical medicine, this Commission is prepared to assist the Office of The Surgeon General in dealing with questions now arising constantly as a result of the extent and long continuation of the war in tropical regions.

*S. Bayne-Jones*

Colonel, Medical Corps, Deputy Chief  
Preventive Medicine Service

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