SECTION *2*

The Ad Hoc Committee System

1973–1990

PART I

The Decade of the 1970s

Reassessment and Reorganization after the Commission System was Abolished

When the bold new organizational plan for the AFEB was approved, it was unclear to many Board members just how the new role and advisory responsibilities would be fulfilled. Abolishing the commission system had considerably shifted the Board's philosophy, operation, and mission. Nevertheless, the Board and Commission members who had provided advice and recommendations, and who had contributed specific research for the betterment of health care and preventive medicine for *the* military, accepted the new charge with objectivity and grace. This is to their great credit. With the change, the Board and its Commissions would no longer directly sponsor specific research aimed at helping to solve medical problems in the military. Rather, the Board and its new ad hoc Committees would now function solely as advisors when specific problems arose.

It was not possible to foretell if the Board would continue to be as useful to the military as it had been during the first thirty years of its existence. How would the Board and its ad hoc Committees fit into the overall structure of the Department of Defense? In 1984, when I was President of the Board, Colonel Robert F. Nikolewski, the Executive Secretary, prepared a White Paper at my request that described the AFEB's function and activities since its reorganization.

The White Paper was written in response to both Department of Defense Directive Number 5154.8, dated November 6, 1978, and Directive Number 5105.18, dated March 20, 1984. The AFEB had received new charters on those dates. Throughout the Board's history, new charters, guidelines, and statements of mission had been prepared to better define the role of the AFEB within the Department of Defense structure. Because personnel are frequently reassigned in the key administrative positions within both the military and the Office of Health Affairs, the Board itself has repeatedly needed to provide the evidence that its function is necessary to the Department of Defense. (After all, the AFEB's institutional memory dates back fifty years, to 1940!)

Colonel Nikolewski's report, which follows, serves both as a retrospective overview of and an introduction to the activities that occupied the Board during the 1970s and 1980s. A list of the recommendations that the Board made from 1955 until 1985, which Nikolewski appended to his report, appears in Appendix **3** of this volume.

DASG-AFEB
1 October 1984

SUBJECT Armed Forces Epidemiological Board, Department of Defense Directive Number: 5154.8, November 6, 1978 and DOD Directive Number: 5105.18, March 20, 1984

Statement of Function. The Armed Forces Epidemiological Board (AFEB) provides to the three military Departments, through the rcspcctivc Surgeons Gcncral, timely scientific and uniquely professional medical advice and specific recommendations concerning operational programs, policy and research Concerning new technological and epidemiological principles (i.e., distribution and causation **of** disease in a specified population) in the control **of** acute and chronic diseases, environmental protection, occupational health and health maintenance systems for all the uniformed military services. Recommendations that have been formulated by the Board for implementation by the respective military medical services [appear in Appendix 31.

1. Recommendations by the AFEB within the past sixty days have included Board oversight of the most comprehensive review of the Navy Asbestos Medical Surveillance Program ever undertaken. Coincident with this study, the Board has been charged by the Assistant Secretary of Defense, Health Affairs, in an initial and ongoing oversight review **of** total epidemiologic reporting systems, specifically addressing the availability and quality of data in potential areas of international conflict worldwide. In addition, the Secretary has requested that the Board begin a continuing review of the medical consequences of and constraints created by the essential and increasing participation of women in the Armed Forces. Further and recent recommendations by the AFEB have resulted in changing, within the past three years, the policies and directives of the Tri-Service Regulations **AR** 40-562, BUMEDINST 6230.1H, AFR 161-13 and CG COMDTINST 6230.4C relative to Immunization, Requirements and Procedures of the Uniformed Medical Services. Specifically, the qualitative and quantitative applications of smallpox, tetanus, polio, meningococcal, typhoid and hepatitis B vaccines have been substantially and beneficially changed, thus offering increased protection of our military population with concomitant and significant cost reductions. Policy changes have occurred in all three services regarding the variety and quantity of stockpiled antibiotics to be utilized in answer to the complex problems associated with the elimination of diarrheal and rickettsia1 disease for combat servicemen. The AFEB is singularly responsible for developing each year the formulary and administrative schedule of the current influenza immunization program for the military which, as an aside, mitigates potential civilian application nationally. This Board, in support of DOD, was instrumental within the past eighteen months in justifying the maintenance of crucial overseas laboratories which are dedicated to epidemiologic disease control and research unique to these theaters of operation. Through the office of the Executive Secretary, AFEB, the Board was instrumental in organizing and coordinating the establishment of a United States Navy cohort collection and study of serologic specimens which validated the efficacy of the 1982–1983 influenza vaccine, which resulted in a savings of $500,000 in stockpiled vaccines.

2. Policy changes through recommendations by the AFEB, relative to changes in the immunization schedules for the Armed Forces, have resulted in an incalculable benefit to the military services by reducing the impact of preventable infectious diseases through decreased morbidity and in minimizing periods of lost training time. For example, there were only 14 cases of measles reported in the entire military service during calendar year 1981, as compared to 425 cases during 1980. Recent recommendations dealing with the administration of the hepatitis B vaccine are realistically expected to be as dramatic in the control of this devastating disease with its variety of medical sequelae. These actions were solely the responsibility of the Armed Forces Epidemiological Board whose effectiveness in both scientific applicability and timeliness benefited the *commonality of purpose* of the three military medical services.

3. Historically, all meetings, with rare exceptions, are open meetings attended by physicians and scientists both from within the federal government and the civilian community. This forum, because of the signal competence of the Armed Forces Epidemiological Board **(AFEB)** members, consistently serves as the premier sounding board **for** the preventive medicine officers of the three uniformed services. This necessary interface, between these experienced

medical officers and recognized and reasoned development of scientific ideas[, results] in major significant changes in military medicine *common* to *all three services.* Examples of this uniformity of scientific endeavor, between military medical personnel and these national civilian authorities, have included, but have not been limited to, the risk analysis, discussion and assessment of the Herbicide Orange problem, potential environmental and occupational hazard analysis associated with cancer as well as comprehensive **policies** regarding immunizations of the military community. These latter recommendations in themselves have consistently set the benchmark for public health immunization programs for the private civilian sector. The existence of a *single board* **of** renowned physicians and epidemiological scientists, serving the *common* problems of the uniformed medical services, has effectively avoided unnecessary "triplication" of efforts by the three services as they address the problems and solutions in epidemiologic disease control, risk management and occupational environmental threats to the military population.

4. [The AFEB operates, to a significant degree, through three chartered Subcommittees: Disease Control, Environmental Quality, and Health Maintenance Systems. An ad hoc committee is presently investigating aspects of the military medical healthcare delivery systems to effect compatible data bases and interchange between the three services relative to the incidence of disease within the United States military population. Prompt identification of disease threats and recommendations for disease control, which are accomplished through this committee, are additionally designed to correlate and promptly interface with the civilian medical authorities. Expertise brought to the Board by the designated members offers effective [representation] in the medical scientific disciplines of infectious disease, internal medicine, occupational medicine, pediatrics, human engineering, toxicology, and biostatistics. [The membership of the Board represents] the wide geographic, professional and ethnic diversity of the Board. Such scientific diversity offers substantial reasoned scientific input to the immediate and pressing needs of the military in, for example, illegal substance abuse *(Cannabis spp.* testing) along with the potential and varied threats to the military and civilian populations regarding overt and covert biological/chemical warfare and nuclear radiation exposure.

5. The Board formally convenes approximately three times per year based on written problem areas identified to the Board by the respective Surgeons General. Task force operations occur between meetings as a data gathering forum for formal presentation to the entire Board and representatives of the military Surgeons General and their equivalent civilian counterparts. Relevance to continuing this committee function is tied inexplicably to current epidemiologic investigations concerning disease control, environmental and occupational medicine threats to the military population worldwide — particularly with the varied and complex geopolitical considerations facing the United States government at this time.

6. Elimination of this single board of civilian medical authorities would create the necessity of requiring each of the three military services to solicit such essential medical-scientific expertise independently. None of the three services possess the depth of competence within these disciplines that this Board singularly and uniquely offers. "Triplication" of efforts **would result in costs far in excess of** the nominal expenses associated with the present Board's operation. In addition, "triplication" would of necessity result in a significant divergence and a lack of a standardized approach essential to military readiness and a uniformity of required medical goals and objectives. In addition, parochial military efforts would eliminate the open civilian forum and lack of public scrutiny inherent in the charter of the Board as mandated by the DOD directives. This civilian board of recognized authorities offers a significant and meaningful entré to medical academia which contributes to unprecedented exchange of information exceeding the collective expertise of the Board.

7. There are no other committees within the Department of Defense, or in federal or civilian agencies which offer an established epidemiologic forum in the biomedical sciences. This Board has effectively achieved, through essential scientific advice and consent, an extremely effective method of recommending appropriate solutions to the commonality of pressing problems unique to the three military medical services.

Robert F. *Nikolewski*
Colonel, USAF, BSC
Executive Secretary
Armed Forces Epidemiological Board

EDWIN H. LENNETTE, M.D., Ph.D.

Ed Lennette, with both medical and doctoral degrees, was well prepared to carry out his role as a member of that large group of microbiologists, virologists, and rickettsiologists who helped make the AFEB and its Commissions so effective. In 1939, he was appointed to the staff of the International Health Division of the Rockefeller Foundation, where he worked on influenza, yellow fever, and other viral diseases from 1939 to 1946. He directed the Medical Veterinary Division at Fort Detrick from 1946 to 1947.

Because of his background and qualifications, Dr. Lennette was appointed Chief of the Viral and Rickettsial Disease Laboratories of the California State Department of Public Health, where he contributed important new knowledge to our understanding of many viral and rickettsial diseases. His pioneering work on Q fever was fundamental to clarifying its pathogenic and epidemiological features.

During this entire period, Dr. Lennette was a member of the AFEB and several of its Commissions, particularly those dealing with influenza, viral, and rickettsial diseases. He was elected President of the **AFEB** in 1973 and served until 1976. Serious scientific and fiscal considerations arose during this critical time for the Board: it operated under a new charter, the Commission system was abolished, and the Board assumed a strictly advisory role to the military.

1973 Armed Forces Epidemiological Board and Committee Directors

Seated, left to right: Dr. William McD. Hammon; Dr. Edwin H. Lennette, President-elect; Dr. Gustave J. Dammin, President of the Board; and Dr. Francis S. Cheever.

Standing, left to right Dr. Charles H. Rammelkamp, Jr.; Dr. Floyd W. Denny, Jr.; Dr. Theodore E. Woodward; **Dr.** Reuel **A.** Stallones; Dr. William S. Jordan, Jr.; and Lt. Colonel Norman E. Wilks, MSC, **USA,** Executive Secretary.

The Permanent Committees and Ad Hoc Study Teams Are Formed

On 12 September 1973, the Board held its fall meeting at the Academy of Health Sciences, Fort Sam Houston, Texas. Dr. Edwin H. Lennnette presided. This meeting, which served to inform the Board members of the medical programs under way at Fort Sam, was accomplished through briefings and inspection tours of facilities. Considerable information was given on the health environment training programs at this military medical center.

Dr. Lennette presided at the regular spring meeting of the Board held at WRAIR on 16–17 April 1974. Important plans were made for new Board members during this meeting. Designated Subcommittees that could help the Board fulfill its new role were formed. There was a discussion of how ad hoc **task** forces might help in the military's implementation of and response to difficult health problems as they arose. The agenda for that meeting follows:

The Agenda of the April 1974 AFEB Meeting
Edwin **H.** Lennette, **M.D.,** President

16 April	
0800–1200	Preventive Medicine Symposium, Sternberg Auditorium
1300	**AFEB** Executive Session (Board Members) Announcements: **Dr.** *Lennette*
1300	Administrative Actions and Discussion Approval of Minutes Fall Meeting Plans 1974 Spring Meeting 1975
1400	Discussion of Board Membership **New** Members Chairmen of the ad hoc Study Teams
1430	Establishment of Permanent Committees
1500	Establishment of Other ad hoc Study Teams
1500–1515	Break
1515	**AFEB** Archives, The Bayne-Jones Room: *Dr. Woodward*
1540–1600	Discussion of the Mission **of** the Board
1630	Adjournment
17 April	
0800–1200	Preventive Medicine Symposium
1300–1400	Reports from the Military: OTSG, Army; OTSG, Navy; OTSG, Air Force
1400–1415	Break
1415–1500	Special Reports Rickettsia1 Vaccines: ***Dr.*** *Wisseman* Smallpox Emergency Quarantine Facility: *Dr. Lennette*
1500–1545	Presentation on Tropical Medicine Instruction and Global Medicine: *Col. Taras Nowosiwsky, MC,* WRAIR
15451615	Discussion on above reports
1630	Adjournment

HEALTH PROCUREMENT STANDARDS

One of the important problems presented to the Board during this period was that of health-procurement standards for the military services. Dr. Lennette asked Dr. Herschel Griffin, a Board member and Dean of the Graduate School of Public Health at the University of Pittsburgh, to head the ad hoc Study Team on Procurement Standards consisting of Lewis H. Kuller, M.D., D.P.H., Pittsburgh; William R. Harlan, Jr., M.D., Duke; Darwin Labarthe, M.D., Mayo Clinic; and Richard B. Shelelle, Ph.D., Illinois. This Study Team worked with designated military Preventive Medicine Officers, and they met at WRAIR on 24 May 1974, with Colonel Robert T. Cutting presiding. That agenda follows:

The Agenda of the 24 May 1974 Study Team Meeting

Ad Hoc Study Team on Procurement Standards
Armed Forces Epidemiological Board

Chairman: Colonel Robert T. Cutting

1000–1245	Announcements
	Approval of Minutes 13 March meeting
	Reports by Drs. Harlan, Kuller, Shelelle and military representatives a. Bibliography and information regarding obesity as a risk factor b. BP of AFEES rejectees for overweight and for underweight c. Weight class of AFEES rejectees for high BP d. Conversion of the AR 40–501 height-to-weight tables to wt^2/ht = body mass index (Keys' modification) *e.* Discussion of standards 1 Height versus weight 2. Blood pressure 3. Other indicators of body fat
1245–1345	Lunch
1345–1500	Discussion of suggestion to revise height-to-weight tables by use of height/weight index
	Where do we go from here? a Can recommendations he made now? b. Further studies (as requested) c. Additional information and further assignments d. Is another meeting desirable? When? e. Conclusions
1500	Adjournment

After the meeting, Dr. Griffin, Lt. Colonel Erickson, and others prepared the following **recommendations,** which were then approved at the Board's fall meeting on **4** October 1974:

1. That the procurement medical fitness standards relative to blood pressure be modified as follows:

a. The use of systolic blood pressure as a standard of medical fitness should be discontinued. Those disqualifying conditions manifested by high systolic and low diastolic pressures [e.g., aortic insufficiency] would continue to be causes for rejection.)

b. Preponderant diastolic pressure over 90 mm should be maintained as a cause for rejection except as provided in (c) below.

c. Provision should be made for acceptance of persons with preponderant diastolic blood pressure over 90 mm but under 100 mm with waiver. This recommendation is based on the following considerations:

(1) The current standards were developed before the ready availability of effective antihypertensive medication

(2) There is no evidence that patients with slightly elevated blood pressure entail an increased risk of complications by participating in strenuous exercise or other physical activity.

(3) The risk of disability due to hypertensive disease and its complications among mild hypertensives within the first 10–15 or even 20 years of military service is very low, much lower than morbidity associated with excessive alcohol consumption, orthopedic problems or psychiatric disease.

(4) The risk of disability due to hypertensive disease is more closely associated with the diastolic than the systolic blood pressure. The major current studies on cardiovascular disease, e.g., the Multiple Risk Factor Intervention Trial (MRFIT), consider subjects as hypertensive on the basis of diastolic pressure alone.

2. That a representative sample of persons accepted with waiver be identified and followed as described below:

a. The blood pressure of the men should **be** recorded at the AFEES centers. Values for initial and repeat measurements at AFEES should be retained for future analysis.

b. During his service, the individual's blood pressure should be recorded (if possible, at **2–3** month intervals) regardless of whether visits for therapy are made *to* the dispensary. Weight, and if possible, adiposity should also be reported.

c. The medical records of each man should be identifiable so that his use of health services within the military can be documented.

d. Men who develop substantially elevated diastolic pressures as measured by readings **above** 100 mm Hg on three or more occasions should be considered for treatment.

e. At the end of one year, data on any changes in blood pressure, medication required, frequency of utilization of medical facilities and morbidity should be evaluated.

f. Blood pressure standards can be reevaluated based on the results of this one year's experience.

Implementation of these changes would increase the pool of available manpower and yield information on the costs/risks of changing standards relative to manpower requirements. During 1971, approximately 22,000 applicants were in this category. It is noted that about 40% **of** them would also be rejected for overweight. Thus, any waiver program must provide for this factor, too.

HERSCHEL E. GRIFFIN, M.D.

After he graduated from medical school, Herschel Griffin had a private medical practice in California for several years. He entered the Medical Corps in 1950 and was soon appointed Regimental Surgeon; later, in Korea, he was promoted to Division Surgeon. His record in the Department of the Army was distinguished, and from 1966 to 1969 he was Chief of the Preventive Medicine Division in the Office of the Surgeon General. After he retired from the military, Dr. Griffin served not only as Dean of the Graduate School of Public Health but also as a professor of epidemiology and microbiology at the University of Pittsburgh.

While in the military, Dr. Griffin participated actively in the activities of the AFEB and its Commissions. Dr. Edwin H. Lennette, who was the Board President at that time, appointed him Chairman of the ad hoc Study Team on Procurement Standards, which was charged to review and make recommendations regarding the military services' physical standards. From 1978 to 1980, while he was also Dean at the University of Pittsburgh, Dr. Griffin was President of the AFEB. This was a critical time for the AFEB, when it reassessed its role and responsibilities as an advisory board to the military services.

THE TWENTY-FIFTH ANNIVERSARY SYMPOSIUM OF THE STREPTOCOCCAL DISEASE LABORATORY

A symposium commemorating the twenty-fifth anniversary of the Streptococcal Disease Laboratory was held at Warren Air Force Base, Wyoming, on 3 October 1974. The symposium was presented in the form of a festschrift honoring Charles H. Rammelkamp, Jr., M.D., a long-time distinguished member of the Board.

The Board met at Warren Air Force Base immediately after the festschrift and planned further for the effective functioning of the Board and its Subcommittees under the new organization. The agenda for that meeting follows:

Symposium Agenda, 3 October 1974, Warren Air Force Base

H. B. Houser, M.D., Chairman
8:45 A.M. Welcoming Remarks
Col. Christopher S. Adams, Jr., Commander, 90th Strategic Missile Wing
Col. G. *Douglas Adamson, M.D.,* Commander, USAF Hospital, Warren Air Force Base
Leroy R. *Maki, Ph.D.,* President, Wyoming Heart Association

Richard M. Krause, Presiding
900-920 A Search for Better Antibody Tests for Group A and Group B Streptococcal Infections: *Lewis W. Wannamaker, M.D.*
9:25–9:55 The Evolution of the Typing System for Group A Streptococci: *W. R. Maxted, Honorary Ph.D.*
10:00–1020 On the Ways Antibodies to Streptococcal Carbohydrates can Substitute for Myeloma Proteins: *Richard M. Krause, M.D.*
10:25–10:45 Break

Chandler A. Stetson, M.D., Presiding
10:45–11:05 Immunopathologic Studies of Rheumatic Heart Valves: *Melvin H. Kaplan, M.D.*
11:10–11:30 The Genetic Instability of Serum Opacity and Resistance to Phagocytosis of Group A Streptococci: *Paul P. Cleary, Ph.D.*
11:35–11:55 Biological Reactions to Peptidoglycan of Group A Streptococcus and Other Bacteria: *Jiri Rotta, Ph.D.*
12:00–1:30 Lunch, Officers' Open Mess

Floyd W. Denny, Jr., M.D., Presiding
1:30–2:00 Post-streptococcal Glomerulonephritis: The Pyoderma Era: *Hugh C. Dillon, M.D.*
2:05–2:25 Observations on the Epidemiology of Rheumatic Fever: *Harold B. Houser, M.D.*
2:30–2:50 The Relative Rheumatogenicity of Group A Streptococcal Strains: *Gene H. Stofferman, M.D.*
2:55–3:25 The Pattern of Acquisition and Spread of Group A Streptococci in Families: *Aziz El Kholy, M.D*
3:30–4:00 Break

Harold B. Houser, Presiding
4:00–4:20 Recreational and Vocational Evaluation and Planning for the Young Cardiac: *Loring Brock, M.D.*
4:25-4:45 Mycoplasma Pneumoniae Disease: An Immune Paradox: Floyd *W. Denny, Jr., M.D.*
4:50–5:10 Crystal Gazing: *Chandler A. Stetson, M.D.*
6:00–7:30 Reception, Officers' Open Mess
730 Dinner, Officers' Open Mess
*Lewis W. Wannamaker, M.D., Pres*iding
Edward A. Mortimer, M.D., Frederick C. Robbins, M.D., Lewis A. Thomas, M.D.

At the 13 January 1975 meeting of the Board, discussions were held on the reorganization of the AFEB, when the new charter for 1975–77 was placed in operation. (See Appendix 4 for the 1975–77 charter.) Colonel Robert T. Cutting, MC, Chief of the Health and Environmental Division, representing the **Surgeon General of the Army, convened the meeting. Vice Admiral Donald** L. *Custis,* **the Surgeon** General of the Navy, attended the meeting and addressed the Board. An additional action item of this meeting was to continue E. H. Lennette as President of the Board.

1975 Armed Forces Epidemiological Board

Seated, left to right: Colonel Robert T. Cutting, MC, USA; Dr. Edwin H. Lennette, President of the Board; Dr. Floyd W. Denny, Jr.; and Dr. Vaun A. Newill.

Standing, left to right: Dr. Theodore E. Woodward; Dr. E. Russell Alexander; Dr. Paul M. Densen; Dr. William S. Jordan, Jr.; Captain Charles E. Alexander, MC, USN; and Lt. Colonel Duane G. Erickson, MSC, USA, Executive Secretary.

CHARLES H. RAMMELKAMP, JR., M.D.

Charles Rammelkamp's interest in military medicine began in **1943,** when he joined the Commission on Acute Respiratory Diseases under the direction of Dr. John H. Dingle. At Fort Bragg during World War II, Rammel contributed important new knowledge related to non-streptococcal tonsillitis, acute respiratory disease of recruits, and the induction of atypical pneumonia and acute respiratory disease in volunteers. After the war, with Dingle's group and a new Department of Preventive Medicine at Case Western Reserve University, Rammel participated in the AFEB-supported research that detected the prevalence of Type 12-D streptococcal infection in acute nephritis in families. In **1948,** he established a laboratory at Warren Air Force Base as a member of the newly formed Commission on Streptococcal Disease of the AFEB. The pioneering studies done there established that intimate contact is the major transmitting mechanism of streptococcal infections, and that epidemics are prevented by chemoprophylaxis with penicillin. They also showed that proper use of antibiotics in treatment of streptococcal pharyngitis will prevent attacks of rheumatic fever.

Rammel worked unceasingly and made major contributions to medicine and preventive medicine. Although his major interest was streptococcal infections, he contributed equally to the knowledge of staphylococcal infections. There is no question that Charles Rammelkamp was devoted to the AFEB, in both its military and civilian roles, and was a major contributor to its success in solving medical problems.

LEWIS W. WANNAMAKER, M.D.

Lewis Wannamaker received his formal education in medicine at the University of Minnesota. After he completed his training in pediatrics, he returned to the University of Minnesota School of Medicine, where he eventually became a professor and Chairman of the Department of Pediatrics. During World War II, Dr. Wannamaker was a member of that remarkable team of medical scientists who worked on streptococcal diseases and the prevention of rheumatic fever at Warren Air Force Base, Wyoming. He was a major contributor to the work of this team of investigators, which included John Dingle, Charles Rammelkamp, and Floyd Denny. At Minnesota, Lewis Wannamaker developed the Center for the Study of Streptococci, a ,worldwide reference bank, where many scientists trained under his leadership.

The AFEB profited greatly from Dr. Wannamaker's service. He was a member of the Commission on Streptococcal and Staphylococcal Diseases from 1955 to 1973, and its director from 1967 to 1973. He served as a member of the Commission on Cutaneous Diseases from 1968 to 1972.

CHOLINESTERASE INHIBITION
AND THE GERMAN NERVE GAS KNOWN AS GB

At its 10 July 1975 meeting, the Board heard of a problem caused by methyl phosphorofluoridate, a German World War II nerve gas that was called GB in this country. Some of the workers at the Rocky Mountain Arsenal had manifested symptoms of organic depression (not to be confused with emotional depression) after they had participated in the demilitarization of CB, which is a cholinesterase inhibitor. In order to assess the difficulties pertaining to cholinesterase inhibition and the depression that it caused in these people, an ad hoc Study Team on Cholinesterase Inhibitors was formed. It convened at the Forrestal Building in Washington, D.C., on 13 August 1975. The agenda and roster of participants follows:

Agenda, 13 August 1975
Ad Hoc Study Team on Cholinesterase Inhibitors

0900–0910	Opening Remarks: *Dr. Newill*
0910–0920	Problem Definition: *Col. Cutting*
0920–0950	Demilitarization Program GB Operation at **RMA:** *Lt. Col. Hanson*
0950–1000	Break
1000–1030	Occupational Health Policy Background Practice and Procedure of RMA Difficulties: *Lt. Col. Hathaway*
1030–1130	Discussion of Cholinesterase Methodology Reproducibility in Human Specimens *Dr. Sidell, Col. Steinberg* *Dr. Michael, Dr. Ellin*
1130-1230	Lunch
1230–1300	Teratogenicity: ***Dr.** McNamara*
1300–1530	Discussion Conclusions Recommendations to the Board

Roster of Participants

AFEB members: Dr. Vaun Newill, Chairman of the ad hoc Study Team, Division of Environmental Health, Exxon Corp; Dr. Wayland Hayes, Vanderbilt University School of Medicine; Dr. J. Henry Wills, Albany Medical College; Dr. Uavid Grob, Maimonides Medical Center.

Representatives from the Army: Col. L. J. Legters, MC; Col. Robert T. Cutting, MC; Col. John E. Ward, MC; Col. Marshall Steinberg, MC; Lt. Col. George E. T. Stebbing, MC; Lt. Col. Robert L. Hanson, MSC; Lt. Col. Donald M. Rosenberg, MC.

Representing the Air Force: Lt. Col. Frank L. Corker, MC.

Civilian Representatives from *Edgewood Arsenal.*
AFEB Staff: Lt. Col. Duane G. Erickson, MSC, Executive Secretary; Miss Betty L. Gilbert, Executive Assistant.

The ad hoc Study Team met at the Rocky Mountain Arsenal on January 28–29 1976 to further study the cholinesterase inhibitor problem. The agenda for that meeting follows:

Agenda, **Rocky** Mountain Arsenal Meeting, January **1976**

28 January **1976**

0830	Arrive at Rocky Mountain Arsenal: *Dr. Gaon*
0830–0850	Welcome and Opening Remarks: *Col. Byrne*
0850–0920	GB Demilitarization Briefing: ***Mr.** Glassman*
09204950	Installation Restoration: *Lt. Col. Williams*
0950–1000	Coffee Break
1000–1020	**Work** Environment Monitoring and Quality Control: Dr. *Boyle*
1020–1033	Protective Garment Status and Issue of Safety Equipment: *Mr. Rock*
1030 1130	Escorted Tour of CB Demilitarization Facilities: *Mr. Ursillo and staff*
1130–1230	Lunch in the Officers' Open Mess
1230–1330	**Investigative** and Quality Control Studies: *Mr. Ursillo*
1330–1350	Quality Control of RBC ChE: *Col. Glenn*
1350–1430	Employee RBC ChE Determination and Evaluation: Dr. *Gaon*
1445–1630	Discussion

29 January **1976**

0830–1130	Discussion and Executive Session

After the various meetings and discussions, the Board made the following report on the problem of cholinesterase inhibition and its consequent organic depression:

During its meeting of February 13,1976, the AFEB approved the report and thirteen recommendations of the ad hoc Study Team on Cholinesterase Inhibitors. The report and recommendations which follow were transmitted to the Surgeon Ccncral, DR, on *23* March 1976.

In response to a request for assistance from the Chief, Health and Environment Division, OTSG-DA, an ad hoc Study Team was organized to consider occupational health problems associated with the GB demilitarization project. Dr. Vaun **A.** Newill was appointed Chairman. The first meeting was held in Washington, D. C. on 13 Aug 75, and a second, on 28–29 Jan 76 at Rocky Mountain Arsenal at Denver. The following report is hereby submitted for consideration by the Board

1. The Study Team wishes to commend the Demilitarization Project for the marked improvement in occupational health procedures which have been implemented at Rocky Mountain Arsenal since early in 1975 and which is manifest in the significant decrease in instances of cholinesterase depressions in their workers since June 1975.

2. The problem of establishing baseline cholinesterase activity levels in each individual is recognized, particularly when there exists a possibility for exposure within the first 48 to 72 hours after employment. However, the importance of this baseline value cannot be overemphasized, since it will serve as a reference point for all future

determinations. Thus, a specific study should be conducted to determine the best least-cost procedure for accomplishing this task. Until such time as results of this study are in hand, baseline cholinesterase activity values should be based on three determinations performed on blood specimens collected on three nonconsecutive days. In addition, whenever there is a change in the method of determination of the cholinesterase activity, there should be a reevaluation of the baseline for each employee. In this reevaluation, blood collected for determination of cholinesterase activity should be analyzed by both methods for a period of time to obtain data necessary for the reevaluation procedure.

Recommendations:

a. That a study be performed to determine the best least-costprocedure for establishing the RBC cholinesterase activity baseline for a newly hired individual. Until the results of this study arc available, the baseline activity of an individual should be determined on specimens collected on three non-consecutive days.

b. That individual baseline data be reevaluated each time that there is change in the method used for RBC cholinesterase activity measurement. Parallel determinations by both methods on the same blood sample should be made for a period of time to aid in this reevaluation.

3. The current practice at RMA is to determine RBC cholinesterase activity only once every two weeks on personnel who have a high risk of exposure two or more times a week. While this practice, in conjunction with recent improvements in protective measures, has been associated with no instance of serious intoxication by GB, it is desirable to detect evidence of absorption of GB earlier than is currently possible. In the 75 instances in which RBC cholinesterase activity was depressed below 75 percent nf baseline in 57 individuals at RMA during the past year, the mean percent reduction of cholinesterase activity reported at the time of detection was 45 percent. This resulted in a 56-day mean time lost from the job because of restriction from further exposure until the cholinesterase activity returned to at least 90 percent of the baseline level. On the average, weekly, instead of biweekly, determinations on employees who are subjected to a high risk of exposure one or more times a week would detect evidence of GB absorption closer to the time of exposure. Earlier detection of depressions in cholinesterase activity has the following advantages:

a. There would be less opportunity for re-exposure while blood, and presumably tissue, cholinesterase activity was depressed, and therefore, less likelihood of cumulative toxicity.

b. Since it should be easier to relate the depression of cholinesterase activity to one or two episodes of possible exposure than to three or more episodes, it might be more feasible to identify contributory factors.

c. When the depression of cholinesterase activity is the result of more than one exposure, it should be possible to detect the depression at levels closer to 75 percent of baseline rather than at the current mean level of 55 percent of baseline. This in turn should result in reduction in the time lost from that job because of restriction from further exposure.

d. Weekly, instead of biweekly, determinations of cholinesterase activity during the recovery period after removal from the job because of a depressed ChE activity should provide a more accurate indication of recovery of normal activity, and should enable half of the employees to return to full duty a week earlier. There would be some advantage in determining cholinesterase activity within a day after a potential exposure, if logistically possible. The employee union should recognize this requirement for more frequent sampling as an advantage for the protection of the health of the employees, and it also should decrease time lost from duty. Employees who are not subjected to a high risk of exposure should continue to have their cholinesterase activity determined at intervals of several weeks *to* several months, depending on the degree of exposure.

Recommendation:

That employees subjected to a high risk of exposure to GB one or more times a week have their RBC cholinesterase activity level determined at least once a week.

4. The reproducibility of values for RBC cholinesterase activity determined daily in any non-exposed normal individual is between 10 and 20 percent in the best laboratories. Therefore, a determination of 75 percent of baseline should represent a significant reduction of cholinesterase activity, evidence of systemic absorption of an anti-cholinesterase compound, and a valid reason for avoiding re-exposure until sufficient recovery of cholinesterase

Armed Forces Epidemiological Board and Committee Directors
Army Environmental Hygiene Agency, Edgewood, Maryland
11–12 November 1976

Seated, left to right Dr. Paul M. Densen; Dr. William S. Jordan, Jr.; Dr. Floyd W. Denny, Jr.; Dr. Theodore E. Woodward, President of the Board; Dr. Charles H. Rammelkamp, Jr.; and Dr. Norton Nelson.

Standing, left to right: Captain Dennis F Hoeffler, MC, USN; Colonel Llewellyn J **Legters,** MC, **USA;** Dr. Mildred A. Morehead; Dr. Herschel E. Griffin; Dr. Vaun **A.** Newill; Colonel Frank T. Corker, MC, USAF; Betty Gilbert, secretary; and Lt. Colonel Duane G. Erickson, MSC, USA, Executive Secretary.

VAUN A. NEWILL, M.D.

After he graduated from the University of Pittsburgh School of Medicine, Vaun Newill trained in medicine in Cleveland and joined the faculty of Case Western Reserve University School of Medicine there. Subsequently, he held faculty teaching appointments at the schools of public health at Harvard and at the University of North Carolina. From 1968 to 1970, he directed the Division of Health Effects Research at the National Air Pollution Control Administration, Durham, North Carolina. In 1974, Dr. Newill joined the Medical Research Division of the Exxon Research and Engineering Company, Linden, New Jersey.

The **AFEB** was particularly fortunate to have Dr. Newill as a member. In 1975 and 1976, he chaired its ad hoc Study Team on Cholinesterase Inhibitors. Workers at a military chemical plant had experienced depressions following their exposure to the nerve gas isopropyl methyl phosphorofluuridate (known as GB). The Study Team's thorough report helped provide the guidelines on the occupational health problems associated with the demilitarization of this toxic chemical.

activity has occurred. However, the requirement for recovery of cholinesterase activity to 90 percent of baseline before permitting return to work having a potential for re-exposure is regarded as too stringent in view of the 10 to 20 percent variation in the technical reproducibiity of the determination; this has resulted in longer periods of employee absence from full duty (mean, 56 days) than would appear to be necessary.

Recommendations:

a. That the RMA continue the current criterion of removing employees from potential exposure to GB when their RBC cholinesterase activity is depressed to 75 percent of their baseline level, or less.

b. That the criterion for permitting workers to return to duties which entail a potential risk of exposure to GB be changed from 90 percent to 80 percent, or higher, of their baseline ChE activity provided that they have had no exposure to anticholinesterase compounds for at least one week, and provided than an 80 percent, or higher, of baseline cholinesterase activity level has been obtained on at least two separate blood samples.

5. In order to assure maximum protection of the health of employees throughout the demilitarization program, standardization of procedures for cholinesterase activity determinations and for surveillance of employees should be achieved. If it is feasible to do so, a single method for determination of ChE activity should be used by all facilities. At the least, different methods used by various facilities all should be standardized by use of two reference preparations of cholinesterase derived from human erythrocytes; one to be a normal control preparation, the other, a partially inhibited (by GB) preparation. The extent of inhibition of the latter reference preparation should be known to the coordinator only, and preparations should be labeled in a nonrevelatory manner.

Recommendations:

a. That some appropriate individual be designated to be responsible for assuring that acceptable standardized techniques for employee health surveillance are used at all installations involved in the demilitarization program.

b. That a single central laboratory, or two or more regional laboratories, be designated to process blood samples from installations operating under the demilitarization program and to perform routine determinations of the RBC cholinesterase activity therein. The various operating installations should maintain competence to perform accurate determinations of RBC cholinesterase activity for nonroutine use in the event of an accident or a possible significant exposure of one or more workers. A quality control surveillance system should be established to assure that this competence is maintained.

6. There is a trend toward the more general use of pharmacological measurements to supplement environmental measurements in controlling occupational exposure to chemicals. In this connection, it has been customary for decades to monitor the plasma and/or RBC cholinesterase activity of workers exposed to anticholinesterase organic phosphorus compounds. This offers an indirect indication of absorption through measurement of a biochemical effect. It long has been practical to obtain a direct indication of exposure through measurement of urinary excretion of metabolites of a few compounds, such as parathion and malathion. However, only since the work of M. T. Shafik has it become practical to measure the urinary metabolites of all organic phosphorus insecticides. [NOTE Shaftic, M. T.; Broadway, D. E.; Enos, H. F.; and Yobs, A. R. 1973. *Agr.* Food *Chem.* 21: 625–629. T.F.W.] The direct analytical approach should not replace the measurement of cholinesterase activity, but the analysis of metabolites does have the advantage of better quantitative correlation with exposure, and, if repeated, it can reflect discrete/recent exposures rather than a summation of exposures over a period of weeks or even months. The Shafik method of measuring urinary organic phosphorus metabolites is now standard in several laboratories. Analysis of a few samples of urine from persons recently exposed to GB under the most severe operational conditions would reveal whether a practical measurement of absorption of GB is now possible without modification of the method. If such a trial were unsuccessful, the method still might be adapted through study of the organophosphorous metabolites characteristic of GB, and, perhaps, through increasing the sensitivity of the method to detect the small concentrations expected in the urine of exposed workers.

Recommendations:
a. That the practicality of using the standard Shafik test be explored by sending suitable samples of urine to any laboratory skilled in using the test.
b. If this test is not immediately successful, that arrangements be made to have Dr. Shafik determine the possibility of adapting this test for measuring metabolites of GB in the urine of individuals occupationally exposed to the compound.

7. No scientific opinion with regard to restrictions on employment of women can be rendered before further data are available. In general, restrictions on work for women might best be applied to the risks of exposure involved in a particular job rather than to impose a blanket exclusion from the entire project. However, it must be kept in mind that any woman who works in an area where she could be exposed, and who subsequently delivers a child with a birth defect, might claim that an exposure caused the defect. There is at present no scientific data which could refute such a claim. The government could therefore be held liable for damages.

Recommendation:
That women employees of child-bearing age and capability should be assigned only to jobs with an extremely small possibility of exposure to GB.

8. The ad hoc Study Team believes that the analysis of data from work exposure records and health records by epidemiological techniques could provide much valuable information for the GB demilitarization project management. Further, a sociological-psychological study of workers in the high-risk category might be useful in determining why some employees experience less exposure to GB than others performing the same work.

Recommendation:
That the Commander, **RMA,** request through command channels of the US. Army Materiel Development and Readiness Command that the services of an epidemiologist be provided for analysis of occupational health data from GB Demilitarization Project.

9. The ad hoc Study Team believes that whenever feasible every opportunity for clinical studies on individuals exposed to GB should be pursued using a comprehensive and well-defined protocol. This information could be of significant value in occupational health programs for pesticide operations. Because of the potential value of this information with regard to the public health implications of the broad use of pesticides and their potential effects in the general population, provision should be made for long-term retention of this data to include periodic analyses.

Recommendation:
That employees who have experienced an exposure to GB, and who have signs or symptoms attributable to GB, have measurements made, whenever feasible, to record local and systemic signs including pupil size, vital capacity, maximum breathing capacity, movement of expired air and localized or generalized sweating measured by skin resistance technique.

10. The accumulation of water, hydraulic fluid and other liquids on the floors within cubicles increases the risk of accidents and the possibility for exposure to GB. Mechanical failure of the sump pumps has been described as the cause of this accumulation of fluids. Increased effort should be made to eliminate this unsafe condition.

Recommendation:
That each cubicle be provided with a back-up pumping system which will become operational automatically if the existing sump pump fails to prevent accumulation of fluid on the cubicle floor.

SUBMITTED BY:

Vaun A. Newill, M.D.
Chairman, ad hoc Study Team

Duane G. Erickson
Lt. Colonel, MSC, USA, Executive Secretary

THE LIAISON BETWEEN THE ARMED FORCES EPIDEMIOLOGICAL BOARD AND THE U.S. ARMY MEDICAL RESEARCH INSTITUTE OF INFECTIOUS DISEASES

From the time that the Army's medical research activities began at Fort Detrick, the AFEB, and particularly its Commission on Epidemiological Survey, maintained a close relationship and responded for advice and assistance whenever requested. The Board's Commission on Epidemiological Survey served in a direct advisory role for the investigative programs at Fort Detrick, which later became known as the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID). That program of activities is described in the history of that Commission being prepared by Colonel Dan Crozier, MC, former Director of the Commission on Epidemiological Survey and former Commander of USAMRIID.

On 20–21 November 1975, the AFEB's ad hoc Subcommittee for Infectious Disease Problems met at USAMRIID for discussions and to plan work sessions. This productive meeting informed the Board of the various fundamental research activities underway at Fort Detrick. (Similar sessions of this type were held in ensuing years; when these meetings were held, a Board member gave a full report to the AFEB at its next meeting.) The agenda for the 20–21 November 1975 meeting, showing the topics of discussion and participants, appears on page 166.

THE COURSE IN GLOBAL (TROPICAL) MEDICINE AT WALTER REED ARMY INSTITUTE OF RESEARCH

In February, 1974, I suggested in a letter to Brig. General Kenneth Dirks, MC, Commander of the United States Army Research and Development Command, that, if feasible, civilian participants, including selected medical students and interested faculty members, be enrolled in the Global (Tropical) Medicine Course at Walter Reed Army Institute of Research (WRAIR). I pointed out that curricula in most American medical schools are grossly deficient in their training in parasitology and tropical medicine. General Dirks kindly expressed his ready assent to the suggestion. However, because of the military requirements and the practical considerations of class size, limited laboratory facilities, and fiscal constraints, he felt it was unlikely that the course could be extended significantly, or that a second course could be presented. Edwin H. Lennette, Board President, supported my suggestion in the following letter, dated 19 February 1974:

Dear General Dirks:

I should like to second the comments of Dr. Ted Woodward in his letter to you of 11 February 1974 with general reference to global medicine and specific reference to the course in Tropical Medicine at the Walter Reed Army Institute of Medical Research. Dr. Woodward has pinpointed an area in which medicine in this country is woefully deficient and, since medical schools are no longer involved in the teaching of global medicine (or, as it is sometimes designated, tropical medicine), I truly believe that the Department of the Army could play a major role in this important area of medicine and medical education.

Indeed, I feel that the subject is of such importance that I have asked Col. Wilks, executive secretary of the Armed Forces Epidemiological Board, to place it on the agenda of the next meeting of the Board, *viz.*, 16–17 April 1974.

Sincerely yours,

Edwin H. *Lennette, M.D., Ph.D.*

The course was expanded somewhat, in keeping with available resources and the normal constraints of WRAIR staff members. A few Peace Corps physicians have taken the course and non-military

The Agenda of the November 1975 Meeting of the Subcommittee for Infectious Diseases

0900 Opening Session
Introduction and Remarks: *Col. Joseph F. Metzger, MC; Brig. Gen. Kenneth R. Dirks, MC*
20 November
Coffee Break
Scientific Presentations
I. Subpopulation of actively rosetting T-lymphocytes as an index of CMI in man: *Lt. Col. Robert Edelman, MC*
II. Multiple leukocyte factors that induce reactions characteristic of the inflammatory response: *Carol A. Mopes, Ph.D.*
III. Directions of Arenavirus Research
Arenavirus studies at USAMRIID: *Lt. Col. Gerald A. Eddy, VC*
The African green monkey as an alternative primate host for studying Machupo virus infections: Clinical aspects: *Capt. Franklin S. Wagner, VC*
Pathogenic studies of Bolivian hemorrhagic fever: *Maj.* Charles G. *McLeod, Jr., VC*
1215 Lunch at Fort Detrick Officers' Open Mess
1330 Scientific Presentations (continued)
IV. Directions of Rickettsiology Research
Overview of Rickettsiology Division research: *Maj. Carl E. Pedersen, Jr.,* MSC
Immunological aspects of spotted fever vaccines: *Richard H. Kenyon, Ph.D.*
Diagnosis of Rocky Mountain spotted fever **using** radioimmunoassay **techniques**: *Maj. Charles N. Oster, MC*
Specific *in vitro* lymphocyte transformation to Rocky Mountain spotted fever rickettsia1 antigen: *Maj. Michael S. Asrher, MC*
Immunological potential of the soluble antigen of *Coxiella burnetii*: *Maj. Richard A. Kishimoto*
Coffee Break
V. Directions of therapeutic studies
Effects of poly (ICLC) on yellow fever, Machupo, and Venezuelan equine encephalomyelitis virus diseases in monkeys: *Maj. Edward L. Stephen, VC*
Mouse models for evaluating potential antiviral compounds: **A** new "indirect" evaluation model: *Ralph* W. *Kuehne, M.S.*
The use of small-particle aerosols of antiviral compounds for the treatment of type A influenza pneumonia in animal models: *Maj. Jerry S.* Walker, *VC*
Pharmacokinetic aspects of aerosols of kanamycin in normal and respiratory *Klebsiella pneumoniae*-infected rats: *Richard* F. *Berendt, Ph.D.*
1715 Cocktails and Buffet Supper: Fort Detrick Officers' Open Mess

21 November
0800 Scientific Presentations (continued)
VI. Bacterial Exotoxins
Overview of toxin research: *Leonard Spero, Ph.D.*
Pseudomonas exotoxin—Properties and role in pathogenesis: *Stephen H. Leppla, Ph.D.*
The response of mammalian cells to **the** exotoxins of *Corynebacterium diphtheriae* and *Pseudomonas aeruginosa:* Differential cytotoxicity: *john L. Middlebrook, Ph.D.*
Staphylococcal exfoliative toxin: *Ms. Anna D. Johnson*
Coffee Break
Consultation Sessions: Each Division Chief will serve as host for meetings with consultants assigned according to the following list:

Division	**Consultant**
Aerobiology	William S. Jordan, Jr., M.D., and Herschel E. Griffin, M.D.
Animal Assessment	Reurl Arthur Stallones, M.D.
Bacteriology	William D. Sawyer, M.D., and Charles H. Rammelkamp, Jr., M.D.
Pathology	A. M. Pappenheimer, Jr., Ph.D., and Abram S. Benenson, M.D.
Physical Sciences	Ralph D. Feigin, M.D., and Jay P. Sanford, M.D.
Rickettsiology	Bennett L. Elisberg, M.D., and Theodore E. Woodward, M.D.
Virology	Edwin H. Lennette, M.D., and Neal Nathanson, M.D.

1215 Lunch at Fort Detrick Officers' Open Mess
1330 Executive Session

LIEUTENANT GENERAL
RICHARD TAYLOR, MC, USA
The Surgeon General

candidates have either enrolled or audited the lecture series. Available laboratory space has been a limiting factor. The AFEB has always shown great interest in educational programs for all of the military services, and Board members have contributed to various of the courses, particularly the one at WRAIR.

The period of fiscal austerity continued. In 1976, Colonel Richard Miller, MC, Chief of Preventive Medicine at WRAIR, and Director of the excellent global medicine course there, reported a problem and asked for a little help. He had been informed by the Surgeon General's Office that financial limitations had necessitated canceling the course. In a telephone call, I commented to General Taylor that closing the global medicine course at WRAIR would have far-reaching implications. After all, the course had served to indoctrinate the medical officers of all three services to the field and practical problems faced in the tropics. General Taylor, during his entire career, had closely identified himself with the Board, and the spirit of cooperation between him and the Board had always been a two-way street. He pinched a little more and found the financing to continue this excellent instructional course, and it remains one of the best of its kind anywhere. This is a fitting tribute to the excellence of military-sponsored educational programs, which keep medical officers informed of unusual but important global medical problems.

THE AFEB MEETING AT THE CENTERS FOR DISEASE CONTROL

Because the Board desired to keep abreast of relevant national problems related to infectious discasc control, it held its winter 1977 meeting at the Centers for Disease Control (CDC) in Atlanta, Georgia. Several important developments during this period had prompted this change of venue. Dr. William Foege, Director of the CDC, briefed Board members on the scope of their activities. Legionnaire's Disease had posed a considerable threat that summer, and Board members were able to hear, first hand, of the new developments in this field. Furthermore, the African-derived hemorrhagic fevers caused by the Lassa and Ebola viruses were occurring with increasing frequency and had the potential to pose considerable challenges for the military.

This collaborative meeting among the AFEB and staff members of the CDC, WRAIR, and USAMRIID provided a unique forum. Discussion arose regarding the optimal site for the hospitalization of patients who were either en route to, or already in, the United States, and who were possibly infected with either virus. It was concluded that the best plan should include upgrading the security laboratories (Class IV) at USAMRIID. And it was considered appropriate that patients thought to be in the incubation period of any of these hemorrhagic fevers should be hospitalized at Fort Detrick.

This meeting was very useful, and it demonstrated the benefits that accrue from holding meetings at the site where a subject disease is under investigation. The agenda for the AFEB meeting in Atlanta follows:

Agenda for the 14 November 1977 AFEB Meeting at the Centers for Disease Control

0830–0840	Opening Remarks: Dr. *Herschel E. Griffin,* President, AFEB
0840–1910	Overview of CDC Operations: *Dr.* Win. *Foege,* Director, CDC
0910–1010	Epidemiologic Surveillance and Disease Reporting Systems *Dr. Philip* S. *Brachman,* Director, Bureau of Epidemiology
1010–1025	Coffee Break
1025–1125	Legionnaire's Disease: *Dr. David* W. *Fraser,* Chief, Special Pathogens Branch, Bureau of Epidemiology
1125–1225	Lassa and Ebola Viruses — Investigations and Management of Imported and Indigenous Cases: *Dr. Karl Johnson,* Chief, Special Pathogens Branch, Virology Division, Bureau of Laboratories
1225–1315	Lunch
1315–1400	National Preparedness for Defense against Biological Warfare Agents and for National Health Emergencies Discussion of Separate and Joint Responsibilities and Capabilities for a Coordinated Response by All Agencies Involved Stockpiles of Vaccines, Antitoxins and Immune Globulins
1400–1430	Report from Subcommittee on Disease Control and Discussion: **Dr.** *Abram Benenson,* Subcommittee Director
1430–1500	Report from ad hoc Subcommittee on Asbestos Related Health Problems and Discussion: Dr. *Anna Baetjer,* Subcommittee Member
1500–1515	Coffee Break
1515–1545	Report from Subcommittee on Health Maintenance Systems and Discussion **Dr.** *Mildred Morehead,* Subcommittee Member
1545–1600	Report on 1977 USAMRIID Planning Session: *Dr. Charles H. Rammelkamp, Jr.*
1600–1630	Programs of the Uniformed Services University of the Health Sciences *Capt. Dirk Van Peenen, USN,* Chairman, Department of Preventive Medicine and Biometrics, USUHS.
1630 -1650	Army Preventive Medicine Report: *Col. Taras Nowosiwsky, MC,* Chief, Health and Environment Division, Office of the Surgeon General
1650–1710	Navy Preventive Medicine Report: *Capt. W. J. Brownlow, MC, USN,* Head, Disease Analysis and Control Branch, Occupational and Preventive Medicine Division, BUMED, DN
1715	Adjournment

1978 Armed Forces Epidemiological Board and Committee Directors

Back row, left to right: Paul M. Densen, D.Sc.; Anna M. Baetjer, M.D.; Paul Kotin, M.D.; Vaun M. Newill, M.D.; Abram S. Benenson, M.D.; James Chin, M.D.; and Lt. Colonel Duane G. Erickson, Ph.D., MSC, USA, Executive Secretary.

Front row, left to right: Theodore E. Woodward, M.D.; Gustave J. Dammin, M.D.; Herschel E. Griffin, M.D., President of the Board; Charles H. Rammelkamp, Jr., M.D.; and William S. Jordan, Jr., M.D.

THE PROBLEM OF THE HERBICIDE AGENT ORANGE

For more than a decade, the AFEB had heard reports and entered into discussions regarding the medical effects of exposure to the herbicide Agent Orange in Vietnam. The Board's role had been to render advice pertaining to the techniques and methods for evaluating the problem. On 30 August 1979, a special ad hoc Subcommittee met to review a plan to study the possible adverse health effects on Air Force personnel following their exposure to Agent Orange in Vietnam (Project Ranch Hand). The attendance roster for that meeting follows:

AFEB: Floyd W. Denny, M.D., Anna M. Baetjer, M.D., and Paul M. Densen, D.Sc., members, and Captain Charles W. Halverson, USN, Executive Secretary.

Consultants and Technical Experts: Major Alvin L. Young, USAF; Joel Michalek, Ph.D.; Lt. Colonel William H. Wolfe, USAF; Colonel George D. Lathrop, USAF; Major Phil G. Brown, USAF; Robert W. Miller, M.D.; Abraham Lilienfeld; Lt. Colonel Ronald D. Burnett, USAF; Colonel J. W. Thiessen, USAF; Commander R. B. Peterson, USN; and Bartlett M. Rhoades.

Dr. Paul Kotin, a Board member who was active in the Board's assessment of the Agent Orange problem, was unable to attend this meeting. The ad hoc Subcommittee carefully considered comments and recommendations regarding the Ranch Hand protocol, and their recommendations were approved by the Board. The recommendations pertained to the need to formulate an ideal control group with provision of adequate sampling flexibility and replacement under the proposed best-match variable concept. It was proposed that only one best-match-available control be used in the analysis. It was further recommended that a classic retrospective-prospective mortality study be considered (in conjunction with the proposed study), comparing the Ranch Hand personnel with the nonexposed C–I23 air crew members. Other suggestions pertained to *(a)* the type of statistical testing, *(b)* whether a positive dose-response finding would be required, *(c)* dose-latency analysis, *(d)* the type of bias corrections, and *(e)* the criteria for rejections.

During the 18 September 1979 meeting of the Board, Colonel William Wolfe, USAF, and Dr. Patterson, an analytical chemist, reported on data that evaluated the immune systems of the Ranch Hand group that had been exposed to Agent Orange. Isotope dilution spectrophotometry techniques measured dioxin and its analogues in adipose tissue and serum; concentrations were higher in serum. With an overnight run, it was possible to perform five sample specimens at a one-time cost of $1,000 per specimen. Two million dollars would be required for a two-year project. The half-life of dioxin is assumed to be 7.08 years. Studies showed that the Ranch Hand Group, which comprised 2,250 in the study, were exposed to Agent Orange, based on the isotope findings. Interestingly, no difference in serum levels was detected for Vietnam and non-Vietnam test samples.

The Board continues to be involved in this important longitudinal study.

THE ASSISTANT SECRETARY OF DEFENSE REQUESTS THAT THE BOARD CONSIDER NEW ISSUES OF GREAT IMPORTANCE

The Board usually held its fall meeting at a facility known as Parson's Island at Kent Island, Maryland. McCormick and Company of Baltimore kindly allowed the AFEB and its guests to meet there. This particular meeting was of considerable interest since a number of senior military officers and others in authority attended the meeting. These included: John Moxley, M.D., Assistant Secretary of Defense for Health Affairs; Lt. General Charles C. Pixley, MC; and Brig. General Garrison Rapmund. One of the

THEODORE E. WOODWARD, M.D.

Ted Woodward was raised in Westminster, Maryland; he graduated from Franklin and Marshall College in 1934 and the tiniversity of Maryland School of Medicine in 1938. He entered the Army in 1941, interrupting his internship and residency in medicine. During the war, he served at Fort Meade, Maryland, for a short time, and with the U.S. Army Corps of Engineers in Jamaica, B.W.I. This was followed by research training at the Army Medical School in Washington, D.C., where he attended a course in tropical medicine. He was temporarily assigned to a field laboratory with the initial landing forces in northern Africa. His work, primarily on the typhus fevers, involved research at the various Pasteur Institutes in northern Africa, and he was a member of the U.S.A. Typhus Fever Commission. He served in Naples, Cairo, the Aden Protetorate, the European theater (in England and Normandy and elsewhere in France), and the Pacific theater (in northern New Guinea and the Philippine Islands).

After World War II, Woodward practiced medicine privately in Baltimore for several years. In 1948, he joined Joseph E. Smadel in studying the clinical efficacy of Chloromycetin in the treatment of scrub typhus and the typhoid fevers in Kuala Lumpur, Malaya (now Malaysia). After this valuable experience, he joined the faculty of the University of Maryland School of Medicine, where he organized the Division of Infectious Diseases. From 1954 to 1981, he was Chairman of the Department of Medicine there.

He contributed to AFEB activities, first as a member of the Commission on Epidemiological Survey from 1952 to 1973, and as its Director from 1959 to 1973. He was a member of the Commission on Rickettsia1 Diseases from 1955 to 1973, and an associate member of the Commission on Immunization from 1950 to 1973. He served as President of the AFEB from 1976 to 1978, and from 1980 to 1990.

prominent guests was Wolf Szmuness, M.D., Director of the Laboratory for Epidemiology at the Kimball Research Institute of the New York Blood Center. The agenda for that September 1980 meeting and a summary of its minutes, which provide insight into the manner in which the Board functioned and recorded its discussions, follow:

Agenda for the Fall **1980** Meeting **of** the AFEB

19 September

0830–0840	Opening Remarks: *Theodore E. Woodward, M.D.*, President, AFEB
0840–0850	Greetings: *John Moxley, M.D.*, Asst. Secretary of Defense for Health Affairs
0850–0930	Infectious Disease Research Funding: ***Brig. General Garrison Rapmund,*** Assistant Surgeon General for Research and Development
0930–1000	TRA
1000–1015	Coffee Break
1015–1100	Navy Overseas Medical Research Laboratories: ***Capt.*** S. *W. Joseph, MSC, USN,* Naval Medical Research and Development Command, NNMC
1ion–1145	Commentary on a Paper by Dr. E. K. Gunderson Concerning Epidemiological Models for Management and Clinical Services in Health Care Systems: Paul *Densen, D.Sc.*
1145–1300	Lunch
1300–1330	Tri-Service Experience with Hepatitis *B* Virus: ***Army,*** *Navy, and Air* ***Force Preventive Medicine Officers***
1330–1430	Hepatitis *B* Vaccine Trials in a New York City Homosexual Male Population: *Wolf Szmuness,* M.D., Director, Laboratory for Epidemiology, Kimball Research Institute of the **New** York Blood Center
1430–1445	Coffee Break
1445–1530	Army Preventive Medicine Report: *Col.* ***George*** E. ***T.*** *Stebbing, MC,* Chief, Preventive Medicine, Consultants Division, Office of The Surgeon General, DA Navy Preventive Medicine Report: *Capt. R. L.* ***Marlor, MC,*** Director, Occupational and Preventive Medicine Division, Bureau of Medicine and Surgery, DN Air Force Preventive Medicine Report: *Col. Alfred K.* ***Cheng,*** *MC,* Chief, Preventive Medicine, AFMSC/FGTA

20 September

0830–0840	Opening Remarks: ***Theodore*** E. *Woodward, M.D.*, President, AFEB
0840–0900	Reassessment of AFEB Recommendation Concerning Typhoid Immunization for Dependents Overseas
0900	AFEB Working Session

Summary **of** the Minutes

Dr. Woodward, President, opened the meeting at approximately 0830 on 19 September 1980 by welcoming all present with special recognition given to Dr. Moxley, the Assistant Secretary of Defense for Health Affairs, Lt. General Pixley, the Surgeon General of the Army, and Brig. General Rapmund, the Commander of the U.S. Army Medical Research and Development Command. After a few introductory and administrative remarks, he called upon Dr. Moxley as the first speaker.

Dr. Moxley began with the statement that the problem with which the AFEB had been involved concerning overseas laboratories had been settled and that all of the labs would stay open and all of the personnel positions reinstated. He stated that due to changes which have been experienced over a period of time within the DOD medical fields he would like to **ask** the Board to give thought and consideration to the following areas in the future:

1. Focus research on neurobiological or chemical warfare issues.

2. The vulnerability of human organisms in handling certain types of weaponry; an example of the problem is the severe hearing impairment from close proximity to the firing of certain heavy artillery.

3. Epidemiological research into alcoholism and substance abuse.

4. A realistic, sharply defined set of physical standards, such as weight, vision, and sickle cell trait carriers, that would eliminate frequent waivers is needed.

5. Research on effects of individual and group isolation, and its effect on combat readiness and on interpersonal relations.

6. The importance and expanding area of computerized management information systems (DEERS, TRIMIS, UCA).

Dr. Moxley, in concluding, asked that consideration be given to the composition of the Board itself in filling vacant positions with the expertise, interest and dedication to address the types of issues described above. He stated that previously the AFEB had focused on infectious diseases but now is diversifying to include other areas and that he feels the above areas will be very challenging areas within the DOD over the next few years.

A question and answer session followed in which Dr. Moxley stated that it would be very difficult to justify a Board as large as the AFEB in the future if the Board was focused entirely on infectious diseases and that the Board's expansion in the future was desirable. It was stated that two-thirds of all casualties during past wars were due to disease, not hostile action, and that disease has been critically important to manpower during wartime; however, it may have less impact on manpower effectiveness at this time, and it is not known how much time should be given to various other areas. The information system will address this.

Dr. Woodward called on General Kapmund as the next speaker.

General Rapmund stated that he would like to place into perspective the status of the Army's research programs. He stated that the Army has nine laboratories which are headquartered at Frederick, Maryland, that there is currently a staff of 2,800 and a budget of about $85 million, and that by the end of 1980 all nine labs should be involved in chemical research. Some of the current research programs include: disease, environmental hazards, casualty care, dental, chemical, drug abuse, and tank gas masks.

General Rapmund stated that some members of Congress [and] Hill committee staffers are convinced that R & D and NIH do duplicate work. They feel that Army R & D should concentrate on lasers, microwaves, [and] chemical and biological warfare defense. General Rapmund stated that the Board may be able to help with programs for typhus research and anti-malarial research. He said Congress says that there is duplication of research efforts among Services, the military medical school and NIH. He stated that the Board may help to influence decisions concerning research of military medical importance and national defense. Better visible documented coordination between NIH and the Services is needed to avoid cuts in funds. He stated that there is a necessity to demonstrate to Congress that DOD is seriously coordinating research efforts in order to avoid fund cuts. Help is needed from the Board for independent verification of the nature and validity of the problems. General Rapmund then said some priority areas of interest include, in the order of priority: chemical agents, performance in hazardous military environments, and infectious disease.

General Rapmund then listed some of the advisory bodies they may call upon if needed. Included are: the Army Scientific Board, clinical Consultants to the Army Surgeon General, the Defense Science Board, and the National Academy of Sciences National Research Council and also a number of contract sources.

General Rapmund stated that research for occupational health is needed particularly in the areas of the dangers of new weapon systems. The principal emphasis should be on fire-power and sustainability of troops in the field. He said, as it stands, the medical consideration is not an integral part of the weapons system development. But, if the Army would view and allow human factors as part of the systems development, then resources could be returned to support this. The major weapons system decision-making body is chaired by very senior people and medicine is not represented. The Board might be able to help on this issue. There are currently a lot of weapon systems that are not ready to be fielded and have not been tested for human factors.

Dr. Woodward called on Dr. Densen to comment on Dr. Cunderson's paper Epidemiological Models of Value for Clinical Service and Management of Navy Health Care Systems: Inpatient and Outpatient Data at the Naval Health Research Center at San Diego.

Meeting of the Armed Forces Epidemiological Board
Parson's Island, Maryland
September 1982

Rear Admiral James Zimble and
Brigadier General Monte Miller

Left to right Captain Hauler, Admiral James Zimble, Colonel Al Cheng, Dr. Dwight Culver, and Dr. Abram Benenson.

Dr. Densen stated that first, he would like more preciseness in the language of the [conceptual] framework when dealing with incidence of disease, and second, a little more thought to the use of sampling procedures would greatly reduce costs and allow more factors to be examined. The mechanism for identifying which groups are high risk groups for morbidity or hospitalization and identifying problems that go with certain kinds of environments were discussed. The methods for coordinating general health maintenance programs and occupational health programs, with thought given to placing people in jobs, i.e., matching physical capacities of individuals against physical requirements of the jobs, need further study.

Dr. Densen suggested the organization of a task force consisting of the three Preventive Medicine Officers of the services, the San Diego group, the statistical units of the Services, a clinical group and someone who represents the actual clinical problems of delivering health services get together for more meaningful data collection. Dr. Densen also suggested that research be directed at testing ways of indicating beneficial life styles in the Armed Forces should be developed. Dr. Densen stated that a form is being put in health records of Air Force and Navy civilian and military personnel indicating what exposures exist in the workplace. The physician should indicate at the time of the exam whether it is an occupational illness. This data collection system must have the proper questions asked and the proper data collected in order to be of value.

Dr. Woodward then called upon Captain Joseph, USN, to speak on the Navy's Overseas Medical Research Laboratories.

Captain Joseph began by stating that the matter of the Overseas Medical Laboratories has been resolved and expressed thanks for the efforts of a number of persons, including the AFED. He stated that the Navy Medical Research and Development faces a cut of approximately $3–12 million and that added to last year's cut plus additional years cuts, that soon the decision of whether the Navy can continue to maintain certain projects will exist. Captain Joseph then briefed the Board on the locations of the Navy medical laboratories and the projects with which they were involved. He briefly justified the necessity of having laboratories at these various locations. He stated that in the Navy Overseas Laboratories, the infectious disease programs are primarily involved in the following four areas: epidemiology, improved diagnostic methodology evaluation and use of chemotherapeutic and chemoprophylactic drugs and vaccines. He stated that it was important to recognize that a disease is not always the same in various areas, thus they are looking at risk of exposure to various infectious diseases, their prevalence, severity and resistance to therapy in these various locations.

Dr. Moxley stated that one of the very significant factors in saving the laboratories was the strong support for retention of the labs expressed by the host nation governments. Dr. Moxley also said that universal respect for U.S. biomedical capabilities is held throughout the world, which is an important factor when approaching nations to develop relationships to have sites where bases can be developed.

Lt. Colonel Erdtmann then provided information concerning the viral hepatitis morbidity in U.S. Army active duty forces. He pointed out that most individuals that have clinically apparent hepatitis, i.e., having jaundice, significantly elevated liver function tests, or typical symptoms, are admitted to the hospital and given a diagnosis of acute viral hepatitis as long as other conditions associated with jaundice and abnormal liver function are ruled out. It is then routinely determined whether the individual's blood contains HBsAG, a marker for type B hepatitis. Other hepatitis B markers are not usually performed. Lt. Colonel Erdtmann went on to present data which showed hepatitis rates almost ten times higher in the Army than for the U.S. population at large. However, due to different reporting mechanisms in the civilian community, the real differences in rates are probably not that great. But Lt. Colonel Erdtmann said the data suggest that there is probably a higher occurrence of hepatitis among military forces than among the U.S. civilian population. From 1976 to 1979, the Army worldwide case rates were generally stable with approximately three cases per thousand per year (for all types combined) and one case per thousand per year for type B. There were approximately 2,200 cases of all types per year and 800 cases per year of HBV with an overall decline in acute viral hepatitis in 1979. Lt. Colonel Erdtmann cautioned the Board that the true number of cases of hepatitis B was probably understated. The HBV cases as presented represented only those in which a HBsAg test was performed, was positive, and was recorded within the medical record at the time the discharge summary was dictated. Those individuals with acute viral hepatitis in whom an HBsAg test was not done or whose test result was not available at the time of discharge were not counted as cases of hepatitis B. Additionally, those individuals whose HBsAg test was negative were discounted as cases of hepatitis B even though other serologic markers might have been positive lor hepatitis B had they been done. Thus, the data represented only a "least case" analysis of hepatitis B morbidity. He reported that during the period 1976 through 1979 most of the HBV cases occurred in Europe (53%)

GARRISON RAPMUND, M.D.

Following his graduation from Harvard College in 1949, and from the Columbia University College of Physicians and Surgeons in 1953, Garrison Rapmund trained as a house officer at Bellevuc Hospital in New York, and in pediatrics at the Babies' Hospital, Columbia I'resbyterian Medical Center, New York.

Gary Rapmund joined the Department of Virus Diseases at WRAIR and later served at the U.S. Army Medical Research Unit in Kuala Lumpur, Malaysia. He developed an interest in rickettsia1 diseases, particularly mite-borne typhus fever, and made important contributions *to* their diagnosis and prevention. He was Commandant of the unit in Malaysia from 1965 to 1969, and was Director of WRAIR from 1976 *to* 1979. Dr. Rapmund was promoted ***to*** Major General in 1981, and he commanded the U.S. Army Medical Research and Development Command until 1986. In 1983, the Infectious Diseases Society of America awarded him their Joseph E. Smadel Medal. During his tenure with the Medical Research and Development Command, Dr. Rapmund kept the AFEB informed of the research dcvclopmcnts in the medical services and maintained a good working relationship with the Board.

while 37 percent occurred in the U.S. Eighty-five percent (85%) of the HBV cases occurred among individuals less than 25 years of age. Over 90 percent of these individuals were enlisted males. He further presented data which showed that the incidence of acute viral hepatitis among active duty Army personnel worldwide by viral type was higher in Europe and Korea than elsewhere. With respect to the incidence of hepatitis B worldwide by race and sex, there was slight suggestion that the disease rate in males was higher than females and that the rate among blacks was slightly higher for both sexes. In summary, military groups found it to be the highest risk of developing clinically apparent hepatitis B infections were young enlisted members assigned overseas to Korea or Europe.

Colonel Cheng commented briefly on the acute hepatitis experience in the Air Furce. He indicated that presently they had insufficient data to determine rates, but had only total numbers of cases based upon Air Force hospital inpatient information which, in addition to Air Force personnel, included some Army, Navy and dependent personnel. Colonel Cheng said that approximately one-third of the cases were hepatitis B. He reported, however, that beginning this year, on certain bases, it will be possible to obtain more accurate denominator information. He then commented briefly on five recent outbreaks of hepatitis A, four of which were related to child care centers.

Captain Marlor reported that the Navy, based on data from disease alert reports, in 1979, had a total of 387 reported cases of **type** A hepatitis and 284 cases of type B, 77 of which were in active duty personnel. In January through June of 1980, there were 152 cases of A and 80 cases of B. Of the active duty B cases in the Navy identified in January through June 1980, the majority were young sailors and in the lower pay grades. The cases seemed evenly distributed throughout the rating groups. Captain Marlor further stated that people assigned to ships in the continental U.S. had about the same number of cases as those assigned to shore. Also, it was noted that those shipboard in the Atlantic and Pacific areas had exactly the same number of cases reported and those ashore in those areas were about the same. Captain Marlor concluded that in view of the present available data it would be difficult to identify any specific populations that would be candidates for hepatitis B vaccine.

Dr. Wolf Szmuness, of the Lindsley F. Kimball Research Institute of the New York Blood Center, next presented the results of a study with a hepatitis B vaccine in a placebo-controlled, randomized, double-blind trial in 1,083 homosexual men known to be at high risk for hepatitis B infection. The study showed the vaccine to be safe and the incidence uf side effects was low. He said that within two months, 77 percent of the vaccinated persons had high levels of antibody against hepatitis B surface antigen. This rate increased to 96 percent after a booster dose and remained essentially unchanged for the remainder of the study. *For* the first eighteen months of follow-up, hepatitis B or subclinical infection developed in only 1.4 to 3.4 percent of the vaccine recipients while the placebo recipients experienced an 18 to 27 percent incidence ($P < 0.0001$). The reduction of incidence in the vaccinees was as high as 92.3 percent. No one with a detectable immune response had hepatitis B or subclinical infection. Dr. Szmuness also stated that they noted a significant reduction of incidence within 75 days after randomization. This observation, he said, suggests that the vaccine **may** be efficacious even when given after exposure. In the ensuing discussion, it was pointed out that the vaccine would probably be available for use by mid- or late 1981, but that a number of other types of studies would follow. Other populations suggested for testing the vaccine include dialysis patients, babies, children and endemic carriers.

Dr. Culver then presented some of his views concerning occupational health. He pointed out that the province of occupational health is the worker and the work environment. The work environment should be safe and manipulated within limits in order to produce the desired degree of safety and health. He emphasized that people in occupational health, however, cannot make the decisions determining how safe or healthy the work environment is to be; those determinations are the responsibility of the organization concerned. Likewise, how healthy and productive the worker should be are determinations for the employing agency. Dr. Culver said that the functions of those involved in occupational health do include, in the case **of** people, the measurement of the environmental effects on individuals, i.e., medical surveillance and clinical assessment. He said the work environment should be measured in terms of its physical, chemical and psychological parameters. He also pointed out the need for more research programs to develop important methods of making various measurements and applying the accumulated data epidemiologically so appropriate control measures can be established.

Dr. Culver concluded by emphasizing that an effective occupational health program cannot exist without the coordinated interaction of diagnosis, treatment, medical evaluation and environment analysis. Additionally, those involved in diagnosis and treatment must have some responsibility in prevention, in control of the environment and in the selection of people who are going to work in that environment.

Colonel Stebbing proceeded with the Preventive Medicine Report for the Army. He indicated that the Army had experienced a very significant increase in cases of heat injury during 1980; approximately 100 more than a year ago.

Most of this increase was due to cases of heat exhaustion rather than heat stroke. Fifty-two percent of heat injury cases were among basic trainees and the remainder were in seasoned troops. The reason for this is not clearly understood.

With regard to the Army influenza program, Colonel Stebbing indicated they would soon be immunizing with the A Brazil, A Bangkok, and B Singapore vaccine. He said they had already seen some cases of Adeno 4 and have started immunizing with Adeno 4 vaccine.

Colonel Stebbing reported on eight cases of meningococcal meningitis, two of which were serogroup Y. One Y was a fatal case. The remaining six cases were not serogrouped. Colonel Stebbing went on to describe the Army occupational health organization and some of the inherent internal problems. He said there was a great need for research into finding effective applications of epidemiology to problems in occupational medicine and environmental hygiene as it relates to the work environment, i.e., medical surveillance, identification of environmental hazards and control measures. He also briefly described the occupational health and industrial hygiene training programs provided in the Army.

Captain Marlor then gave the preventive medicine report for the Navy. He described some problems caused by certain lining materials or the improper application thereof in potable water tanks aboard ships. This has resulted in difficulty in maintaining adequate chlorine residuals. These ships will most likely have to return to a shipyard and have the tanks relined. This will be very costly in time and money and there is limited yard space. He reported a related problem which concerns the conversion of an oil tanker to a water barge which is to be deployed to Diego Garcia for an extended period. Again, [there is] a problem in maintaining the potability of the water.

Captain Marlor stated that the Navy still did not have an occupational health group. He said they have been working to develop a viable occupational health program. In this endeavor, they have been attempting to make some organizational changes. He said they are building into the Navy Environmental Health Agency. NEHC will be staffed with occupational medicine physicians, industrial hygienists, radiation specialists, occupational health nurses, etc. in order to improve data gathering and analysis to identify problems for further study and research. This unit will also have a preventive medicine element for epidemiological support.

Colonel Cheng reported on problems similar to those experienced by the other services. Their hearing conservation program was very good at this time. Measurement and control of exposure to toxic gases and chemicals continue to present problems, this requiring more research for improved technology. Colonel Cheng said there is currently an effort being made to expand their training program in occupational health to include family practice physicians. Colonel Cheng further commented on the increasing problems associated with child care centers as a result of the increasing numbers of single parents in the Air Force.

Dr. Woodward called the meeting to order at 0805 on 20 September 1980. He stated that he thought the AFEB should write letters to Dr. Moxley and General Rapmund thanking them for their presentations and asking them to define those areas, in the order of their priorities, in which the Board might be of assistance. He stated that the Board could then devote time of the AFEB meetings to the key issues.

Dr. Woodward stated that Dr. Moxley had said that he would very much appreciate meeting with a small group of the AFEB after the Board has had time to consider his suggestions and to discuss further the proposed issues.

There was a general discussion of the Gunderson paper concerning how the suggestions made by Dr. Densen could best be carried out, the objective being to develop a better delivery and statistical analysis system, with the three services working together to maintain and establish better credibility and focus on methods for identifying high risk groups. It was decided that a task force should be organized to meet in San Diego. The task force would be made up of the Preventive Medicine Officers, the group from San Diego, a statistical group and a clinical group, plus any other persons who might be helpful to the mission of this task force.

It was suggested that at the next Board meeting, the Services expand on what the highest priority items should be as identified by Dr. Moxley and General Rapmund and when the priorities are established that consultants with the appropriate expertise be solicited to assist the Board in responding to these priorities.

There was a general discussion concerning the Board making a resolution stating that it is desirable that each of the three Services have a well organized, integrated occupational health service and that resources should be made available. After discussing the matter, it was decided that more information was needed from the three Services. There was a request that the OSHA Study, which produced a report of the occupational programs, be made available if possible.

There was a general discussion on the problems of funding cuts for the Army and Navy Medical Research and Development programs. The Board indicated that it will be very supportive and coordinate very closely with Dr.

Moxley and General Pixley on this matter when their wishes are known.

Captain Marlor was asked to bring the Board up to date on the asbestos situation at the next Board meeting and each of the three subcommittees were asked to put together lists of names for review for possible Board membership.

Dr. Woodward stated that he would form a resolution in the name nf Dr Geoffrey Edsall, who died recently, place it in the Minutes, and mail it to Dr. Edsall's wife.

After a general discussion, it was decided that the next AFEB meeting would be set for 5-6 February 1981.

The meeting adjourned at 1015a m on 20 September 1980

After this meeting, I requested that Dr. Moxley indicate those issues that he considered to be of the greatest importance. He responded with the following letter, dated 11 December 1980:

Dear Ted:

This is a somewhat belated reply to your request that I reduce to writing a prioritized list of the issues which I presented to the Board at the Kent Island meeting two months ago. I have waited to get the transcript of that portion of the meeting so that I might more accurately reflect my comments.

I realize what I am proposing is, in many ways, quite a departure from the sorts of topics and issues that the AFEB has wrestled with in the past. But the simple fact is that medicine is changing, and we in the military health care system aren't immune to that change. Further, we must make a particular effort to address and, hopefully, resolve some of the less traditional medical problems we face. I don't intend to demean the past important contributions the AFEB has made in traditional epidemiological areas, but we must move on to meet new challenges. This was the major purpose in enlarging the size of the AFEB and of seeking broadened expertise.

I suggest the following issues for AFEB consideration:

*Chemical warfare is an area in which I would like to ask for the assistance of the AFEB. The civilian sector has made enormous investments in neurobiology research, which will be of value in any investigation of chemical warfare issues. I see one major function of the AFEB to be a catalyst in the interaction of the Department of Defense and the civilian community in areas of medical research. Although a decade ago there was significant reluctance on the part of many scientists to work with DOD, attitudes toward national security and the availability of research funds have changed so that now we are able to benefit from civilian-based research to a greater extent. The military medical departments, my office and the AFEB should cooperate in focusing research on neurobiological or chemical warfare issues.

*Another important issue to be addressed is that of the human organism's vulnerability in handling certain types of weaponry. One example of this problem is the severe hearing impairment that can result from proximity to the firing of certain heavy artillery. Weapons are developed without the early involvement of the medical community, who later may point out that for health reasons the weapon is usable only with certain sacrifice of operator capability.

• Epidemiological research into alcoholism and substance abuse is needed, since these are problems of great magnitude in the military. Expert guidance from the AFEB would be welcomed by the Office on Drug and Alcohol Abuse Prevention in Health Affairs.

*The three Surgeons General have all expressed concern about the validity of the existing physical standards. They are increasingly requested to grant waivers to permit the acquisition of otherwise qualified personnel. Weight and visual standards, as well as sickle cell trait carriers, are targets of particular interest in the matter of waivers. I would like to see a realistic, sharply defined set of standards that would not necessitate frequent waivers.

*Fascinating research on the effects of individual and group isolation, on combat readiness and on interpersonal relations has begun at the Letterman Army Institute of Research. This could be a basis for further investigations in this area.

• Expertise could possibly be provided by the AFEB to Health Affairs in the important and expanding area of computerized management information systems (DEERS, TRIMIS, UCA). I feel that there is a need for periodic evaluation of these efforts to guarantee the development of useful products.

*The success of the cooperative efforts on behalf of the continued support for the overseas labs demonstrates the potential effectiveness of this group when called upon in a controversial area. Medical research and development is facing a critical period, which compels us to maintain an active interface with the civilian community and to ensure

efficient management of R & D efforts within the Department.

In conclusion, I want to shift the focus of this letter from the issues which confront us and the Board to the composition of the Board itself. I know that several positions on the AFEB will become vacant in 1981. It is my sincere hope that in filling these positions, you will seek vigorous members with the expertise, interest and dedication to address the sorts of issues described above. The military health care system counts heavily on your advice and counsel.

I appreciate your willingness to hear and consider these new issues. Once you have had a chance to digest the foregoing, I and my staff would be pleased to meet with you to discuss the proposed issues further.
Sincerely,

John H. Moxley III, M.D.
Assistant Secretary of Defense for Health Affairs

Soon thereafter, on 16 February 1981, I wrote to Dr. Moxley, and described the Board's prior experience, its recommendations, and the steps to he taken on the issues raised. **All** of these issues were thought by the respective military services to be of great importance.

Dear Dr. Moxley:

We missed having you attend our recent meeting of the Armed Forces Epidemiological Board, which proved to be quite productive. It is our hope that you will be able to attend the meetings this year which are scheduled for June 11–12,1981, at WRAIR; [and on] September 16–17–18, 1981, [at] Parson's Island. The latter site seemed to be a nice site for a meeting; it was relatively cheap and the surroundings served the purpose to promote good communication.

Undoubtedly, General Augerson has conveyed some of the features of the recent meeting to you. He attended the executive portion on Friday morning, at which time I spoke to the various points which you introduced at the Parson's Island meeting in 1980, and elaborated upon in your letter to me of December 11,1980.

Permit me to address these points in order.

1. The Board does consider chemical warfare a very important matter, particularly with respect to the needs of neurobiological research. General Rapmund directed some of his comments to the chemical warfare problem. During one of the meetings in 1981, we will arrange to have the Board informed of the current status of things including the viewpoints of experts regarding future indicated research.

2. The issue of injury **of** humans in handling modern types **of** weapons is an equally important matter. Several years ago, there was a partial briefing on the problem to the Board. Again, this issue will be discussed with more thoroughness in either the June or September meeting of 1981. There is the important matter of security clearance which takes time to arrange.

3. The matter of the problem of alcohol and drug abuse is not new to the Board. About six years ago, the Board established an ad hoc Committee on Drug Abuse in which a small group of high level and well-qualified persons participated. Some very positive recommendations were made. I am instructing Captain Halverson to exhume this information for the AFEB office which should provide useful data. A copy will be sent to you. Also, we will seek to have a full status report presented to the Board by the respective Services and convene a small special study group in keeping with the indicated needs. This is a major problem which was succinctly made clear during recent meetings. The problem or its solution is not uniquely medical.

4. Physical standards. You have first-hand evidence of the Board's important in-put regarding the Board's recommendations pertaining to health standards. The Densen Report was excellent. You raised the matter of weight and visual standards and the issue of sickle cell trait. I have asked Dr. Densen to consider this matter and to let us have his views and those of his subcommittee. Clear recommendations should be forthcoming.

5. Individual and group isolation in relation to combat readiness and interpersonal relations. During the last meeting, we were impressed with the data on morbidity and mortality statistics which Captain D. F. Hoffler presented from the Navy Department. It was very apparent that suicide ranks high as a cause of death, albeit lower than in the civilian population. I have contacted several members of the three Services and will arrange to have the Board informed by well qualified senior officers regarding their evaluation of the issues. Captain Hoffler informs me of an outstanding expert in the Navy Department and I am sure that there are others. Since you mention that studies have been initiated at the Letterman Army Institute of Research, we will have the appropriate qualified

person speak for that group.

6. Computerized management and informational systems. The AFEB has established a Task Force to pursue the important matter of epidemiological approaches to health care and management. The Navy program in San Diego is an excellent example. The Task Force met once and we are now planning working sessions which will include members of the **Task** Force, indicated invited experts and the preventive medicine officers of the three services. It is our view that small working groups of this type can accomplish a great deal for each service. If genuinely interested, they can concentrate on those approaches which seem particularly appropriate for their specific service. Some good progress has been made. Dr. Herschel Griffin heads this Task Force and when he steps down as a member of the Board later in the year, Dr. Remington has kindly consented to lead this group. We are fortunate to have Drs. Griffin and Remington involved and you will be pleased to know that Bill Spicer has made important contributions.

7. Overseas service-oriented research programs is a matter with which the Board fully concurs. You are aware that the Board interfaced in this issue and is fully cognizant of the importance to encourage academic institutions to relate to overseas service-oriented research programs. This has happened before and if there are proper resources, it will happen again. Already, there is progress of this type at NAMRU-2 in Jakarta; there are other examples.

Let me thank you for your interest and objective comments. By way of additional interest, the Board has decided to invite three persons to join the Board. Two infectious disease types are now stepping down (Rammelkamp and Jordan) and only one will be replaced, i.e., Saul Krugman. The two other members whom we hope to recruit are Seymour Jablon, who is an expert in systems programs, and Sheldon Murphy, who is capable in toxicology. Your comments will be appreciated.

Sincerely yours,

Theodore E. Woodward. M.D.

The AFEB's **Prior** Action on Substance Abuse

I responded to Dr. Moxley's comments pertaining to AFEB interaction on substance abuse among military service personnel, and informed him that the Board's ad hoc Committee on Drug Abuse had been formed and had met at WRAIR ten years earlier, on 13 April 1971. Members of the Committee who were not affiliated with the Board included: Dr. Vincent Dole, Chairman of the Rockefeller University; Dr. Robert L. DuPont, Director of the Narcotics Treatment Administration; Dr. Gilbert Beebe of the National Research Council; and Mr. Brian LeBert-Francis of the Special Action Office for Drug Abuse Prevention. Dr. Colin MacLeod represented the AFEB. This ad hoc Committee had formulated a series of recommendations, which the Board had approved. My letter to Dr. Moxley on this subject, dated 4 March 1981, and the AFEB's previous recommendations, dated 24 April 1972, follow:

Dear Dr. Moxley:

During our recent discussions and correspondence, you raised the important problem of the practice of drug abuse in members of the Armed Services. As President of the Armed Forces Epidemiological Board, I assured you that the Board would respond to this matter, and attempt to be of assistance in keeping with its limitations.

As a first step I have retrieved the proceedings of the AFEB's ad hoc Committee on Drug Abuse, which rendered **a** report on April 24, 1972. The composition of the special ad hoc Committee, appropriate memoranda and letters, and the recommendation of the **AFEB** are enclosed. They are submitted to you for informational purposes.

As was indicated previously, the Board will assign this important problem to some of its future meetings since it considers the issue extremely significant.

Sincerely yours,

*Theodore E. Woodward, **M.D.***

JOHN H. MOXLEY III, M.D.

John Moxley received his A.B. degree from Williams College in 1957, and graduated from the University of Colorado School of Medicine in 1961. He was a house officer at Peter Bent Brigham Hospital in Boston; from 1963 to 1965, he was a clinical associate and attending physician at the National Cancer Institute in Bethesda; and he was the senior resident physician at the Brigham Hospital. Dr. Moxley's specialties are oncology and hematology.

Dr. Moxley was appointed Assistant Secretary of Defense for Health Affairs in 1980; during his tenure, he maintained a close and enthusiastic relationship with the AFEB. Despite his busy schedule, he attended many of our meetings. At the Board's fall 1980 meeting, he raised a number of issues regarding important national military problems, including chemical warfare, health problems related to weapons systems, epidemiological research into alcohol and drug abuse, health standards for the military services, computerized management information systems, and the structure and function of the DoD Overseas Laboratories. The Board addressed these matters effectively and in considerable detail, and is grateful to Dr. Moxley for his constructive suggestions.

Armed Forces Epidemiological Board Meeting on the Medical Education of Drug-Abuse Control Programs of the Military Departments
30 September 1971

Seated, left to right: Dr. William McD. Hammon, Dr. Gustave J. Dammin, President of the Board, and Dr. Colin M. MacLeod.

Standing, left to right: Dr. Theodore E. Woodward, Dr. Edwin H. Lennette, Dr. Francis S. Cheever, Dr. William S. Jordan, Jr., Dr. Charles H. Rammelkamp, Jr., Dr. Floyd W. Denny, Jr., and Colonel Bradley W. Prior, MC, USAF, Executive Secretary.

Left to right: Dr. Charles H. Rammelkamp, Major General Richard Taylor, Dr. William S. Jordan, Jr., Lieutenant General Hal Jennings, The Surgeon General.

MEMORANDUM FOR

The Assistant Secretary of Defense for Health and Environment
The Surgeon General, Department of the Army
The Surgeon General, Department of the Navy
The Surgeon General, Department of the Air Force

SUBJECT: Recommendation of the AFEB ad hoc Committee on Drug Abuse

The Armed Forces Epidemiological Board by mail vote unanimously concurs in, and accepts, the statement and recommendation formulated by its ad hoc Committee on Drug Abuse as follows:

1. The acute problem of heroin addiction in the Armed Forces appears to be coming under control. With the continued withdrawal of troops from Vietnam (the area with the highest rate of heroin addiction) the incidence of heroin use can be expected to decrease even without specific medical intervention.

2. The measures that have been instituted by the Army, Navy and Air Force for identification and short-term treatment of heroin users in the services appear to be appropriate and intelligently directed. The data systems of the three services also may have sufficient compatibility to support epidemiological and follow-up studies of the addict groups, such as the evaluation of rehabilitation programs.

3. The Committee is, however, disturbed by a deficiency in facilities for continued care of heroin addicts who have failed to respond to the short-term rehabilitation programs within the services, and are discharged still addicted. It appears that only a small (and undetermined) percentage of addicts leaving the services have been brought into effective treatment by Veterans Administration or civilian agencies. The remainder, presumably, are continuing to live as addicts, supporting their dependency by criminal means. If this impression is correct, then either there is inadequate liaison between the armed forces and the agencies to which the veteran has been referred (non-Federal civilian, Veterans Administration, etc.) or the treatment programs that have been offered to addicted veterans are ineffective.

> It is recommended that joint meetings be held between the Department of Defense and Veteran's Administration to review the apparent deficiency for continued care of heroin addicts who have failed to respond to the short-term rehabilitation programs within the services, and are discharged still addicted. If the deficiency resides in the processes of transfer of addicts from the services to treatment program, the problem should be easy to resolve at this level. If, on the other hand, the problem is one of failure of therapy and rehabilitation of the addicted veterans, then a searching study of the causes of this failure should be formulated and implemented. There is an obligation to the veteran which cannot be regarded as discharged until every effort has been made to return him or her to useful civilian life. The AFEB's ad hoc Committee on Drug Abuse would be available to advise on how to evaluate the efficacy of rehabilitation programs in the Veterans Administration and elsewhere in the civilian sector.

4. It would also be desirable to follow the long-range outcome of those who have been identified as addicts while in service. The logical agency to conduct such a study would be the White House Special Action Office, since it would have access to data from all sources. Indeed, a comprehensive follow-up study would appear to be feasible only if undertaken by this agency. Alternatively, if such a study is not possible, then limited surveys should be considered (e.g., incidence of continued addiction in sample of persons identified as addicts in Vietnam in 1971–72, and later returned to New York City). Such a limited survey could be conducted by the Department of Defense under contract with data registries in the area (New York City Narcotics Registry, Methadone Data Registry, Policy Department listings, etc.).

FOR THE ARMED FORCES EPIDEMIOLOGICAL BOARD:

Bradley W. Prior
Colonel, USAF, MC
Executive Secretary