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DEPARTMENT OF THE ARMY
Office of the Chief Chemical Officer
COMMITTEE (SOCIETY OF AMERICAN BACTERIOLOGISTS)
Advisory to the U.S. Army Chemical Corps

CMLAC 10 February 1959

SUBJECT: Report and Recommendations of the Committee (Society of American Bacteriologists), Advisory to the U.S. Army Chemical Corps.

TO: SEE DISTRIBUTION

1. Reference is made to letter, this office, subject as above, dated 4 February 1959 with one inclosure, AC-59-C-12. The inclosure is superseded by inclosed Report and Recommendations, Committee (SAB), Advisory to the U.S. Army Chemical Corps, dated 10 February 1959, AC-59-C-12. All copies of AC-59-C-12 should be destroyed to avoid confusion. Destroyed Classified Waste, 11Dec62-hcl

2. All addressees except the DCCmlO/Scientific Activities should consider the inclosure as an information copy only at this time.

C. B. MARQUAND
Executive Director

1 Incl
AC-59-C-17

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REPORT AND RECOMMENDATIONS
Committee (Society of American Bacteriologists)
Advisory to the U.S. Army Chemical Corps

Committee Members:

Dr. Gail M. Dack, Chairman
Dr. Francis S. Cheever
Dr. Irving J. Gordon
Dr. William A. Hagan
Dr. Jesse V. Irons
Dr. Albert P. McKee
Dr. Willard O. Nelson
Dr. Arthur G. Norman
Dr. Erling J. Ordal
Dr. William B. Sarles
Dr. S. S. Elberg (Appointment pending)

(U) The Committee (Society of American Bacteriologists), Advisory to the U.S. Army Chemical Corps, met at Fort Detrick, Frederick, Md. on 15-16 January 1959. All Committee members were present with the exception of Drs. Hagan, Norman, and Sarles. Dr. Cheever was able to attend only the first day of the meeting.

(U) On 15 January the program began with a report of action taken on previous recommendations. This was followed by a discussion of matters of mutual professional interest. A review of agent selection and research in the area of bacterial, viral, and fungal research included screening, genetics, and the work on P. tularensis and P. pestis.

(U) The report by the Screening Branch of the Medical Bacteriology Division of Biological Warfare Laboratories was favorably received by the Committee. The activities of this Branch appear to be competently managed; the program is well-conceived, and its components are in proper sequence.

(U) On 16 January research on agents, tissue culture, and genetics in the area of viral and rickettsial research was presented, and was favorably received by the Committee.

(U) Dr. Ordal reviewed the conclusions he and Dr. Nelson had reached regarding the BW drying program as the result of an earlier visit to BWL.

(U) Major General Marshall Stubbs joined the Committee in the afternoon and he was presented with a preliminary summary of the Committee's observations and recommendations.

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(U) The Committee was especially pleased to note the change in direction and emphasis of the work at BWL since the first meeting of the Committee, thus providing basic knowledge to better accomplish the purposes of the program.

(U) As a result of the foregoing discussions and reviews, the Committee makes the following Observations and Recommendations.

(U) OBSERVATION NO. S1-59: The effort under way at BWL to encourage in-service advancement of professional personnel, as well as bringing in individuals from the outside for temporary assistance to the program, is endorsed by the Committee and should be continued.

(C) OBSERVATION NO. S2-59: The Committee feels the work on P. pestis presented by Dr. Fukui represents the application of energy and imagination to a phenomenon of basic interest to microbiologists. The immediate practical bearing on problems of BW become apparent when one considers the objectives of storage and its effect on virulence. It is felt that the concept underlying these studies on factors affecting virulence may indeed provide a tool whereby it will be possible to study the cellular metabolism and immunochemistry which is concerned with step-wise changes: virulence ⇄ avirulence.

The Committee was tremendously encouraged to note the continuation of provision for basic research at BWL in spite of the budgetary difficulties.

The remainder of the program, as Dr. Fukui sketched it, appears to be sensible in its approach to the practical problems of plague infection. The Committee would, however, warn against (a) too much reliance on the gel diffusion techniques without frequent and parallel confirmation by the quantitative precipitin technique with bioassay of precipitates and supernatant fluids in evaluating antigenic structure of strains; and (b) avoidance of the lower primate for occasional confirmation of the predictions (implied) from data on mice and guinea pigs.

It is recommended that:

(C) RECOMMENDATION NO. S1-59: The screening of the backlog of single candidate BW agents be continued, but at an accelerated rate. Emphasis be given to the proposed program of the screening and development of a series of poly-component agents using BW, CW, RW toxin components in combination as a single agent.

EXPLANATION: The use of poly-component agents (BW, CW, RW toxin components in combination in a single agent) offers great potential in relation to the areas of:

1. Effectiveness of both

   (a) lethal and
   (b) incapacitating usage

2. Obscuring the diagnosis and/or detection in target areas.

3. Possible additive effects of the combined agents.

4. Possible enhancement of the effectiveness of one compound by a host "pre-conditioning" effect brought about by the co-agent(s).

5. Possibility of combination of immediate, delayed, and long term action in host.

(C) RECOMMENDATION NO. S2-59: The development of a basic program in genetics of bacteria be extended to carry out basic genetic studies on specific bacteria which have been shown to have potential as BW agents. Studies on actual BW agents should be given high priority and should be carried out without delay.

EXPLANATION: The Committee expressed its pleasure at the progress made in developing a basic program in genetics of bacteria. Adequate genetic studies are necessary in order to fully explore the potentialities of a given agent. On the basis of adequate knowledge it should be possible to alter agents or develop modifications of agents which have improved properties for processing and use as a munition. It should be possible to tailor agents for the purpose desired. While studies on simulants are important, particularly in establishing basic principles, emphasis should be given to the application of modern knowledge of microbial genetics to actual BW agents.

(C) RECOMMENDATION NO. S3-59: Branch I, Virus and Rickettsia Division maintain close contact with the other branches of the division.

EXPLANATION: Pursuit of new and exotic additions to the virus and rickettsia screening program should be vigorously undertaken. There are certain unidentified and uncharacterized viruses, some discovered through laboratory infections, that might be uncovered and assessed.

This group is believed to be at a disadvantage at times because of the nature and limitations of the experimental design.

(C) RECOMMENDATION NO. S4-59: An effort be made to recruit additional laboratory assistance for the Medical Bacteriology Division.

EXPLANATION: The number of active and productive scientists at the PhD level with no one to serve as a continuing assistant is alarming. The provision of more personnel in the field of cellular metabolism and immunochemistry for the further exploitation of the current findings and the further development of the basic research program should be a matter of first priority.

(C) RECOMMENDATION NO. S5-59: Requirements for materiel to pursue the rapidly developing area of viral and bacterial genetics should be given high priority consideration. The field of chemical genetics should be considered as an important area for future expansion.

EXPLANATION: The Committee was impressed by the progress that has been made in genetics, particularly in the study of virus genetics, and wishes to express again its conviction that this will prove to be of great importance to the BW program. Personnel conducting the research are imaginative and well-versed in advanced methods.

Since microbial genetics and other areas actively pursued at BWL are also of great importance, the Committee feels strongly that increased support of the virus genetics program should not be at the expense of other programs.

The Committee feels that the beginning that has been made in the area of chemical genetics is most promising. The discovery within the past few years that nucleic acids can induce virus infection opens many important possibilities for the BW program. It would be helpful if persons especially qualified in nucleic acid chemistry, the synthesis of nucleic acid analogs or of nucleotides, and other areas of chemistry of particular importance to this field, could be procured to assist those presently in charge of the program.

(C) RECOMMENDATION NO. S6-59: Equipment and personnel to carry on immuno-fluorescence studies and, if necessary, electron microscopy be made available to the virus and rickettsia program.

EXPLANATION: The advantages of immuno-fluorescence microscopy for virus research are now so well established that procurement of first class equipment and, if necessary, personnel to carry out studies using this technique would greatly advance the program in virus and rickettsial research. Since the work is time-consuming and exacting, it might be necessary to assign specially qualified technical personnel to this task.

(C) RECOMMENDATION NO. S7-59: The BWL investigate the possibilities of developing a chemotherapeutic or chemoprophylactic substance for virus infection that might be analogous to so-called "interferon".

EXPLANATION: Interferon has been reported to be a com-

ponent of influenza virus that apparently will prevent superinfection of treated cells by means of a complete or partial interference effect. If an analogous substance could be found for viral and rickettsial agents of importance to the BW program, it would be of the greatest importance with respect to BW; involvement of our troops or civilians could be definitely prevented before a strike.

It should be noted that if this type of substance (containing protein and egg-derived) is administered to the respiratory tract on more than one occasion, the potentiality of severe asthma or fatal anaphylaxis must be guarded against.