ARMY SERVICE FORCES

CONFERENCE of PREVENTIVE MEDICINE OFFICERS

PREVENTIVE MEDICINE SERVICE OFFICE OF THE SURGEON GENERAL

14-15-16 FEBRUARY, 1945

JOHNS HOPKINS UNIVERSITY

SCHOOL OF HYGIENE & PUBLIC HEALTH

BALTIMORE MARYLAND

P R O C E E D I N G S

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Foreword

Remarkable achievements in preventive medicine have been made during this war. These achievements have been largely a result of the application of new scientific discoveries, and the recognition of the field of preventive medicine as one of the most important military medical specialties. The preventive medicine officer's function is the reduction of noneffectiveness from disease, and to carry out this mission he must be well qualified to advise the surgeon on all aspects of disease prevention and to supervise the execution of the methods which are adopted.

This conference of medical officers engaged in preventive medicine throughout the United States was arranged to present recent developments in the field and to stimulate further progress through free discussion of problems. I deeply regret having been unable to attend, owing to my absence from the country at the time. I am sure, however, that the results we sought have been obtained. In view of the success which attended this initial conference it is hoped that annual meetings of the same sort can be held.

James S. Simmons

JAMES S. SIMMONS
Brigadier General, USA
Chief, Preventive Medicine Service, SGO

ROSTER OF OFFICERS ATTENDING PREVENTIVE MEDICINE CONFERENCE
School of Hygiene and Public Health
Johns Hopkins University, Baltimore, Maryland
14-16 February 1945

Allen, Robert W., Lt Col, MC, Headquarters, Seventh Service Command
Banton, Huston J., Colonel, MC, Headquarters, Fourth Service Command
Brooks, Henry C., Lt Col, MC, Camp Shelby, Mississippi
Burns, Francis J., Lt Col, MC, Camp Joseph T. Robinson, Arkansas
Buss, Paul, 1st Lt., MC, Fort Benning, Georgia
Buzzerd, H. W., Maj, MC, New York Port of Embarkation
Cannon, E. B., Maj, New Orleans Port of Embarkation
Carpenter, George R., Maj, MC, Fort Bragg, N.C.
Carroll, Francis B., Lt Col, MC, Headquarters, First Service Command
Coleman, James A., Lt Col, MC, Camp Blanding, Florida
Cooper, Z. P., Capt, MC, San Francisco Port of Embarkation
Council, Francis E., Col, MC, Headquarters Ninth Service Command
Dewey, Leonard D., Lt Col, MC, Headquarters, Eighth Service Command
Farragut, Loyall D., Maj, MC, Fort Belvoir, Va.
Fehlman, Frederick H., Maj, MC, Office of the Chief Surgeon, Army Ground Forces
Foote, Franklin M., Maj, MC, Medical Field Service School, Carlisle Barracks, Pa.
Franklin, Daniel, Col, MC, Headquarters, Second Army, Memphis, Tenn.
Frick, W. G., Lt Col, MC, Charleston Port of Embarkation
Goodnight, Scott H., Capt, MC, Seattle Port of Embarkation
Heimoff, Leonard, Maj, MC, Fort George G. Meade, Maryland
Hilldrup, Don G., Col, MC, Headquarters, Sixth Service Command
Kenna, William A., Maj, MC, Hampton Roads Port of Embarkation
Kogel, Marcus D., Lt Col, MC, Medical Field Service School, Carlisle Barracks, Pa.
Lacey, Warren W., Capt, MC, Fort McClellan, Alabama
Lacock, Walter B., Lt Col, MC, Headquarters, Fifth Service Command
Leclerc, G., Maj, RCAMC, Office of the Director of Medical Services, Ottawa.
Lee, Russel V., Col, MC, Office of the Air Surgeon
Manly, James P., Maj, MC, Camp Hood, Texas
Marsh, Edward H., Col, MC, Headquarters, Second Service Command
Neufeld, A. H., Maj, MC, RCAMC Liaison Officer, Washington, D. C.
Newman, W. H. F., Maj, MC, Medical Regulating Unit, SGO
Norton, John W. R., Lt Col, MC, Headquarters, Ninth Service Command
Primer, Benjamin M., Lt Col, MC, Headquarters, Fourth Army, Fort Sam Houston, Texas
Quinby, Shepard, Maj, MC, Headquarters Personnel Distribution Command, AAF
Riedel, Robert, Maj, MC, Headquarters, Air Transport Command
Schrader, Lester C., Lt Col, MC, Headquarters, Third Service Command
Smith, William M., Maj, MC, Camp Howze, Texas
Smith, William S., Lt Col, MC, Headquarters, Eastern Defense Command
Tillman, Norbert A., Lt Col, MC, Fort Knox, Kentucky
Towne, Wilson W., Maj, SnC, Headquarters, Second Army, Memphis, Tennessee
Tucker, Sidney N., Maj, MC, Headquarters, Ninth Service Command
Walker, Ralph J., Lt. Col, MC, Headquarters, Western Defense Command
Ward, Edward F., Capt, SnC, Boston Port of Embarkation
Weir, James A., Lt Col, MC, Medical Field Service School, Carlisle Barracks, Pa.
Wright, James C., Lt Col, MC, Fort Jackson, South Carolina
Wylie, Charles R., Maj, MC, ASF Regional Hospital, Pasadena, California

MORNING SESSION - 14 FEBRUARY 1945.

P R O C E E D I N G S

GENERAL BAYNE-JONES: We are greatly indebted to the Third Service Command for an opportunity to hold this meeting, the first meeting of preventive medicine officers probably in the history of this present war. We are indebted further to the Commanding General of the Third Service Command for a most understanding and supporting attitude to all of the things that we have tried to do in the Army in his region and elsewhere to improve and preserve the health of the Army. I have the honor of presenting Major General Philip Hayes, Commanding General of the Third Service Command, who will give you a word of greeting.

GENERAL HAYES: General Lull, General Bayne-Jones, Dr. Maxcy, Col. Strome, members of the conference, I want to welcome you to Baltimore and to the Third Service Command. I and the Third Service Command are very happy to have you here. At this time, I also wish to thank Johns Hopkins University for their part in this converence. I want to say at this time, General Lull, that if at any time we can be of any service to the Medical Corps in any way or wise, it is my pleasure to do so.

I personally am a great believer in conferences. Fortunately for me, my particular Command is so located that it is possible, in spite of the limitation of fifty which is now in effect because of ODT, that several officers from time to time can talk things over. There is nothing like personal contact. You can write and you can lecture large crowds, but you just don't get across what you can by a relatively small conference and the time in which the conferees have to talk over their problems. I am sure that, for example, Don Hilldrup and Frank Strome some time during their time here together will talk over some of their problems, and life, of course, is just a matter of problems.

For you people it largely concerns the physical and the mental side. With me it is varied, but there are problems and they have to be solved and, of course, that is the basic reason that you are here. I think that from this war will come out a great number of improvements in education and that is what a conference like this is. The value of getting together and the personal contact have been more emphasized in the last two or three years in every field than ever has been before, so I am certain that from this conference you will get a great deal.

I understand that your conference is on preventive maintenance, so to speak, preventive maintenance of health and body. All I hear is preventive maintenance of vehicles, or this, or that. It certainly makes sense. If we can get the preventive angle into the situation we are not going to have so many serious problems afterwards.

I know, for example, just as an illustration that carries along the idea, I use my Inspector General differently than the other service commands. I send them out to contact the people, the post, the camps, the installations, so that I can prevent trouble arising later and so that officers and enlisted men are not going under some investigation from which comes some military trial or something like that. I have found in that way that not only do I know a great deal more of my service command because of the Inspector General's help but also many an officer and enlisted man has been straightened out in

his path, he has been given the medicine before he became ill and today has a fine record and a good standing.

The same idea, I suppose, holds in this question of preventive medicine. It is a thing I firmly believe in and, no doubt, from your agenda, even from a layman's viewpoint, it looked to me to be most comprehensive and the scope most broad. I have found, though, in conferences, that we have to be very careful about having too heavy a schedule because in having too heavy a schedule you miss some of the opportunities of people getting together and talking over their problems. I looked at your agenda. It seemed to me to be pointed, pertinent and from it will come, I know, a better understanding and a clearer solution of the many problems which come up.

I would like to say a word at this time, also, as far as my service command is concerned -- and I know it covers a much broader field than that -- for the superior work that every one of the Medical Corps from General Kirk and General Lull down, is doing. I know of no other service doing a greater work in a better way under situations that sometimes are sort of nebulous.

We are all going through this increased hospital load period, casualties coming in. You can't tell how many people are going to be sick or how many men are going to be wounded. You have to estimate and then your estimate falls short and you go under pressure. More doctors are needed and you haven't got any more doctors and more nurses are needed and they are hard to get but somehow, some way the problem is being solved. It is only being solved because of the team work amongst you men in the Medical Corps from the very top right down to the post level and the station hospital level.

I want at this time to commend each and every one of you, although I don't know you. I know that you are doing the job. Some day there will come to you a realization of the inner satisfaction which is the only thing that a great number of us who can't get across will get out of this war and that is we say the only one we live with, the man inside of us. When we satisfy him, we can say to ourselves as the years go on, "Work well done."

It is a great pleasure to be here. I would like to meet you personally. I won't have the opportunity but I hope you get a great deal from your conference. Thank you very much. (Applause.)

General Hayes withdrew at the conclusion of his address.

GENERAL BAYNE-JONES: The Surgeon General has shared all of our problems. In the office of The Surgeon General, General Lull has been equally close to all of the things that have grown up in preventive medicine and worked forward in his office and out to all the rest of us. It is with a sense of honor and a feeling of very close tie that I have the privilege of presenting to you Major General George F. Lull, Deputy Surgeon General, who will speak to us now. General Lull.

GENERAL LULL: General Bayne-Jones, Dr. Maxcy, Col. Strome, gentlemen, my word is a word of greeting to you from The Surgeon General's office. As you know, General Kirk is abroad, in the South Pacific, so he could not be here in person.

This war that we are all trying to fight, sometimes under great difficulties, has been influenced a great deal by the work that the men in preventive medicine have done and are doing. No one in the Medical Department can help but look with pride upon the results

obtained in the prevention of certain diseases in this war as compared to previous wars or in the latter phases of this war as compared with the early stages. I think malaria is an excellent example of what was done on the job. The Medical Department, I think, can take full credit for this.

We all know that the prevention of malaria is not a medical job in itself. It is a job for the commanding officer but it has to be put in effect by the Medical Department and the Medical Department has to keep needling everybody all down to line to see that it is carried out. That is the way with a great many projects that are put on by the Medical Department.

I don't know whether you know the reason years ago for the regulation that officers over 45 years of age should not take the typhoid vaccine. It was because of the General Staff that we had then, a group of elder statesmen who did not know anything about medicine but they ran the Army, and they didn't want to try this new-fangled vaccine of Russell's but finally by wording the order so that no one over 45 had to take it they approved it. That was put in not because of any immunity but because the General Staff was mostly in those days over 45 and they wouldn't have to take it.

Those days, fortunately, have passed. Others have arisen. We con't have trouble with the old men now. As a matter of fact, it is the young men who give us more trouble than the old men. The older men have been educated through the years and some of the older line officers in the Army are the strongest supporters of this program. General Hayes has a grasp of the medical situation here in the service command and not only in the service command but all over the country.

As I say, fortunately, many of our senior officers have become educated so that they realize the important part that the Medical Department plays in carrying out a war. The man who has been up against something that the Medical Department has done, that is, if he has been wounded or if he has been taken to one of our hospitals or if he has seen some of the work that we do in the field, his attitude is altogether different.

I remember taking a class down at Benning one time and they had a critique after the maneuvers. We were all in this big tent. One youngster got up and said (they had told them to discuss anything they had seen or ask any questions):

"You know, I would like to say something. Up at Carlisle we are taught that when we are assigned as a battallion surgeon or regimental surgeon we will keep in intimate contact with the commanding officer and we will know just where he is going and what he is going to do, so we can lay our plans accordingly."

He was told that that was right.

He said: "My commanding officer wouldn't tell me anything. He left me in the dark."

Another boy got up and said, "My commanding officer kept me informed of everything he was going to do, so I could go right along with him."

I said, "I will take a guess on this. I may be wrong but I bet the man who wouldn't tell you anything was a real young major and the other fellow was an older man who had been in battle, himself."

That was true. The man who had been through battle himself realized the importance of having medical assistance at his right hand so that he could call on them. That is one of the things that has happened in this war. The medical care that the soldier gets immediately after he is wounded has been a big morale factor.

I have told a story in the office a great many times. When General Kirk came back from Europe he was impressed with this. He said, "You go into a hospital and ask eight or ten men, 'How soon after you were wounded did you get your first treatment, your initial treatment' and they would say, 'Just as soon as I was hit', or maybe 'five minutes', or 'as soon as the aid man could crawl up to me.'"

I told Morris Fishbein this and I said, "Morris, it is really wonderful how soon they get treated after they are hit. We will just ask one of these men." We had a fellow in a plaster cast before us.

I said, "Son, how soon after you were hit did you get treated?" The fellow thought a minute and said, "Two days and a half." We picked the wrong man. Morris laughed. Then the boy explained that he was out in a foxhole and that no one knew he was there, and he said, "It wasn't anyone's fault. They just didn't know I was there. I was caught out there and I couldn't attract anyone's attention," because if the aid man had known he was there he would have gone out after him. That is something that has been developed in this war, these excellently trained aid men who treat the man right on the ground.

You might be interested to know that we have finally gotten some recognition for the medical men attached to infantry units. They will be awarded a combat badge of their own. They will not get the extra pay, however. There is a bill in Congress to give them the extra pay. What you might not know is that in certain divisions on pay day the men in the infantry, the doughboys, put their extra pay back on the table and then the kitty is divided up among themselves and among the aid men. That comes from the infantry soldier, himself, who does that, because they appreciate these splendid corpsmen who stay right with them and see that they get the proper treatment where they fall. We are delighted to think that we have gotten a combat badge for them and we think this bill giving them extra pay will undoubtedly pass.

I don't want to waste any of your time and that is just what I am doing because you came here for a conference. As General Hayes said, these conferences are of the greatest value. You know, you issue a directive from The Surgeon General's office, even the good ones that General Bayne-Jones writes, and he can write directives. He is very meticulous and he knows how, but he slips up once in a while, because if you get nine people in the service command to read the directive, there is always some fellow who puts another interpretation on it. I don't say that in criticism. The man puts an interpretation on it because he honestly thinks so, and when he explains it to you sometimes you can see why he put the interpretation on it the way he did. So it is almost impossible to write a directive that everyone will see clearcut.

We have so damn many directives, anyway, you can't read them. It just means one more directive, but when you can get together and iron out your problems and discuss what you are doing about certain things, it is a big help to not only you people in the field but it

is a big help to those of us in the office. We have had some conferences of service command surgeons and when we can all get together and talk things over -- it is sometimes not long enough because there are so many things that can be brought up -- I have come to the conclusion that the smaller the program and the bigger the time for discussion is the important part of these conferences.

I appreciate being here and I appreciate the fact that this group can get together and iron out some of their problems and probably everyone will go away from here having derived some benefit from the conference. (Applause)

GENERAL BAYNE-JONES: What General Lull says about cutting through directives and getting at the heart of the matter must have struck a sympathetic chord in the breast of Col. Strome. We have found him to be a very direct person, immediately responsive to any sort of inquiry about preventive medicine that comes from our office, alert to preventive inquiries, and always a backer of anything that we have asked him to do in the way of help in solving the situation.

In addition, you should know that at the time of this meeting here, under the Third Service Command, there has been a spirit of hospitality and great assistance coming from Col. Strome who, in the midst of an enormous amount of administration and detail of the Service Command Surgeon's office that he has had to handle, has helped us very much in arrangements for this meeting, as he has in the development of preventive medicine in his service command. Colonel Strome.

COLONEL STROME: General Lull, General Bayne-Jones, Dr. Maxcy, fellow officers, gentlemen, it is a pleasure to be here today and have a few words of welcome from General Hayes and General Lull. I think it is indeed fortunate that Baltimore and Washington are only 40 miles apart because the officers of this Command have a rare opportunity in taking part in this, what we consider a very important conference. We hope you will have more of them and I want to assure General Bayne-Jones that if he plans any more, that Baltimore, which is a very friendly city, is wide open to receive you and we will make all the preparations. I can assure you of that.

I think there is going to be another meeting held here in the near future and we believe that the more sent to Baltimore, the more our men in this command will learn because it is impossible for them to get out to Chicago and the other places where these meetings are held.

Of course, we would like to see a few meetings in San Francisco, especially the service command surgeons, where they could have a little trip, or down in New Mexico, but an unfortunate part of being near Washington is that you never get over 40 miles away.

I feel that the discussions here today concerning malaria and other tropical diseases which are local -- the State health departments are very much worried about them -- will be of value to all of us. As far as the state of Maryland is concerned there is no undue alarm. I understand that in other communities and in some of our small towns in Maryland there is considerable alarm in the vicinity of the prison camps. However, as General Lull said, he was not going to talk long, I am not either.

It is a pleasure to have you with us and all the facilities of the office of the Service Command Surgeon are open to you. We would be glad to see you at any time.

My office -- only three can get in at one time -- is Room 410, Tower Building. If you find any difficulty with your hotel accommodations or anything else in the town I would appreciate it if you would let me know and I will pass the buck to Major Eddie Vinnicombe, who is the man who is responsible for the arrangement of this meeting today. You haven't met Major Vinnicombe but I hope you will all meet him before you leave because he is the "fixer" for the Third Service Command. If there is anything more that we can do, General Bayne-Jones, don't hesitate to call us. Thank you.

GENERAL BAYNE-JONES: It is peculiarly fitting that we are able to have this meeting in the auditorium of the School of Hygiene and Public Health of Johns Hopkins University. We have around us the spirit of Dr. Welch and all the men who were responsible for the development of much of the knowledge that we use nowadays and we are under the roof that has protected and has housed many of the leaders, important leaders of the public health movements of the country.

I am sure we will get something out of that without realizing, in fact, that we are meeting in such an environment.

Dr. Lowell Read, the Dean of the School of Hygiene and Public Health, was going to speak to us, as you noticed on your program, but he is away. We have the good fortune of having Dr. Kenneth Maxcy, the Professor of Epidemiology, to speak for the School in place of Dr. Read.

Dr. Maxcy is really one of us in more ways than you may know. Maybe you have met him out on a post. He is a member of what we now call the Army Epidemiological Board. He has been out on many investigations in posts and camps in this country.

He went over to New Guinea and studied scrub typhus and he is a soldier in every way except the uniform that he happens to be wearing right at the moment. I have the great pleasure and honor of presenting my friend and distinguished associate, Dr. Maxcy. (Applause.)

DOCTOR MAXCY: General Lull, General Bayne-Jones, Colonel Strome and members of the Conference.

It is my privilege, on behalf of the President of the University and the faculty of the school of Hygiene to extend cordial greetings. We are certainly delighted to have you meet here and use the facilities of this school.

This occasion has a peculiar significance to me. It brings back, for one thing, a memory of the previous war when I was a young officer under an old man on the Hill, who was Commanding Officer of the Base Hospital at Camp Beauregard, General Lull, at that time Major Lull.

From my experience as a medical officer in the last war, I became interested in preventive medicine and have been so since.

This occasion -- the gathering of these distinguished officers and the program which lies before you is to me an indication of the way in which this new, relatively new field of preventive medicine has progressed in the last 25 years.

We have come a long ways since 1918. In view of the fact we have at times seen in the press some criticism of the policies of the War Manpower Commission and their effect upon medical education, I might first revert specifically to the article which Dr. Graham recently published in the Saturday Evening Post. I presume many of you have read it.

It is gratifying to point out that although this may have an unfortunate effect on medical education, there are contributions that the Army has made and not the least of these is in preventive medicine.

I think all of us will agree that medical education can be improved in the first place and so far as teaching preventive medicine it can be improved, by the example of the creation and organization of a Preventive Medicine Service in the Office of The Surgeon General.

The field of preventive medicine has been definitely delimited by the functioning of this Preventive Medicine Service, not only in the installations in this country but in those in the theaters of war and in the occupied countries preventive medicine has demonstrated its importance.

The teaching which has been instituted or has been directed stimulated, you might say, from this service and its effect upon medical officers who are serving in the Army will be of great value in the public health, post-war period. I think we might also point to the fact that the research which has been fostered by the Office of The Surgeon General has made contributions which will be of lasting value.

These are some of the assets.

I think it is an interesting contradiction and a heartening one that in this period when human life is being destroyed on a scale that is hitherto unknown, that there is still a nucleus of interest and effort under The Surgeon General of the Army, which is directly toward the saving of human life on a scale that is hitherto unknown.

I wish to conclude with the cordial greetings again and welcome you to Baltimore and the School of Hygiene and hope that your conference will be profitable in every sense of the word. (Applause.)

GENERAL BAYNE-JONES: That concludes the official introductions but I can't help wanting to introduce one more distinguished officer to you.

I will just ask him to rise up.

I see Colonel Russell Lee from the Air Surgeon's office who has come in. We are delighted to have him. Col. Lee. (Applause.)

GENERAL BAYNE-JONES: I am looking around for someone from the Ground Forces.

MAJOR FEHLMAN: I am representing the Ground Forces.

GENERAL BAYNE-JONES: That is right. Major Fehlman representing the Ground Forces. Before I say anything more, I would like to make a few announcements to you.

(Announcements.)

GENERAL BAYNE-JONES: General Hayes said what I would have said and will say again about the character of this conference. We would like to emphasize what he spoke of as the informalities and frankness and discussion. You have a very heavy program in spite of the kind remarks that were made about it. This program was really cut down from a lot of topics that we have had in mind bringing up here and had to be cut down from the extraordinary number of fine topics and questions that came to us from preventive medicine officers in the Service Commands. It is pretty full, as it stands.

Down at the bottom of the page it says, approximately half of the time allotted to each speaker throughout the conference will be reserved for open discussion. I hope we can adhere to that. I am not sure how that may work out as we go along but we do want discussion and there will be plenty of it before we get through, among yourselves and with those of us who come from Preventive Medicine Service in Washington.

There is a notice at the end of the program, on the afternoon of Friday, the 16th of February, at 1330, there is a provision for statements by Service Command Chiefs of Preventive Medicine and representatives from the Army Air Forces, Army Ground Forces and the Office of the Chief of Transportation, concerning preventive medicine organization and procedure. That may bring out a lot of questions and a summary of some discussions during that afternoon but we would like discussion as we go along. There are bound to be a lot of questions that can't be answered at the time they are brought up. We will do the best we can. Perhaps the people in this room can contribute answers. We will try in our record to keep track of the unanswered questions and write to you about them later or incorporate them in what I am quite sure is going to be an adequate coverage of the minutes of this meeting.

The leader of preventive medicine in the Army, who called this conference really and about whom we are all thinking at this time is General Simmons. I deeply regret his absence. General Simmons, I am sure, would be thinking of us at this time with a feeling of regret at not being here. He went off with General Kirk about the end of January to go around the so-called Pacific Ocean areas. They have gone from Hawaii and gone out through Australia and through the Philippines, the Mariannas and will come back on a trip that will take them about two months.

It is rather symbolical of General Simmons on the whole and of activity of preventive medicine in this war that such an expedition should be made into a theater reaching so far overseas. He will see many things; he will be able to give advice on the way.

Characteristic of his trip there are a lot of radiograms coming in from every place where his plane lands and when he gets back we will know that we have plenty of new things to do in connection with the preventive medicine program on the long step to Tokyo through Pacific Ocean regions, Southwest Pacific and all the islands and seas with which we are concerned in that region.

General Simmons would have great pride in seeing you here today and he would be able to say these things to you that I, as a poor substitute, can't say or convey to you. I think it would give him an extraordinary thrill to see, in the first place, the general recognition of preventive medicine in the Service Commands and in the military posts of the country and in addition to see you and meet you personally and see the kind of people that are carrying on this great work in the Army.

Of course, some of you don't know him and those of you who do know him can all agree in regretting not being able to see him and get some indication from him of what I think is a very extraordinary thing that we are privileged to live with in his office and that is his vigor, the great energy he has, the devotion to the ideal of preventive medicine, the extraordinary courage and a quality that we doctors are not always apt to have and that is an aggressiveness in the pursuit of an ideal that is absolutely necessary in the Army.

It seems superfluous to me to add anything in the way of welcome. I think what we would express among ourselves is a sense of gratitude to all of you for having come from far places to this meeting with us to give us an opportunity to talk face to face about many of the problems.

You are front line people in this country, just as the preventive medicine man is front line man overseas. The things that you are doing in camps and posts and headquarters in this country are really activities of front line troops against disease, just as would be abroad in the battle field.

It is interesting to me to look at the title of this conference. It is called "Conference of Preventive Medicine Officers". That is what General Simmons called the officers but I suppose we might have called it Medical Inspectors. I bring that up because AR 40-200 calls you medical inspectors.

I would like to tell you a bit about the name. We had for months "preventive medicine officer" as the main designation of what General Simmons and the rest had in mind as the proper title for the chief man who would deal with preventive medicine in the post. It was written into the draft of that AR at some time in its multiple wanderings through various concurring and dissenting offices and almost got passed as "preventive medicine officer".

Then there were objections raised to it at the very last minute. It was decided among other things that the title did not have enough power and finally everybody went back to the old title of Medical Inspector. They thought perhaps the term "inspector" would give you more of an operational standing than just to be limited to preventive medicine officer. There is much to be said on both sides.

I am glad to see that this conference is listed here as "Preventive Medicine Officers," keeping for the moment, maybe, the proper designation that the Army regulation would have it called, because "Medical Inspector" loses out when we are really thinking about preventive medicine. That title keeps the thought of preventive medicine in front of people by repetition.

A.R. 40-200 outlines the functions of the Medical Inspector in general. This is one of the AR 40 series that we hope in time to get out in an orderly fashion, to bring the whole preventive medicine program of the Army more or less together in one place. Those articles, Army regulations, you know, have been revised by cutting out a whole lot of the practice of medicine and the detailed procedures that were so valuable, as I understand, to cavalry officers and others in command who had read the old regulations of 1923 and later, and practiced a little medicine by themselves.

There are all sorts of things in those old regulations that were put there, I believe, because the Medical Department couldn't find any other means of getting out a professional manual. Anyhow, now

they are much more streamlined and to the point. There are new ideas in them and they will be more serviceable. We have in preparation, a sort of preventive medicine manual.

Colonel Lee had the same idea, from the office of the Air Surgeon. We have both been talking it over. It is going to be a very difficult thing to put together in one circular or regulation, all the kinds of things or training manual material, that you would like to have at hand, but we realize that you need something like that. You need a coordination and codification of all the regulations that run over the vast field in which you have to operate and in addition it will undoubtedly be useful to you to have in a sort of a manual a certain amount of technical detail that you may have at your fingertips or easily accessible. When you sit down to write up such a thing, if you just put down the list of regulations, you don't get anything that is much worth while and if you go into a great deal of detail you come out with a big book before long. Then you know that a lot of that is going to be changed in a short time. We are striving toward this objective and I think Col. Lee also, is still working at it, to get out something that is sort of a helpful preventive medicine manual for the officers so that they will know at least where to go for the things that they want through these intricate regulations.

The topic that I have on this program to talk with you about is the preventive medicine program of the Army. How to deal with it is a rather difficult problem for me, especially after looking over the rest of the program, because most of the program, the preventive medicine program in the Army, will come out from the reports that will be made to you by Directors of Divisions and from your own discussions, and your own experiences. I should like to try to summarize in advance and say some things as to what I have learned about the preventive medicine program from my Chief, General Simmons, and I shall in the course of talking with you about it quote from him without reference to him, actually using his own words, and many, many other times unconsciously and without knowing that I am quoting from my Chief.

I think you could divide the preventive medicine program of the Army into four main subdivisions: One of them would have to do with the mission of the Medical Department in preventive medicine. A second might be called the attitude of the Medical Department and particularly of the officers in the field of preventive medicine. Then the program of organization, to carry out the mission in terms of the attitude and finally, the most important of all -- The qualifications and the spirit and character of the personnel.

Initiative, attitude, organization and personnel are obviously the four main divisions under which you might discuss the preventive medicine program. General Simmons has repeatedly pointed out that the Medical Department of the Army is responsible for the health of all of our military personnel. Its principal mission is to keep the soldier fit to fight. I think that has to be so stated in the military terms like that, but from such a mission, in keeping the soldier fit to fight, there are extensions of benefits to civilians in government service and civilians in the homes and lives of the community that extend far beyond merely a military activity.

General Simmons has pointed out again and again that the maintenance of the health of troops by the application of all known and proved measures is what we strive to attain. This mission can be carried out fully only by the eliminations of hazards to the health of troops. Some of those are the hazards that one ordinarily thinks about in terms of industrial medicine and the hazards of mechanized

warfare. Broad as the word "hazard" is, it is a useful term to indicate the need for relief from the hazard of infection as well as relief from the hazards of nutritional deficiencies and nutritional inadequacies, and relief or protection against the hazards of weather.

I should say that although psychiatry is not officially in the field of preventive medicine, certainly morale factors and the relief from the hazards of mental strain and the emotional breakdowns fully and properly belong in this field. The field of preventive medicine will come into psychiatry more and more as future developments occur.

Another point in the carrying out of this mission or a part of it which has to be constantly considered and is considered, is research. Just think over what you would have done at the beginning of this war to prevent and control disease if you had only the knowledge that was available at the time and had not constantly improved, as notably in the field of insecticides, with increased knowledge that has come from research.

Cardinal features of the program therefore are the applicqtion of all the known and proved measures for the care and preservation of the health of troops, the elimination of hazards and constant research. In fact, the research attitude undoubtedly is characteristic of people who go into the field of preventive medicine because you are always looking around for something that is the cause of the situation that you are dealing with. Nothing is handed to you in any of these situations on a platter. You have to be detective-minded and research-minded. That is the type, or at least the spirit of reseasrch, which extends all through the actual investigations of preventive medicine.

For the actual summary of the program that you might discuss, I would like to call your attention to paragraph 1d in AR 40-200 which tells you what the Medical Inspector is charged with and rather sums up the preventive medicine program of the Army. He is charged with the responsibility of recommending and supervising an adequate program of preventive medicine for the command or station to which he is assigned. This program will include personal hygiene and environmental sanitation, communicable diseases control, including venereal diseases and insect disease control, all phases of sanitary engineering and prevention of nutritional deficiencies.

We will have in the course of this program discussions of every phase of that summarized program in AR 40-200 and no doubt other topics that will be related to it. It seems that the more successful we are in preventive medicine the more useless we are thought to be by some people. I think it happens over and over again in the field of preventive medicine. You have found notably, for instance, in communities that are protected against smallpox by vaccination of the older generation, they say there is no smallpox there and therefore their children don't need to be vaccinated. Safeguards tend to fall down when preventive medicine has succeeded. That is happening to us all the time in the field of preventive medicine, particularly when things are going well and are in good shape.

I don't know whether you can console yourself by thinking of preventive medicine in the terms of vitamins but it is a kind of medicine that is a bit like that. You really are recognized, in preventive medicine, by your deficiencies. If you are not there and not doing the right job, disastrous things happen. If you are on the job and everything is going well, you would not be discovered, as vitamins were not discovered until one knew about what happened in their absence.

For instance, in regard to the outbreak of typhus at Naples last year, I showed a chart of that to a person of some competence, at least the person was going to write it up for the press, and I showed that they had about 1,000 cases in the non-immune population in the winter under conditions of filth, destruction of a city, with all the facilities destroyed by bombing and shelling, and crowding, all the things that make typhus spread in a non-immune population. This chart shows that about the last week in December the incidence started to decrease and it cuts off almost like a knife at that point.

This person lost interest. Only 1,000 cases occurred. You didn't really have any epidemic to deal with and you were not doing anything and the person lost interest in the story. I say if it could have been shoved back two or three or four weeks and you had had 100 cases or 50 cases and you stopped these things at the beginning, which is what you want to do, stop them before they start, you are thought to be particularly useless.

I would like to speak a bit about the attitude of the preventive medicine officer. Paraphrasing a bit from one of General Simmons' papers, it can be pointed out and realized by all if the attitude is that health is a positive thing. Health should not be expected as a gift but must be fought for and cherished, regardless of cost, "in order to maintain the fighting efficiency of the Army." It is true for the Army, it is true for all our lives, and community associations, the people, themselves, that as the health officers become more and more aware of the necessity for an aggressive reaching out for health and the preservation of it, the better the troops will be and the better the communities will be. In another paper of General Simmosn he again uses -- and I don't know how much he thought about the word, but he speaks of our present aggressive program for protecting the health of American troops.

I learned that from him and from being in the office. I came down there from a relatively quiet, academic grove and had thought of preventive medicine activities as something that flowed rather naturally from the talks about disease. I did not see how you could talk to students about diptheria without the prevention of the disease being apparent. You certainly can't talk to students about tuberculosis and about the modes of infection and the environmental conditions favorable for T. B. without having the thought of removal of those conditions, and preventive medicine, coming into their minds. The same about industrial hazards; But I found out very soon, and maybe because it was an Army system I was getting back into, that the thought of a thing is not very much good by itself. You may have a wonderful lot of ideas, you may write about them, but unless you do something and do it aggressively it really is not very effective. It could not be effective in an Army and it is relatively ineffective in a university or municipal environment. I am using the term "aggressive" in the sense of doing things that naturally flow from the considerations and seminar discussions that precede a decision on any point.

I remember the last war where you would see a great difference and I hear it is the same way now. You would be cold and messy in one place with a filthy trench latrine and dirt everywhere. In one officer's command he thought this ought to be cleaned up, but it was not. You have all met officers of that type who think about it and that is all.

Yesterday there was an officer in from Italy who told about the First Armored Division. Until recently they had not had any hepatitis, and they had gone throughtmaybe two seasons without any enteritis or

diarrhea and dysentery to speak of. Next to them are units with a lot of diarrhea, dysentary and later hepatitis who are not taking care of themselves. He says that the First Armored Division has latrine covers and box seats with the cracks all plugged up and they have men standing by to see that they are kept clean. The next outfit is just dirty, living in dirt. The same thing occurs in certain posts and environments in this country.

At this point it seems appropriate, in connection with this program, to discuss what we call command function. The Medical Department is an advisory body when it is outside its own field of care, actual care of the sick. We console ourselves sometimes by saying, when things go bad, that it is the fault of the command. The responsibility is placed in this A. R. as in all the other regulations upon command. The responsibility rests with the commanding officer. It rests with General Hayes. He knows how to deal with it. It rests, with the commanding officers, right on down through, to carry out and see that this preventive medicine program is carried out. However, it is no good to sit back and say it is the responsibility of the command and point to some document you have laid on the commander's desk. You are all right, in having the document, and it is well to be "covered" in certain conditions.

There are two very notable examples in the Army where The Surgeon General has been way out ahead and preventive medicine officers with Divisions and with Service Commands and other units have been way out ahead of the Command in knowing what should be done and in advising what should be done. Two conspicuous examples I am thinking of are malarial control and the things that might have been done ahead of time to prevent trench foot that is causing such a loss of men in the cold regions of Northwest Europe.

These are command matters. They have to do with supply, requisition, foresight in the campaign, all the things you think that the man in general command, the Commanding Officer, would do in advance just so he would have fighting men to carry out his part of the program. They don't do it for various reasons. Sometimes they think the doctor is wrong in advising them. Sometimes they are just not educated as General Lull pointed out, about some of his earlier associates. We can't say that they may be apathetic -- you could not, except in special cases, make such an accusation. I think most of the trouble of the failure of command is the failure of understanding. This is where it comes around again to the preventive medicine program of the Army. I think a direct responsibility for any medical officer who has to do with preventive medicine is to educate the command.

An officer may, as I say, have been covered by all the paper work in the world, but his men are sick. Yet another officer could have had the same paper work and the same opposition at one time. He has finally convinced the Commanding Officer of the rightness of the purpose and got him to do things. In fact, the medical officer, as we all know, can use the name of the commanding officer if the commanding officer signs it, himself, after, we will say, being convinced and get these things done and have a clean, healthy outfit.

I have been through a couple of experiences like that since I have been down here. I have seen a case where actually it was said in reference to a medical matter, that the highest authority in the War Department, was not telling his generals how to run the war. They don't tell the generals how to run the war from a place like that but the generals who made that decision at that time really did not know enough or comprehend enough to have justified the decision. Without the

authority of a higher-up having told the generals what to do, two to four months later after explanation and education in both of these instances the thing was done and recommended from the point of view of the Medical Service. That I think is part of the responsibility of the preventive medicine officer, to influence his commanders so that these things will be done, to reach understanding, and to maintain cordiality. These things are done, as we all know, success follows.

On organization, one could talk at great length. It is obvious that you must have organization to carry out a program. An organization is going to differ in various places. It is something that is fetish to some people and something that is to be taken as a fluid and movable affair in the minds of others. In any case, there is always organization and this organization will differ in different situations. We would like to hear, before this conference is over, about some of the organizations with which you are familiar. I would like to tell you a little about the organization of the Preventive Medicine Service in the Office of The Surgeon General. This organization has been built up under General Simmons, I would say partly according to plan, partly according to needs and always as a sort of compromise with the General's very far-reaching ideas and vision of what might be done and could be done.

Some of the organization that we have has been forced by the Control Division. Some things that are so logical from the point of view of the integration of the subject are illogical to the Control Division because you have to use the same word somewhere in the separate job descriptions. It is hard for them to understand that although the same general terms may be used the actual content of two jobs may be very different. So our organization that we have down there is mixed up, frankly, for administrative reasons as well as for personnel reasons and for reasons of associations of closely related subjects. It is not held up as any model organization, except to say that it is a going concern, very closely integrated, moving along with a thorough association between Divisions as well as the best association that we have been able to maintain with Service Commands. The association with Service Commands is going to be much better after this conference.

As General Simmons tells in some of his papers, about 1939 when the Surgeon General saw the on-coming war over the world, he began to do more about preventive medicine than he had in his office before. It was really in 1940 that a Division of Preventive Medicine was set up in the office of The Surgeon General. I wasn't there in early days. I didn't get down until 1942, so I can't know all that was happening at that time. I imagine it was small and cramped like a good many other parts of the Surgeon General's Office in those days.

The Preventive Medicine Division began to expand more in 1941. In 1942 we got a purchase on the 12th floor of our building and now occupy the whole of the twelfth floor. The service has grown tremendously and the functions of the Preventive Medical Service have greatly increased, both in response to the needs of the Army and in a form characteristic of the subject matters dealt with as modified by administrative considerations.

General Simmons in talking about his vision, as he called it at the time, said that the objectives of the Service have been the maintenance and conservation of the health of the Army through the prevention and control of infectious diseases and the elimination of health hazards. I might add too that concern was felt more about the

nutritional sides of the preventive medicine program in the Army. A new Division of Nutrition has been included in Preventive Medicine Service.

General Simmons points out that this Service has advanced towards this objective by the development of plans based on estimates of future possibilities, by the constant accumulation of scientific knowledge from all available sources and by the vigorous application of the most promising control procedures. In this work the Division has utilized every available facility and has enlisted the services of most highly qualified persons. In general, the nature of the work is the administrative management of all phases of preventive medicine.

The Preventive Medicine Service is concerned with the establishment of processes and procedures, development of control measures, procurement and assignment of specialized personnel, the collection and analysis and distribution of information on medical and sanitary conditions in all parts of the world and the initiation of research on problems of immediate significance to the armed forces. This service has maintained the closest possible liaison with numerous governmental and civilian agencies. I think that goes down through most of the posts and certain Service Command Headquarters that we know of.

There are extraordinary relationships in this war between different Government Departments and different civilian agencies and foundations and universities who are working together for the preservation of the health of the troops. General Simmons has mentioned the chief of these, such as the National Research Council, Committee on Medical Research of the Office of Scientific Research and Development, the Bureau of Medicine and Surgery in the Navy, U. S. Public Health Service, Pan American Sanitary Bureau, Coordinator of Inter-American Affairs, the Department of Agriculture, International Health Division of the Rockefeller Foundation, and most of the scientific and medical societies in the country, together with the special societies for biology and chemistry. This relationship between agencies goes on all the time. Information resulting from studies goes down through Preventive Medicine Service.

I have a chart here of the Preventive Medicine Service. The organization has actually been changed a bit since this chart was drawn up. I haven't a slide of it and there is no use of your seeing it in detail at this time. I want to let you know the main elements of the organization. We have an office of the Chief, a Deputy Chief, two Assistant Chiefs and an Executive Officer and then various units attached to the Office of the Chief, partly because they don't fit into the ordinary Divisional arrangement.

The main block on this side is the Army Epidemiological Board which is composed of the Control Board and ten Commissions composed of civilians. Each Commission is under the directorship of a distinguished man in the same field, such as respiratory diseases, influenza, pneumonia, streptococcal infection, pneumonia, meningitis, measles and mumps, air-borne infections and tropical diseases, and so on. That Board of some one hundred civilians is at the disposal of the Army. It has done extraordinarily fine work up to this time. In work in posts and camps it has always secured the approval of the Service Command Surgeon. We have undertaken many investigations in posts. Thanks to Col. Strome we have had a long and profitable relationship with Fort Meade and regions in the Third Service Command.

We have recently added to the top of this organizational chart a Health Education unit which we hope will be of value to you. We would

like to have suggestions coming in from you and maybe we will have some material going out that you can use in the way of films, posters and things that will be of value. The reason for making it a unit is that we had an educational branch in tropical medicine, one in sanitation, and one in venereal diseases. We have brought these officers together in one unit for work toward a broad educational program. We have called it a health education unit rather than a training unit because it is broad like education rather than strictly limited as training would be.

There is a lot of red tape and trouble to go through in getting films made, but we think we can succeed in disentangling some of that and be of service to you. We would like to receive from you, photographs, descriptions of new sanitary devices and any good shots of films that you may know about in your district or have heard of, from some officers.

The United States of America Typhus Commission is housed in the region of Preventive Medicine, although it is not organically attached to the office. Then there are ten Divisions under Preventive Medicine Service. These are:

The Sanitation and Hygiene Division,
The Laboratories Division,
The Epidemiology Division,
Tropical Disease Control Division,
Sanitary Engineering Division,
Venereal Diseases Control Division,
Occupational Health Division,
Medical Intelligence Division,
Nutrition Division,
Civil Public Health Division.

Within the Preventive Medicine set-up, as you would naturally think, hygiene and sanitation is basic. This Division of Sanitation and Hygiene carries the routine load of sanitary and hygienic measures for the preservation of the health of the Army.

Laboratories Division stands as an example of a thought that has always been in General Simmons' mind, namely, that laboratories are an essential agency of preventive medicine. Therefore, there should be maintained a strong Laboratories Division of Preventive Medicine Service in the Office of The Surgeon General, the Service Commands and in hospitals. Wherever preventive medicine officers have to work, they have to depend on a good laboratory. It has been a drive of the General to have good laboratories. It is much to his regret and to everyone else's regret to see Service Command laboratories changed from their previous War Department status to a status that has made their futures very precarious and doubtful. Strong laboratories should exist everywhere and the laboratory man should be on the top staff.

Epidemiology is obviously there. Although we may not know exactly what we mean by that word, we know what we do in the field of that work. The Professor of the subject (Dr. Maxcy) is here. However, I know another member of his faculty who thinks that the word ought to be abolished because it has no deep, regular significance. What we mean in the field of epidemiology is infectious disease control and the analysis of statistics and it has to do largely with infectious diseases. In this curious organization, however, we do not include all the infectious diseases under Epidimiology Division.

The next that stands out here is a Tropical Disease Control Division which uses all the epidemiological methods. The Divisions of

Tropical Disease Control and of Epidemiology are housed close together. Tropical Disease Control is so important to the Army now that it has to be represented by a separate Division.

Sanitary Engineering on our chart appears between Tropical Disease and Venereal Disease Control, mostly, I think, to separate it from the word "sanitation" in the title of the Division of Hygiene and Sanitation. Sanitary Engineering represents a profession of the people who are dealing with supplies and the purification methods and all the engineering phases -- and much of the engineering phases of sanitation. It has a very distinct field and has been maintained as a separate Division in Preventive Medicine Service ever since General Simmons started his organization.

Venereal Disease Control is set off from Epidemiology because it is a tremendously specialized subject and deals so much with public and other relationships. In an Army program, extending as we do outside Army cantonments and fields, venereal disease control extraordinarily and clearly represents the type of preventive medicine work going on in the Army that is affecting civilian communities at the same time that it is aiding the troops and aiding civilian communities at the same time that it is affecting regulations and behavior of the troops.

Occupational Health is a new activity that has been developed under General Simmons. It arose naturally from consideration of the exposures of people in ordnance plants and privately operated plants. It has grown enormously. It is responsible for the War Department's highly enlightened attitude and plan for industrial medicine in the country. I believe there is no contribution in the field of industrial medicine that will equal that which has been made under Col. Lanza and Preventive Medicine Service during the war in dealing with the problems of people employed in plants of all kinds engaged in war work a breadth of view has been characteristic of this whole development. The relationships extend far beyond a troop basis clear out into communities and legislative bodies. They involve many other considerations than just the affairs of the Army post or group of military people that are locally concerned with a problem.

One might say the same of Medical Intelligence. That Division grew to meet the need for assemblage and dissemination of the knowledge of sanitary and medical conditions in all countries and areas of the world. This Division has served not only the Office of the Surgeon General but also the whole War Department. There were no such things available as the surveys that have come out of this Division having to do with health conditions and living conditions and the characteristics of the countries to which troops could be sent.

Nutrition Division has recently been added. It is of vast importance for the proper care of the troops. We will have much discussion here, probably, endeavoring to work out relations between the Quartermaster and the Food Service of Divisions of the War Department, and other problems.

Civil Public Health Division was formed very recently, within the past year, so that the Surgeon General could live up to certain obligations that have always been on the Medical Department but never in such force and never properly handled until this war. That is the responsibility of the Surgeon General for the health and care, to some extent, of people in occupied, and liberated countries, which come under jurisdiction of our Army. You will hear more of what that Division is doing in relation to the Civil Affairs Division of the General Staff when Col. Turner and his associates speak to you. That, in general, is an outline of the organizations.

I would just like to conclude with one or two remarks about qualifications of the personnel. The qualifications seem to me to be of two main types. One of those is professional and educational qualifications. It seems best that the preventive medicine officer be a medical officer because his long training should be in lines of medical thought. As a medical man he has a basis in the tradition and the continuity of knowledge that is activating him unconsciously. I am laboring this point a bit because everyone knows that the training alone, medical training alone, does not fit a man to be a good officer or a good preventive medicine officer. In fact, it can ruin him. Some men who are professionally trained are either by disinterest or by the actual kind of training that they have received unfitted to be in preventive medicine. They are unhappy and they don't know what to do and they are not concerned, really, in getting results.

On the other hand, we have conspicuous examples of men who have had no medical training who are very able in the field of preventive medicine and have the thorough confidence of their commanders up to a point where a medical professional problem would be involved. They are often better men in preventive medicine than some of the better medically trained officers. However, as a basis of training for preventive medicine I believe we agree in friendliness and frankness among ourselves that a basic medical training is the main thing to look for. That has been so specified now after a terrific battle, so that the medical inspector is to have the qualifications that are briefly outlined in AR 40-200.

Beyond education and training let us go back to what I said about interest and attitude. In the field in which you are working you have to fight a battle all the time to get the things you want done, to get the ideas over that you wish to put over and to defend the troops against the attacks of disease. In preventive medicine officers you look for qualities of interest and courage and energy and devotion to the ideal of the preservation of the health of the troops.

If I may quote, in conclusion again from General Simmons, he said at one time that execution of the preventive medicine program is a responsibility which must be shared by every individual in the entire military force. The effectiveness with which it is executed will depend on the intelligence and zeal with which the individual medical officers carry out the primary mission of the Medical Department. Finally, he said: "I hope you will remember that the successful medical officer is one who exerts every energy to protect the health of his troops. It is important to cure the sick, but it is more important to prevent sickness." I think many people would agree with that entirely.

We know that in the meetings that we are going to have here during these next two days a lot of matters requiring correction will be mentioned. These will be matters concerning the health of the troops and matters concerning our own relationships. I want to say again, that we are very proud to have you accept the invitation to come here. We hope we will talk together freely before we get through. (Applause.)

GENERAL BAYNE-JONES: Before we start off, I see two of my distinguished friends from Canada here, Major Neufeld who is a liaison officer with the Canadian Army Medical Corps and Major Leclerc, from Ottawa. (Applause.)

The next topics are to be presented by Lt. Col. Arthur Long, Director of Epidemiology Division. He will speak on immunization procedures, the new immunization register, and Diptheria control. He said he thought he could do it all in a half hour so you could talk back to him. Col. Long.

Before the Colonel begins, may I ask you if you have questions to ask, will you please give your name distinctly and the post, so that the lady can get it down in the record.

INFECTIOUS DISEASE CONTROL. IMMUNIZATION PROCEDURES - NEW IMMUNIZATION REGISTER - DIPHTHERIA CONTROL.

LT. COL. ARTHUR P. LONG, MC, DIRECTOR, EPIDEMIOLOGY DIVISION.

COLONEL LONG: General Bayne-Jones, fellow officers: It is quite a big order to attempt to present anything like a complete discussion of the immunization program and in addition to discuss diphtheria control all in thirty minutes. I don't believe I can do it as a matter of fact.

I will ask you to bear with me if the things that I have to say seem to be somewhat disconnected and hurried. I will go along rapidly because we are extremely anxious to hear from you people. I feel that we will derive much more benefit from what comes from your experience than from what I might have to say. I will, therefore, be very brief in my discussion of the immunization subject.

The various immunizations have been separated for administrative purposes into what we call routine procedures and the special procedures. The routine procedures, include the basic three, smallpox, typhoid and tetanus. Very little needs to be said about those procedures.

I would, however, like to point out a few recent changes in the administration of these and to emphasize certain important features of their application. Ofcourse there has been no change in smallpox vaccination methods. However, I would like to emphasize or rather to ask you people to continue to emphasize to the individuals with whom you come into contact the necessity for continued attention to vaccination techniques, the proper interpretation of smallpox vaccination reactions and the proper care of the vaccine. As a matter of fact, there has recently been some indication of unrecognized vaccination failures. Following re-vaccination some individuals have responded with primary reactions, these individuals having been vaccinated a year or less before. That can mean only one thing, failure of the original vaccination.

The Army experience with smallpox is extremely satisfactory. Within the last year there have been less than one hundred cases reported from the entire Army. I am talking about overseas troops as well as those in this country. However, among those cases that have occurred, there has been very good evidence to indicate that there have been failures of vaccination. There have been in many instances immune reactions entered on their immunization records which means, misinterpretation of the results of vaccination. Col. Callendar will be with us later today and will go into considerable detail on typhoid and paratyphoid vaccination.

There is one fairly recent administrative change that occurred a year ago or thereabouts. That was the adoption of the half c. c. dose annually as a stimulating dose, taking the place of repetition of the three doses every three years.

One other change has been the acceptance of longer periods between individual doses of typhoid vaccine. It is now recognized that it is quite acceptable to give typhoid vaccine at intervals of seven to twenty-eight days between the individual doses. I am talking now about the basic series, of course. This was done to bring it into harmony with the tetanus immunization so that it would not be necessary to bring a man in so many different times for the basic immunization. Now tetanus toxoid and typhoid vaccine may be administered at the same times.

The other one of the routine procedures is tetanus immunization. I would like to emphasize that only one routine stimulating dose is required. This dose to be given at the end of the first year after the basic series. We feel it is not necessary to give a dose of tetanus toxoid every year. There has been some misunderstanding about that, I am sure. The former requirement that, for men going overseas, a dose of tetanus toxoid be given within six months prior to their departure has now been done away with. There is no longer a requirement for that six months dose of tetanus toxoid.

I think we are on very good ground on this rather minor change of policy. We have tried to follow the response of individuals immunized to tetanus. We know very well what happens to them at the end of the first year. When they are given their stimulating doses, their titer immediately rises to and beyond the protective level of circulating antitoxin.

Due to the very excellent cooperation of Col. Carroll of the First Service Command I am able to report today results he handed me just five minutes ago of a study that we had instituted in the First Service Command. A group of individuals had received the basic tetanus series over three years ago and their annual stimulating dose at least two years ago. They have received no tetanous toxoid then for at least two years. These individuals were given stimulating doses of toxoid. In every instance they responded very well. The resulting concentrations of antitoxin in the blood serum were well beyond what they actually required for protection.

It is of considerable interest to note that the level of antitoxin two years or more after the routine stimulating dose was, in most instances, adequate for protection. Many of them had at least three-tenths of a unit of antitoxin in their blood to begin with. When they were stimulated they they went up ten-fold, some of them. One, I think, went as high as thirty units, which is well beyond anything that might be needed for protection.

Of the special immunization procedures, those most commonly used are typhus, cholera, yellow fever vaccinations and to a lesser extent, plague vaccination. There have been very few deviations from the original policies governing these immunizations. One recently adopted was a change in administration of typhus vaccine, changing from three to two doses. In the presence of typhus fever, the administration of stimulating doses on a seasonal, rather than on a calendar basis is recommended. In other words, in an area where typhus fever is present, the stimulating doses might well be given at the beginning of the typhus season and about in the middle of the typhus season, perhaps at the beginning of November and again in February.

It maybe of some interest to report the Army experience with these diseases, typhus, cholera, plague, yellow fever. It has been very satisfactory. There have been a total of fewer than fifty cases of typhus fever reported from the entire Army. There were no cases reported in 1944, as far as we know.

There have been no cases reported of cholera, plague or yellow fever. This, perhaps, is another example of what General Bayne-Jones spoke about earlier. We have had no problems with these diseases; therefore, perhaps, there are those who say, why go on through all of the hocus pocus of vaccination, we have had no diseases.

The other special agent which might have been used rather widely or which may still be used widely is the new influenza vaccine. Briefly, this, as you know, is a bivalent virus vaccine containing viruses "A" and "B." You know the background of its development, I believe, pretty well. I won't go into it in any detail except to say that in the experimental group that was used, there was very good evidence to indicate that disease in the vaccinated was a quarter or a third of that experienced in the controls.

We still, of course, do not know what type of virus that we had confronting us in 1918, so that there is no absolute proof that the new vaccine would be efficacious in the presence of a severe epidemic of that kind. There has been none of this vaccine used to date in troops. It is now becoming available in fairly large quantities. We have already shipped small amounts overseas. It looks now as if the season is pretty well passed and we will not have to use it this year. There will be adequate supplies, however, for use next year, should the situation present itself.

In that respect, we would like to emphasize the fact that it is extremely important that every one of us be on our toes to ferret out possible outbreaks of influenza. This flu vaccine is specific for virus A and B. It is felt it is not wise to administer a vaccine of this kind in general with the hope of hitting whatever virus might come along. The policy which has been established, then, has been to administer it in the face of a known or impending outbreak of influenza, A or B. There are various listening posts established throughout the country where there are available the services of the consultants of the Army Epidemiological Board. If at any time it appears to any one of you people that there is a possible influenza epidemic, if you will get in touch with us by telephone or telegraph or any way you wish to do it, the services of these specialists can be made available. They can be of great assistance in establishing diagnosis early. This time factor is extremely important if vaccine is to be of value in preventing or checking an epidemic.

I would like to mention the availability of an immunizing agent for measles, emphasizing again that we have no active immunizing agent for measles but we do have a fairly large supply of immune serum globulin. This is not placental extract. It is probably more effective than placental extract and gives fewer reactions. It is not adapted to widespread use. -- It is a passive agent. Immunity from its use lasts two to three weeks only. It is administered in rather large quantities, 10 cc. given intramuscularly. -- All of these are against its widespread use. Where you are dealing with debilitated individuals who have been exposed or for military reasons it is absolutely essential that exposed people not come down with measles or in case of unusual exposure such as on crowded transports, this agent might well have a place. In submitting requisitions for immune serum globulin the use should be indicated. We have tried not to disperse it widely for non-essential uses.

One agent that is used not widely at all but concerning which questions arise every spring is Rocky Mountain Spotted Fever Vaccine. There are available very limited supplies of this agent. As you know, we have never recommended the mass vaccination against Rocky Mountain Spotted Fever. Rather, it has been felt wise to rely upon other preventive practices such as the avoidance of ticks, careful inspection of people in the area where ticks may be found, early removal of the ticks, and so forth, remembering that a tick does have to be attached four to six hours before the disease is transmitted.

Further than that there is still controversy about the absolute value of the vaccine in preventing the disease. It may well prevent the disease but it probably very definitely will ameliorate the symptoms of the disease once contracted. Obviously it is of no value for treatment. The vaccination has been, then, in general, limited, because of the limited supply. It has been limited to those subjected to special hazards, those who are unavoidably out in contact with brush in tick country such as patrols, guards, and so forth.

We had a certain amount of this material made available to us from the U. S. Public Health Service. For purposes of administration certain portions were subalotted to the various Service Commands. I am sure you are all familiar with that. For example, the third, fourth, seventh, eighth and ninth Service Commands passed upon requisitions reaching them from posts and stations within the Service Commands. If they felt the use was indicated, the request would then be forwarded to the Rocky Mountain Laboratory and the vaccine sent out to the post in question. Requests from other than those Commands were forwarded to the Surgeon General's office. The procedure will be continued this year the same as last. Just what amounts will be made available I don't know yet. We would appreciate it a great deal if in the Service Commands there is an apparent reason for changing the amounts or for changing the method of distribution of spotted fever vaccine over that of last year, you would let us know at your earliest convenience. It is going to be necessary to make the arrangement for this year's supply with the Public Health Service very soon.

You may be interested in the Army experience with spotted fever. In 1943 we had 37 cases reported, whereas last year we had only 15 cases. In 1943, for example, there were eight cases from the Seventh and eight cases from the Ninth Service Commands, whereas last year there were none from the Seventh and none from the Ninth and two from the Eighth. The others were scattered in the First, Second, and Fourth.

Because there has been an increasing interest recently in diphtheria, I would like to go into some detail in discussing this disease, not because I have in my pocket the answers to control of diphtheria in adults, but because I wish to stimulate some discussion from you people in the hope that some of you will have the answers to give me. The early interest in diphtheria, as far as the Army was concerned, began about a year and a half ago, when we noticed the increasing incidence among civilians in Northwest Europe. We were thinking then about the invasion of Europe and we had concern particularly when we realized that, in the Netherlands, for example, they were having about as much diphtheria in a month as they normally would have in a year prior to the invasion. It is comforting to know that despite this increase in diphtheria in Europe the problem has not been a great one in the Army now occupying France and the other countries. There is some diphtheria, but it is scattered. There are relatively few cases. It has not reached anything like epidemic proportions so far as I know in any of the units.

There has, however, been considerable diphtheria. I don't think it is fair to say epidemic, let's say small outbreaks in the Mediterranean area, Middle East, South Pacific and the Asiatic Commands. Recently we had some reported from Burma, New Guinea and Saipan. This incidence is extremely interesting because here we are getting a disease not normally connected with the tropics but here diphtheria, as far as the Army is concerned, is becoming a tropical disease.

A great many of these cases are cutaneous types of diphtheria but they are interspersed with the nasopharyngeal type. We think we know a little bit about the susceptibility of our troops to diptheria. About a year ago a very careful study was set up and carried out on representative troops in this country. They were just about ready to go overseas. They were not recruits and were a pretty well selected group. From that study we determined that about 45 percent of the troops are susceptible to diphtheria as measured by the Schick test.

There isn't time to discuss what the Schick test means, even if I was awfully sure about it. It was interesting to note that, as we expected, troops from the Northeastern and North Central States showed the highest susceptibility rate, whereas those from the Southern, particularly the Southeastern States, showed the lowest susceptibility rates.

In other words, those troops from areas where there has been little or no diphtheria over the last few years and where there have been good immunization programs have a high susceptibility rate. That sounds paradoxical but actually it is not, of course, because with low incidence of diphtheria, with a low carrier rate, no natural immunity developed. In the South there has been diphtheria, high carrier rates, exposure and experience with the organism. Therefore, lower susceptibility rates from naturally acquired immunity.

A word about the Schick test and its applicability to diphtheria control among troops. It is, of course, a useful procedure in distinguishing as well as we can between the susceptible and immune. It is not fair to say that all Schick positive individuals are susceptible to diphtheria. Some may have a latent immunity not measured by the Schick test. We can't go into that detail. But in general for working purposes you can differentiate and divide your people into those two groups. However, the Schick test is not a simple procedure. It is time-consuming. The results must be read at 72 hours. They should preferably be read at 48 and 72 hours in order to pick up the differences.

Interpretation of the Schick test is not a simple procedure. It requires a good bit of experience and understanding. There is a fair chance of loss of potency of Schick test material. That often is not understood. When you see a Schick test survey done and when the results show a very high degree of immunity perhaps you better question the potency of the Schick test material. This study that we were just talking about, the first Schick test material we got had fallen off in potency about 25 per cent. Schick test material is standardized quite precisely (1/5 Guinea Pig MLD per c.c.) and it is a very dilute toxin and really quite fragile.

In addition, it requires very careful intracutaneous technique, two injections being required; that means you have to do an intracutaneous injection on each arm of each individual tested. All of this for large volumes of troops, particularly under field conditions, has led us to the feeling that in many, many instances, the Schick test is not a practicable procedure to be used for diphtheria

control. I don't wish to give anybody the idea that we would like to throw out the Schick test entirely; that is not so; but for large groups, where we are dealing with a lot of people, where time is of the essence and where you don't have a great many well-trained, experienced individuals, the Schick test may well not be a practical procedure.

For immunization to diphtheria, the material that we have is diphtheria toxoid. We believe that fluid toxoid should be used in adults. It is an extremely difficult problem, however, to immunize adults to diphtheria and this procedure should not be undertaken lightly and without very careful consideration. Quite severe reactions occur in a high proportion of the adults. The local reactions experienced are edema, induration often a very bad-looking arm with bluish discoloration.

You may get a whole arm with a sort of brawny, bluish edema and induration. General reactions are characterized by malaise, headaches and elevation of temperature which sometimes goes very high. These reactions tend to come on early and are, in general, just as severe or a little more severe than those experienced with typhoid vaccination.

Because of these reactions the best method that I know about, is to take the group concerned and administer to each individual what we call a reaction test dose of one-tenth of a c. c. of toxoid under the skin. Wait then about 48 hours. The reactors you will know about. They will be coming in. Anyway at the end of 48 hours they should be inspected and examined and those who have exhibited severe reactions should be dropped entirely from the program and then go ahead and start the regular series beginning with a half c. c. and then two other doses, one c.c. each, administered at approximately weak intervals.

The results that you can expect from this method are not too happy, as far as reaction that you will get. If you follow that method, between 55 and 60 per cent of the group will finish the series. They will have gone along without enough untoward reactions to have warranted dropping them out. Between 15 and 20 per cent of the group, however, will have had sufficiently severe reactions to warrant treatment either in quarters or in the hospital for a day or two.

When you are through, then, you have not immunized your entire group. You have completed the series in 55 to 60 per cent but you will have raised the general level of immunity. It will have reached certainly 80 per cent or higher. It is well to remember that the small dose, the reaction test dose will, in itself, stimulate immunity in a certain number of these individuals and those are the people that I talked about earlier who have a little latent immunity that might not even be measurable by the Schick test.

The decision to immunize is extremely difficult. Certainly with the reactions experienced from immunization one is not warranted in immunizing a whole command or other group on the occurrence of an occasional case of dyphtheria. This procedure should be undertaken only from the presence of definite indications of spread of the disease within the Command or components thereof. I think there might be instances where you might want to split a command and immunize only certain portions.

I don't have any golden rule to follow. I can't give you any rule of thumb to suggest when you should immunize and when you should not. I have something here that might be used as a guide. I would be

glad to have you kick it around a bit. As I say, I am not laying it down as a golden rule. Admission rates for either or both forms -- I am speaking of the cutaneous or nasopharyngeal forms -- of a hundred per thousand per annum in organizations say of 10,000 or thereabouts might be an indication. That would mean that you would have 20 cases per week in a group of 10,000. If you had a situation like that and you could see that this was spreading within the command, I would give serious consideration to immunization. However, if you have a very small group, say, 1,000 or less, you might want to step up that required incidence to say 200 per 1,000 -- that would be four cases per week in a group of 1,000, or again, even enlarging your organization to say 20,000 you might want to be a little more conservative.

In many instances the admission rates probably won't help you very much and again you have to rely upon whatever it is that an epidemiologist relies on to determine whether the disease is spreading in the Command or whether it isn't. It is pretty nebulous and probably this isn't very helpful.

One word about passive immunization against diphtheria. It is extremely difficult to visualize a situation in which passive immunization, using diphtheria antitoxin for protection, is indicated. I can not think of any offhand. Remember, the duration, again, is two to three weeks only. There is always danger of serum sickness. It is indicated very, very seldom, I am sure.

There are certain other methods for diphtheria control. I would like to emphasize one thing. We all know the importance of physical inspection, early treatment and isolation of all communicable diseases, including diphtheria. I would like to emphasize that cutaneous diphtheria must be treated exactly the same way in that respect as naso-pharyngal diphtheria. There has been one instance, for example, where cases of cutaneous diphtheria were admitted to a hospital skin ward with resulting secondary cases among other patients on the ward.

Major Tucker is with us from the Ninth Service Command and I hope that he will give us the benefit of some of his experiences on the West Coast where some of these cutaneous diphtheria cases have been coming in from the Pacific. It is extremely important to maintain this physical inspection for at least five days after the date of the last contact. Certainly close contacts should be excluded from food handling, if possible, until it can be shown that they are not carrying organisms.

The treatment of diphtheria carriers has always been an extremely difficult problem to deal with. It is just the same today as always. We have one small hope coming up on the horizon and that is penicillin. Before I mention it further I would like to emphasize again, I am sure unnecessarily but because I am never able to talk about diphtheria carriers without emphasizing it. Antitoxin is of absolutely no value in the treatment of diphtheria carriers and should not be used as such.

We have a very limited experience with the use of penicillin in the treatment of diphtheria carriers. I bring it up because of the fact that our experience is so limited that we are anxious to learn of other experiences. We know that the diphtheria organism is sensitive in vitro to penicillin though less perhaps than some other organisms.

We have been able to collect a series of 24 carriers treated with penicillin, some systemically and some locally. There is nothing consistent about the dosage, nothing much consistent about the method. I mention it to bring up a discussion and to ask that if you have any further experience or hear of any, it will be forwarded so that it can be made available to all concerned. Maybe with that we can find out whether penicillin is good for this purpose or not. Of these 24 carriers, results indicated that there were repeated negative cultures in 19. Now, the duration of this negative state is not known.

Of one group of 16 carriers, nine were kept as controls. They were given saline gargles and of those four became negative spontaneously. That is the weak point in the whole thing. Five remained positive for 16 to 21 days, than were treated with penicillin locally, using nose drops which contained 500 units of penicillin per c. c. They then became negative. Of the seven treated all became negative after five days of treatment.

On the surface that particular study looks pretty good but don't forget we were over enthusiastic about gentian violet and other things. Perhaps penicillin will be the answer. I am putting up a plea for further information.

One problem has arisen, and that is the return of troops with cutaneous diphtheria and other types of diphtheria from overseas. It has been handled very well I would like to congratulate the people on the West Coast, who handled it. It is very important that the post to which incoming troops are to go be notified of the presence of cases among the group returning. This is particularly important with respect to groups returning overseas because those people fan out very rapidly, as you know.

Also, the post should be told of the existence of cutaneous diphtheria among groups returning. This, of course, means the notification of the reception stations to which these groups are going. The one incident that has occurred worked out very favorable. A group came in to San Francisco, I believe, and they very quickly and properly notified all the reception stations to which these people were going. The reception stations then could pick up the physical inspection of contacts where it left off aboard ship. Here is the place where it may be necessary to deviate from the general policy that has developed over the last two or three years, namely the discouragement of working quarantine. As you know the value of quarantine has been largely discounted in the prevention and control of disease. We feel it is not very effective. At the reception stations, however, it is a slightly different situation and it might, under certain circumstances, be desirable to detain these people for a few days so that the physical inspection and the picking out of any new cases could be accomplished. In other words, it is better to hold them there a few extra days than to let them go home in the incubation period of diphtheria.

One minute and I am through. I just want to mention the fact that there is now a new immunization register. You all know that the old Form 81 and the method of handling it have over the past years become rather unsatisfactory. We feel now that both have been improved, both the form and the method of handling. The new form is the immunization register and other medical data, and the new number is W.D. A.G.O. Form 8-117. I have copies of this register and they will be available for you later this afternoon. Instructions for use of this register, the method of handling the entries, and so forth,

are given in War Department Circular 32, dated 27 January 1945. I also have a copy of that for you.

The important points of difference between new and old forms and the new method of handling are briefly as follows: Now each individual, enlisted man and officer, will be given a copy of the immunization register. All new personnel will be given a copy of the new form and beginning right now, authorized by this War Department circular, all others, all enlisted personnel, are to be given a copy of their 81, which is now filed with the service record.

The duplicate of the form for the enlisted men will be filed with the service record and for officers, the duplicate will be filed with the Form 66-1 - 66-2 - or 66-3. That is the departure. There will be no copies retained with the records of the station of which the immunization is done. No other entries will be made in the service record. They will be made on the form and that will be filed with the service record.

Here is something that will take a load off the medical officer. The personnel officer, (unit administrative officer) is responsible for initiation of this record for officers as well as enlisted personnel, for maintaining complete copies and issuing duplicates in case of loss. After you have a chance to look over this record this afternoon, and the War Department circular, if you have any specific questions there will be some one of us here who will try very hard to answer your questions. If we can't answer it we will try and find someone who can.

GENERAL BAYNE-JONES: The whole diphtheria question is open for discussion. Do you want to say something about diphtheria?

MAJOR TUCKER: (Letterman General Hospital, Ninth Service Command, San Francisco, Calif.): General Bayne-Jones, Col. Long, and fellow officers: I would like to take about five minutes to support what Col. Long has said about diphtheria in general and tell you about some of our experiences at Letterman General Hospital with the increase in diphtheria cases that came on in September of 1944 and has continued up to the present tiem.

I think most doctors become bored when they hear some other doctor talking about his own cases but I think you will find that the situation is one that presented a problem we knew very little about and from which we have learned many interesting facts, if not the final facts.

In September of 1944, having seen no cases of diphtheria but one in three and half or four years, four cases of diphtheria appeared in the Command at Letterman General Hospital. One was a nurse, one was a patient and two were enlisted men, all of whom worked or were housed in the same ward, the ward set aside for dermatology. At that time I could see that -- having seen all the cases -- the common denominator, at least with regard to place, was the dermatology ward, so naturally the next step of action suggested itself in going over to the dermatology ward and finding out if there were any more cases, or where this thing started.

The first thing we did was to take nose and throat cultures on all the remaining patients and personnel assigned to the dermatology section and were misled by a very peculiar thing. All of the nose and throat cultures were negative in 24 hours.

For the next four weeks no new cases arose and so it settled back into what I might call epidemiological comfort, and we said "this was probably just a sporadic thing. Perhaps one of the cases of the four was the original source." That brought us up to September 27, 1944, and no new cases came out and about October 15th we got two more cases, of diphtheria, in the same ward. These were both in-patients who had returned from overseas.

Within the next few weeks the diphtheria went up to between 12 and 15 and was scattered among patients who had returned from overseas and members of the Command. A first reaction was to go back to the wards, find out if there were any carriers and we got nose and throat cultures on everybody in sight and found that about twenty-six now had positive nose and throat cultures but that of the 26 positive nose and throat cultures, approximately 35 per cent did not show up positive until 48 hours had gone by. That was something that we couldn't understand because our past medical school training had seemed to suggest that the media will show whether you have diphtheria from 18 to 24 hours or you just haven't got diphtheria.

Cases kept coming in then and we traced them directly to patients arriving from overseas. We had all sorts of cases, nasal diphtheria, naso-pharyngeal diphtheria, and one case an officer with nasal diphtheria, two small ulcers in the inguinal region, from which we also cultured diphtheria bacilli. We went back over to the ward every day and tried to find out where these cases were coming from, because practically all of them arrived with the diagnosis of dermatitis from overseas and for that reason had gotten over to the dermatology service.

One afternoon walking through the ward I noticed dessicated skin on the floor mixed with dust. Many of the patients having severe exfoliative dermatitis, it kept the poor wardmen busy keeping the ward clean. I got some of this dust off the floor, mixed it, took it down to the laboratory and to our great surprise on a direct smear -- just shaking up some dust and skin in saline -- we found an overwhelming number of diphtheria bacilli.

That suggested a possibility that the diphtheria bacillus was being carried on the skin or at least since cases had been on this ward, that they had deposited the diphtheria bacilli on the floor in the wards. At that time we had no knowledge whatsoever about what was going on overseas or whether anyone was finding diphtheria cases anywhere else.

We got cultures from the skins of many soldiers returning with exfoliative dermatitis but were unsuccessful in finding this again. Whether it was due to the fact that the original finding had been just a contamination from a diphtheria patient, a pharyngeal case or not, I don't know. The cases appeared in the Command with about the same regularity as they did with the ships arriving from overseas so it was brought to General Hillman's attention that this was getting out of control and it would be necessary, in our installation at least, to protect the Command and also to devise some means by which we could isolate the patients who came off the ships.

We had a conference and decided that the worst thing that we could do would be to take mass nose and throat cultures on the men returning from overseas. I had considerable difficulty in getting this idea across because having been in other diphtheria epidemics, I knew of the mess that you get into. You get so many positive nose and throat cultures that the more you culture the bigger it gets and the deeper you go and there is no end to it and you accomplish very little.

So leaving the nose and throat cultures as a method of finding new cases or carriers, we next decided we would like to know what the susceptibility rate was of the men returning from overseas. We did not know about the 45 per cent that Col. Long mentioned this morning, so in order to find out, I did 1,000 Schick tests on men coming back and that was done with controls. We read them at 48 hours and also at five days.

We had read somewhere in one of the Journals that at a prisoner of war camp there was an epidemic of diphtheria and they made the Schick survey but the statement was made that the results could be questioned because too many people had read the results so in order to make sure that that didn't happen at Letterman, my assistant and myself put on all the Schick tests and read them all so we had at least one common denominator. We found 28 per cent of the men returning from overseas as Schick positive. The series was complete at about November 1.

At the end of October or the first week in November the magazine "War Medicine" came out with an article by Lt. Col. Karelitz in which a similar series of a thousand Schick tests had been done, although he didn't state where it was and the results were 28.2 per cent and ours were 28 per cent. We felt that that was a pretty good check on what we were doing. I hope I am not taking too much time with this.

The next question was, "What to do with the positive, with the patients coming in from overseas who we knew were exposed somewhere on the ship to diphtheria, if 28 per cent were Schick positive. We decided that in order to give the maximum protection, when a patient arrived with diphtheria he should be immediately isolated. It might not be known for the first 24 hours or the first 48 hours, but as soon as it was found he was immediately isolated. Then all the patients who had been in contact with him were given a tenth of a CC of toxoid subcutaneously. We felt in that way we could boost the latent immunity of the percentage of positives who were Schick positive but still had immunity and that those few who we would miss, who had no immunity whatsoever, would be small enough to be easily recognized if the case came up or were to be controlled.

Since most of the ships that came were Navy ships, we had a little difficulty in stimulating interest in diphtheria amongst the personnel involved on the Navy transports but this was finally accomplished by a joint meeting between Admiral Hunt of the Twelfth Naval District and General Hillman, Commanding Officer of Letterman General Hospital, and following that all the transports' surgeons were instructed with regard to watching for cases and also concerning proper treatment. Our big problem, you see, was getting cases that had developed diphtheria on the ships but either no one paid any attention to it or they were treated inadequately.

The last thing, in closing, was with regard to the immunization of the Command. It was General Hillman's wish that everyone in the Command be immunized who was found to be Schick positive. We found quite a large percentage of our nurses, Red Cross workers and personnel were Schick positive and about three weeks ago we started immunizing them and we ran into the very difficult situation which Col. Long mentioned. I know one group of medical officers, in which there were about 35 who were Schick positive. Within 48 hours I had 15 with reactions greater than 6 centimeters, that is, induration and edema. Two of them were off duty for at least two days and all I kept writing on the little chart was "discontinued, discontinued, discontinued."

About two or three got no reaction from one-tenth of a cc of toxoid but did get a severe reaction following a first dose of a half cc. subcutaneously but we planned to go right through with it to the end and find out how many of them we could immunize, how many would complete the course and we felt that the general level would go high enough so that at least our Command would be protected in view of new cases arriving from overseas. Thank you very much.

GENERAL BAYNE-JONES: Thank you, Major Tucker. There is a lot of interest in this cutaneous diphtheria from Burma and New Guinea. I think we are probably going to have some returning from Europe with it on with, at least, diphtheria problems back of them.

One thing that Col. Ravdin told me about the men that had cutaneous diphtheria in Burma was that many of them are Schick negative. This cutaneous diphtheria is accompanied by all of the usual severe reactions, neuritis, cardiac trouble. It has decreased very much over there and it is not much of a problem in Burma at the time.

A very interesting observation was made by Major Tucker, that of finding the diphtheria bacilli on the floor. It goes back to the observation of Britonneau of Tours who described diphtheria of the feet in ward attendants.

COLONEL JOHN MINOR: (Medical Consultant for the Third Service Command): I just wanted to mention one example which occurred in our command with regard to diphtheria which might be called a horrible example and illustrates some of the things of which Colonel Long spoke.

In brief, one of our stations reported, on a visit, that there were two cases of diphtheria in the hospital. They were not seen at that time but it was reported a couple of days later that there were six or seven cases. I was away for about a week and when I returned, having asked the officers to report to the command if they had further cases that had been done. There was a report that there were 26 cases of diphtheria on that post.

I launched an investigation at once and saw the following situation: They had all of these cases of so-called diphtheria isolated in a ward with the exception of about three or four cases which were obvious cases of streptococcal infection. I should say that none of the cases had been critically ill. They had slight fevers. They had had some throat trouble and that was all. The diagnoses had been made in the beginning by cultures and then they got excited, apparently, and started making diagnoses on smears from the throat and immediately instituting the giving of antitoxin in very considerable doses.

I have never seen so much serum sickness in one group in my life. There were really plenty of them. As I say, at least four or five of the cases were perfectly obvious streptococcal infections, so it was a combination of bad bacteriology, bad clinical judgment and certainly most of all the administration of antitoxin and I simply wanted to bring it out as an example of what can occur.

GENERAL BAYNE-JONES: I don't suppose any other laboratory is doint it but I have known of one that put penicillin in culture media to hold down the growth of organisms such as streptococci so that the diphtheria organisms would grow out.

COLONEL MINOR: That was done in two cases in this particular instance.

GENERAL BAYNE-JONES: It is not a good restraining medium, just to get a pure culture of diphtheria bacilli.

COLONEL MARSH: (Headquarters, Second Service Command): I would like ask Colonel Long about the experience in the control of diphtheria carriers by x-ray. One of my very close friends is the commanding officer in the New York Dispensary. In civil life he is a very experienced and competent x-ray man. He has treated cases of diphtheria carriers with x-ray during the past twenty-odd years and all but one recovered within eight days.

GENERAL BAYNE-JONES: How does he apply the x-ray, Colonel Marsh?

COLONEL MARSH: His technique is beyond my comprehension. He said that many were completed with only one treatment, the rest with two and one exception required four treatments. Of course, there is no control series but 50 cases and cures in all with two treatments sounds pretty good.

GENERAL BAYNE-JONES: Was the idea that of getting rid of adenoid and tonsil tissue?

COLONEL MARSH: Yes.

COLONEL BANTON: (Headquarters, Fourth Service Command). We have had a good bit of a mild type of diphtheria among German prisoners of war. That has not worried us any but I would like to know for my information whether there are any troops in Europe that are likely to come back with gravis diphtheria.

GENERAL BAYNE-JONES: Colonel Long?

COLONEL LONG: I have taken several notes. Maybe I can cover a number of these questions at one time.

GENERAL BAYNE-JONES: All right. We will collect the questions then.

COLONEL CARROLL: (Headquarters, First Service Command): I want to make one remark about the diphtheria carriers among German prisoners, particularly those that were captured after the Normandy invasion. It was thought that they might represent what we could expect to find among carriers in general from Western Europe. At Fort Devens we have cultured on routine cultures media. with the bacteriology being done at Harvard Medical School, so that that was a constant factor. We found a marked increase in the diphtheria carriers but the virulence test using laboratory methods indicated that three-quarters of the cases were avirnlent.

GENERAL BAYNE-JONES: Colonel Lee, did you see some of these cases?

COLONEL LEE: (Office of The Air Surgeon). No.

GENERAL BAYNE-JONES: Colonel Council?

COLONEL COUNCIL: (Headquarters, Ninth Service Command Laboratory). We had in the beginning an occasional case and the impression was that these were brought up to us from Australia. There was not very much definitive work on it. In other words, there was just one case or two a month. There was no group epidemic at the time that I left and they were largely in men who had been down to Australia. I understand since I have left that there have been some more cases reported but I do not have definite data on it.

GENERAL BAYNE- JONES: Colonel Long, will you conclude?

COLONEL LONG: Major Tucker brought up one point that I did slide over and that is the importance of making certain in attendants of cases of diphtheria that those people are immune. I believe that in attendants in hospitals a person should not be allowed to care for a diphtheria case unless he is immune. I think that we will keep away from a good bit of trouble in that way.

The measure of the severity of reactions, as a guide to whether or not to continue diphtheria immunization, is extremely difficult. I think you will find in TB Med. 114, which is the latest publication covering immunizations -- and I will have a copy of that for you this afternoon, too, you may all have seen it -- you have seen the guide, "local reaction not greater than 6 centimeters and general reaction not greater than 101 degrees fever."

Again, those are just guides and it is extremely difficult to know when to stop immunizing them and when to carry on. There is in process now a technical bulletin on cutaneous diphtheria, which I hope will be out soon. It was written by the Medical Consultants Division largely. We assisted in a small section on control. I think you will be disappointed when you try to find out how to control cutaneous diphtheria from this bulletin because it is not there. We don't know how to control cutaneous diphtheria. We have tried to indicate something about the method of prevention of the spread of diphtheria from patient to patient.

You mentioned the treatment of carriers. One of the things that is normally done in diphtheria carriers is removal of tonsils and adenoids after a period of time and clearing up the nasal tract does seem to be of help in a certain number of cases.

Colonel Banton, I don't know about the incidence of gravis diphtheria in Europe. I don't believe it is on the increase. There is a point that I think might be cleared up, as far as I can clear it up and that is the difference between gravis, intermedius and mitis diphtheria. People will often say, "Will the antitoxin that we have available treat adequately cases of gravis or intermedius diphtheria?". Will the toxoid that we have available prevent cases of gravis and intermedius?".

The answer to those questions is, I think, "Yes". There has been no serological or immunizational difference demonstrated among these various types of diphtheria. In some cases the antitoxin does not have the apparent effect that it does in other cases. I don't know the reason but it is not a serological or immunological reason. It may be that the cases are so rapidly developing that the intermedius, and particularly the gravis, may be more of an invasive organism and is a better toxin former either in the nose or throat. You get a toxic reaction quicker than with the others. I would like to emphasize that as far as toxoids are concerned and the antitoxin, as far as I

know -- if I am wrong I will have to be corrected -- as far as I know there is no serological or immulogical difference.

That is a tough question on when to do virulence tests. I don't know what you have in mind. Perhaps it is whether you should decide to treat or not, based on virulence tests.

COLONEL MINOR: Something along that line.

COLONEL LONG: One can get into a tremendous discussion on that question. I would like to say, very briefly, that I believe that it is not fair to the patient to withhold treatment pending a virulence test. I believe that treatment -- I am way out of my field here, General Bayne-Jones -- I believe the treatment should be afforded the patient when, in the clinical judgment of the physician seeing him, it is clinical diphtheria. There are many instances where the patient should be given treatment on that and that alone. If that can be backed up by a laboratory which says "There are organisms consistent with Corynebacterium diphtheriae," so much the better. It may be that you are justified in waiting for a virulence test but I question it.

The carrier study question is something else. As Major Tucker brought out, it is an extremely difficult one. I was going to talk a little bit more about carriers, when you should do carrier studies, and so forth. There isn't time, but I will tell you I fully agree with Major Tucker that in a given situation one of the worst things that you can do, many times, is to go all out in a wide carrier-survey. There are certain instances where you will want to determine carriers but I think that the decision should be done carefully. You should do carrier studies on the contacts, those who are food handlers, on those people from which the epidemic might be spreading, but to go into an over-all, mass carrier-survey, very frequently o exactly the same thing happens that Major Tucker mentioned. You get in deeper and deeper and don't come up with any sort of an answer. That, I think, is about all I have to add.

GENERAL BAYNE-JONES: We will meet again at 1:30. (Recess at 12:25 o"clock p. m. to 1:30 o'clock p.m.)

AFTERNOON SESSION - 14 FEBRUARY 1945

The conference resumed at 1:30 o'clock p.m., pursuant to recess, Brigadier General S. Bayne-Jones, USA, Chairman.

GENERAL BAYNE-JONES: Gentlemen, we will now take up the afternoon session with the fine opportunity of hearing a talk on immunization and triple-typhoid vaccine by Colonel George R. Callendar, Director of the Army Medical School who can speak to us from a very full knowledge, much of which he created himself.

ADDRESS OF COL. GEORGE R. CALLENDAR, DIRECTOR OF ARMY MEDICAL SCHOOL -- IMMUNIZATION - TRIPLE-TYPHOID VACCINE.

COLONEL CALLENDAR: General Bayne-Jones and gentlemen: Just a word about the history and the development of our present typhoid vaccine.

Typhoid vaccine was first used to immunize British troops during the Boer war. It was utilized during a very high incidence of the disease there and the results were not encouraging. Russell, of our Corps, however, felt that something had been accomplished there and went to England, coming back with the cultures used by the British in South Africa. He experimented from 1908 through to 1910, using the Army Medical School personnel for guinea pigs and felt that he had definitely proved, using the agglutination tests, that he had something which would protect in all probability.

In 1910 he recommended that it be given to the entire Army, knowing that a mobilization was to occur in 1911. His recommendation rested in the Adjutant General's hold basket until finally Colonel Kean went to General Wood, who was Chief of Staff and a medical officer, as you know, and wanted to know what had become of that recommendation.

General Wood had not seen it. He found it, however, in fifteen minutes, in the Adjutant General's "hold" basket, O.K.'d it, the Army was immunized and we didn't have any typhoid fever to amount to anything in that mobilization.

In 1916 we had another mobilization on the Mexican Border. We had a sharp epidemic of diarrheal disease, including both types of dysentery, quite a jump in typhoid fever and some 410 cases of paratyphoid A, that organism not having been included in the vaccine at that time. There were a few of para B.

Reports from France at this particular time indicated a considerable incidence of "A," in other armies, which had been immunized with typhoid alone, so para "A" and "B" were added to the vaccine, which was used in the last war. We had a considerable incidence of typhoid in France, especially, where men were drinking out of shell holes and other places and sanitation went more or less to the dogs, as one might say, especially in No-man's land.

Following that war a great deal of work was done and particularly between 1925 and 1935 the controversy arose as to the antigenicity of given strains of the typhoid organism. It started in England where they found the old Rawlings strain was part smooth and part rough. They tried certain other strains and also rejuvenated the Rawlings strain.

Over in this country the most important paper of the early period claimed you got just exactly the same immunization from the rough strain as you did from the smooth. Finally Colonel Siler, working at the Army

Medical School, examined a large number of strains from all over the world of Eberthella typhosa and found that the smooth strains that he had were definitely more antigenic than were the rough and came out with the famous 58 strain or the Boxhill strain from a carrier in Panama which we are still using. After the start of this World War we found that this strain, also, had Vi antigenic content. The Vi antigen is the one that prevents invasiveness as far as the typhoid bacillus is concerned.

With the beginning of this war, selecting strains by the same method Siler used, we added "A" and "B". For, while we had little "A" and "B" experience over the ten years preceding 1917, we did know that they existed in certain countries where our troops would probably go. These then were added and the content of the vaccine increased by 250 million of each A and B, the Eberthella typhosa content being 1000 million.

For this war paratyphoid "C", belonging to the hog cholera group, was considered but no worth-while reports of its presence could be determined nor is there a single authenticated case of para "C" on the records, as far as I know. S.cholera sius organisms have been reported as paratyphoid C but these have all been actually food poisoning and were not typhoid fever. The British Army does not use "C". The British Navy does.

The only high incidence during this emergency period that I know of occurred in the Belgian Congo and troops there had the "C", added after having a considerable incidence of the paratyphoid "C".

With relation to the "Vi" antigen recent work indicates that it may be obtained from other organisms. Salmonella ballerup for example, has a higher content of Vi that Eberthella typhosa and will protect almost equally well as our own strain against invasiveness of this organism but not against its toxicity. A paracolon, recently discovered, will protect against the invasiveness of Eberthella typhosa better than Eberthella typhosa will protect against itself.

That, in brief, is the vaccine that we are using now. The method of immunization, three shots, a half, one and one, cc was developed originally by Russell on the basis of the agglutinin response in rabbits and in man. Recently we have tried the booster shot and that has been one of the biggest things in the protection against typhoid because while your original immunization may give you protection against 1000 minimal lethal doses, wait a year, six months or a little longer and give a booster shot of either a tenth cc. intracutaneously or a half c. subcutaneously and the former thousand is apt to go up to 100,000 or at least to 10,000.

It seems to make little difference how long it has been since your last immunization. In my own case, for example, there was only protection against eight minimal lethal doses. After the booster shot subcutaneously there were 10,000 and that is an ordinary response. As a matter of fact, in all of our immunizations, the booster shot appears to give a higher protection than the original immunization and that is especially true in the typhus fever group.

We have had a certain amount of typhoid. In the North African campaign before we went to Italy, there were a number of cases where untreated water was used by hospitals and line organizations, a breakdown of sanitation.

In Sicily we had our first experience with "A" where the preponderating number of cases in that little outbreak were due to paratyphoid "A."

Here, again, it was eating and drinking things which should not have been eaten and drank. One point that has been emphasized occasionally abroad, first from India, was the question "Shouldn't we use the local strains of the organism, instead of depending upon some born and bred in the United States?" We have examined numerous vaccines. The Indian vaccine was an excellent one, of large content and high "kick". It was not particularly popular for that particular reason. They included a certain number of organisms of the Rawlings strain and a very excellent Vi containing strain and relatively large numbers of para "A" and para "B."

It was not any more effective than our vaccine in producing immunity. It was a perfectly good vaccine to use except that I think ours has kick enough as it is. Various experiments are going on now to see if you can change the immunization to give a little bit less difficulty. Actually, you can use intradermal immunization, wait a year, give a booster shot and probably get approximately as high an immunity as you would with the original immunization, as we give it at present. However, if a man has to move out before that time, into uninspected areas, he is not as protected. Intradermal for primary utilization is not the equal of the other. Change in the present methods of immunization, so that it can be done at intervals of from seven to twenty-eight days, is of administrative value and there is every indication that the amount of immunity is at least as high with this long interval as it would be with the seven to ten day interval, which we have used for so long.

I have a few slides which may be of interest. This first slide shows some past wars. I particularly call your attention to the Boer War in the British Army. You notice they had 57,684 cases. Compare that with the Spanish American war, which is our worst war so far as typhoid is concerned. That is 20,738.

Here is a group of figures showing the result of 1911 vaccinations. In the Spanish war, you see, we had in one camp 1,729 certain cases and probable 2,693. After the vaccination in 1911 with approximately the same number of personnel we essentially had no typhoid at all. In 1914 this experience was repeated.

In the third slide, we compare the First World War with the second. I may say that these are figures which were more or less estimate but are approximately correct. With a strength 678,000 in 1917, we had a total of 317 typhoid and paratyphoid with a strength for 1941 of 1-1/2 million, 27 and in 1942, 76.

The indications are that we have gone up to about 0.045 in 1943 or double the rate for 1942 but as we will see in another figure, it is way below the incidence we had in 1917 and 1918. I believe that is to be laid, very largely, to greater antigenicity of the organisms being used.

This slide shows a comparison of typhoid and diarrheal diseases. From 1917 to 1918, the period of the war, we have an average of 1-1/2 million strength and the admissions were 1,742. The diarrheal diseases were 92,612. That is about the expected ratio between the groups with the vaccination protection of our former vaccine. In 1940 we had a very definite increase in the diarrheal diseases which continues on to 1941. There was some improvement in 1942 as a later slide will show. Typhoid, however, has been negligible.

The next chart. This chart on semilogarithmic paper shows the jump in 1916. That does not include, however, the paratyphoids but only the typhoids in that group. From 1920, paratyphoid is included. The

jump in the typhoid rates for 1943 is from a little below 2, as you see it on this, to 0.045, or this position (indicating.) That represents a relatively small number of cases compared to the 1917-1918 for our strength is somewhere in the vicinity of 8,000,000.

Next slide: Here is a comparison of typhoid and diarrheal disease rates. Note the diarrheal diseases 1941 practically to the level of 1905. It does not look as though our field sanitation had improved and these rates are for troops in the United States, because we didn't have anybody abroad in 1941.

The typhoid rates show the complete typhoid with the paratyphoid added, so that in 1916 the whole group of enteric diseases is way back at the level before vaccination, if we count the paratyphoid as well as the typhoid. That sharp jump around 1921 is due to only 22 cases in a very small army. The other figures over here to the right are way down. You notice they are almost 100 times lower than they were in the preceding war. The jump, as I said, is from .02 to .045 for the year 1943, during the time that we had those cases in North Africa and the paratyphoid in Sicily and Italy.

Slide: This is just to show you the antigenic or somatic antigens that we are using. There is a cross protection between the members of this particular group and between these groups and a number of other Salmonellae. S. hirschfeldii has no common antigenic components of the somatic type with the rest of the organisms so that if it did occur we definitely would have no protection against this organism.

Next slide: This is the only controlled protection test that I am aware of, for the typhoid vaccine. The vaccine was used in 1917 and the outbreak occurred in Hawaii. The water supply for Schofield Barracks came from the north fork of the river. It is a sort of a hillside up here and the south fork is considerably lower. That was a badly contaminated water but in cases of drouth this pumping station pumped from the south fork into the main supply. It was not supposed to be used unless the post was warned and all water boiled.

The officers of the cavalry unit had been boiling their water in the officers' homes on the recommendation of the surgeon because he felt that the chances of contamination were good and a lot of diarrhea made him spend too much time on the line. The troops were, of course, all protected and most of the officer families were at the same time.

Down here we had 800 laborers who were Japanese and Koreans and drank mostly tea and not too much water. After a drouth, a heavy rain washed the contents of one of these privies down into the south fork while they were pumping from here. A man had gone up to convalesce from typhoid and we eventually found him still in the carrier state. Ten days following the appearance of muddy water in the bathrooms at the post, there was an outbreak of approximately fifty cases of typhoid among the 4,000 immunized persons and approximately 50 among the 800 non-immunized persons, a relative proportion of one to five or an 80 per cent protection, whichever way you want to put it. There were seven who died in the non-immunized group and three died in the immunized group.

The vaccine was Rawlings strain with a fairly good B and a rather poor A. I may say that we have had more A abroad than we have had B. Our A is the poorest of the group of three organisms. That is, it is not as antigenic as one would wish, although it is the best one that we have been able to find in some five or six years searching throughout the world. Thank you. (Applause.)

GENERAL BAYNE-JONES: I know Colonel Callendar would like to discuss this with you. Any questions that anyone wants to ask? Captain Sartwell, wasn't there some typhoid in Italy this last winter?

CAPTAIN SARTWELL: Yes, sir.

GENERAL BAYNE-JONES: Anything peculiar about it?

CAPTAIN SARTWELL: I think it was the water supply.

GENERAL BAYNE-JONES: I think you are impressed by seeing what Col. Callendar has said and he can extend it further. I think that I will be backed up by the statistician in saying that there has been an enormous number of cases of diarrheal disease in North Africa and all through the Southwest Pacific area and relatively much less typhoid than you would expect.

COLONEL CALLENDAR: There is only one thing that I might say about that and this is pure theory. A man first gets his organism which he passes on from civil life, let us say. He is protected against typhoid so he doesn't pick up typhoid and does not contaminate his own latrines. That is just a theory. It may be worth while. What do you think of that, General?

GENERAL BAYNE-JONES: I will get some of these statisticians. I think it is reasonable, Colonel Callendar.

COLONEL CALLENDAR: It is the only explanation that I have got.

COLONEL LONG: We have adopted the use of a half c.c. subcutaneous does or the booster dose. Everyone is aware of the fact that the Navy is using the tenth cc. dose intracutaneously. There are various reasons for the Army in adopting the half c.c. subcutaneous. One of the reasons was and I think one of the most important is that in giving vaccines to a large number of people as they are filing by and giving them the vaccine, you can be sure of getting a half c.c. under the skin much better than you can of getting a tenth into the skin.

I should like Colonel Callendar to give us an idea of the relative effectiveness of those two methods because I am sure that all of you are asked that question. Why is a half c.c. under the skin as good as a tenth in the skin?

COLONEL CALLENDAR: The figures published by Leopold, Longfellow and Luippold showed that the booster dose, intracutaneously, was just as effective in a tenth c.c. as a half c.c. subcutaneously. There was no advantage one way or another, but when you line up a group, you are going to give a lot of 1/10th c.c.'s subcutaneously and then it is not as effective.

COLONEL LONG: I wanted Colonel Callendar to bring out that point because I am sure all of these gentlemen are asked that.

COLONEL CALLENDAR: I think you might reserve that tenth c.c. intracutaneously for the hypersensitive individual.

COLONEL NORTON: I would like to ask Col. Callendar for a comparison of the reaction from one-half c.c. and the one-tenth c.c. My personal experience was that I got a worse local reaction from the one-tenth intradermally than I did from the one-half subcutaneously.

COLONEL CALLENDAR: That was my experience but I think that on the whole, in the hypersensitive individual, the one who gets an arm that is markedly swollen you can sometimes give a tenth c.c. and get by with it. You may have a bad reaction but I prefer the subcutaneous for myself.

Over in Hawaii they vaccinated the whole population as soon as we could get vaccine to them after Pearl Harbor. As near as I could make out over 50 per cent were intracutaneous vaccinations, primaries, and they had a considerable number of cases, perhaps one in three or four thousand, that had a residual left in the skin, a foreign body like reaction. Just what the cause of that was we don't know but it did occur. There were some of them inspected and in the only one I have seen, I found a very small bit of material that would go through a very fine needle.

GENERAL BAYNE-JONES: I know a one-star general who has been rather strongly against the intracutaneous injection, but took it prior to his last trip. He was showing us his arm about every day. It seemed to me the reaction produced was a large red spot that gave him some discomfort.

COLONEL CALLENDAR: That little place in the skin will last longer than the reaction to the subcutaneous injection.

GENERAL BAYNE-JONES: Thank you very much, Colonel. As a continuation from the epidemiology, we now have a series of topics to be discussed by Captain Philip Sartwell on Infectious disease control, sulfadiazine prophylaxis -- Reporting and investigation of communicable disease cases and outbreaks -- Administrative procedures in the control of certain diseases. You have an hour, Captain, but if you will do as Colonel Long did and give us an opportunity to talk to you before the end of it we will appreciate it. Captain Sartwell.

INFECTIOUS DISEASE CONTROL. SULFADIAZINE PROPHYLAXIS -- REPORTING AND INVESTIGATION OF COMMUNICABLE DISEASE CASES AND OUTBREAKS -- ADMINISTRATIVE PROCEDURES IN THE CONTROL OF CERTAIN DISEASES.

CAPTAIN PHILIP E. SARTWELL, MC, EPIDEMIOLOGY DIVISION.

CAPTAIN SARTWELL: General Bayne-Jones and fellow officers: If Col. Long was in a predicament this morning, I am in a worse one now because from the little list of subjects that General Bayne-Jones has reeled off, it is obviously impossible to cover them, except in a superficial way. I think that you all received -- at least until the supply ran out -- these directives and technical bulletins. They refer to both the subjects covered this morning and some of those that I am going to take up.

My assignment this afternoon is to continue the discussion begun by Col. Long this morning on matters in which the Epidemiology Division, Preventive Medicine Service, has primary interest. An attempt will be made to sketch the background of certain directives which this Division has initiated and to emphasize a few points that may not be entirely clear. Some of the routine activities in connection with reporting and investigation of communicable diseases will also be considered. Because of the number of topics suggested for discussion at this meeting by various Commands, in response to our request, I am sure it would be best to make the formal presentation brief in anticipation of a considerable amount of discussion.

It will also have to be rather disconnected as there are several unrelated matters to be covered. First, I should like to make a few observations concerning the prophylactic use of sulfadiazine. There are in the audience those who are recognized experts on this subject and I am not going to do more than touch on certain administrative phases chiefly.

As you all know, a larger amount of work has been done on this subject beginning in the winter of 1942-1943 by both the Navy and the Army. The Army Air Forces Research Program has been particularly energetic and the Army Epidemiological Board has made a definite contribution. Two SGO directives have appeared, the first being a circular letter in the fall of 1943 dealing with prophylaxis against meningitis only and the second a TB Med published 1 November 1944, which recommends its use also against streptococcal and other respiratory diseases.

Fortunately, the incidence of all these diseases this winter has been remarkably low so that few stations have had to use diazine. I believe the number is probably less than twelve.

Such work as has been done, however, seems to bear out previous belief in its efficacy and the very limited danger from reactions. There have been rumblings on the horizon, perhaps, that a state of sulfonamide resistance has been created in certain instances. I have not had an opportunity to see any of the data bearing on that point as yet.

Cultural studies indicate that the meningococcus is quite completely eliminated from the naso-pharynx by prophylactic doses while the streptococcus may continue to flourish in the throat in spite of streptococcal disease having been brought under control. It will be

noted that the present instructions provide for daily administration of one-half to one gram dosages over a period up to three weeks.

There is, however, at least one good indication for going back to the method recommended in the 1943 directive of giving a two or three-gram dose on one day only. This method is not mentioned in the present directive for reasons of simplification but it is not by any means prohibited.

This method would be desirable for a meningitis outbreak without undue prevalence of respiratory diseases in a relatively closed group, the classical example of which is aboard a transport. Here it is possible to reduce a meningococcus carrier prevalence quickly to a low point and since new personnel are not being brought into the group, the carrier prevalence should rise very slowly so that continued administration of the drug is unnecessary. The desired effect is attained with a smaller total dosage, thus conserving diazine and reducing the likelihood of reactions somewhat.

A few words about reporting the use of diazine. TB Med 112 contains instructions that when it is used a notation to that effect should be made on Form 86ab. This is because the SGO wishes to know how widely it is used and to continue to receive information as to its effectiveness. It would be helpful if preventive medicine officers of the various echelons called on to authorize diazine would remind station surgeons of this provision. An outbreak of any disease considered severe enough for diazine is severe enough, also, to be discussed in the Sanitary Report of the organization.

There has been some criticism of the indications for diazine set forth in TB Med 112. Granting at once that it is impossible to put down any hard and fast rule and that you have got to rely on epidemiological knowledge and sound judgment, it seemed wise to set up some kind of a guide to go by to suggest the general range of incidence rates that warrant consideration of this action. So far, it does not appear that there is any tendency to use it for insufficient reasons.

Diazine should not be lightly resorted to but it is after all the first really encouraging agent for the control of strep and meningococcal infections.

You are all familiar with the general demand in an epidemic situation to "do something." In the past that "something" has often been the imposition of complete or working quarantine of the unit, which usually does no good, and is very seldom indicated. With diazine perhaps those in authority will more often be content to stop short of working quarantine, since positive action is already being taken to satisfy these demands.

There appears to be some uncertainty about the reporting of special diseases by telegraphic means. With your permission I would like to go into that briefly. Since the time when telegraphic reporting of meningitis was stopped there have been no special requirements except those listed in AR 40-1080 which specifies that each case of yellow fever, epidemic typhus fever, encephalitis, poliomyelitis, cholera and plague should be reported to the Surgeon General and to the Service Command by telegram. All alarming and potentially serious epidemics of other diseases should be reported in the same way. That is left to the discretion of the station surgeon. Form 86ab is relied upon routinely for information about communicable disease prevalence. The Epidemiology Division maintains liaison with the office of the Air Surgeon and reports to it all significant data reported by telegram from air forces installations.

The reasons for needing the most prompt information possible on unusual epidemics are apparent to everyone. Direct personal investigations by the SGO are seldom made, but in certain instances, the Army Epidemiological Board decides to send workers to the post to aid in study of the outbreak and make suggestions for its control. Even when such action is not taken, it is obviously necessary for the SGO to know about these things.

One of the questions submitted for discussion concerned the coordination of reports of communicable diseases prevailing at a station when troops are transferred with special reference to staging areas. I am not quite sure what difficulties the individual making this suggestion had in mind and would welcome discussion of the point.

In 1943 numerous complaints were received that the directive asking for these reports was being misinterpreted and that all sorts of trivial situations were being reported, for instance, reports were being sent to Station B that gonorrhea was present at Station A. A War Department Circular was written to correct this and no further difficulties have been heard of. This circular was recently rescinded because the present AR 40-1080 covers the subject adequately.

It is not known how close a relation Preventive Medicine Officers of stations and higher echelons have with the personnel responsible for making up Form 86ab. Probably, however, they can accomplish a good deal toward the improvement of communicable disease reporting. When an unusual incidence of respiratory disease or diarrheal disease is reported on 86ab, experience has taught us to look first for an error in reporting since the epidemic is frequently just a statistical artifact. Changes in personnel in the registrar's office and issuance of new instructions on reporting make for trouble.

Among the most common errors is the reporting of cases confined to quarters for less than 24 hours or merely seen on sick-call in the dispensary. This, of course, makes the rates noncomparable with other stations.

A case of this sort arose this month when a large post, which really did have a lot of communicable disease, reported remarkably high rates, and a total communicable disease incidence in excess of the total admissions for all causes shown on the front of the form. Here the mistake had been made of counting dispensary cases in part 9 of Form 86ab.

Another common error is to report carriers as cases, and reactions to vaccination as cases of the disease against which vaccination was done. Since Preventive Medicine Officers are the chief users of the information on 86ab, they will be interested in making the reports as reliable as possible. In certain service commands the Monthly Medical Bulletins frequently carry reference to 86ab entries which should be very helpful.

There is opportunity for Preventive Medicine Officers to be of considerable assistance to post surgeons by advising on the best means of tabulating and charting communicable disease data. Many times one finds unnecessary work being done by computing rates for diseases which are occurring in too small numbers to make the rates significant. The solution here, of course, is to base the rates on longer time intervals or not to break down the organizations into such small components.

This should not be taken to mean that one should not bother to find out what organization, what barracks or what mess each case comes from. Such information is often highly important for the control of the disease.

I should like to outline the diseases and situations which at the present time are investigated from The Surgeon General's office. No doubt many of you have been mildly annoyed to receive requests for epidemiological reports on outbreaks of diarrheal disease. These requests have been made, however, with a definite purpose in mind. Realizing that in most instances adequate reports are already being rendered and that the requests entailed duplication of work, decision was made to await the Monthly Sanitary Report of the organization having the outbread before anything is done. If this contains a satisfactory description of the outbreak and control measures taken, no further report is asked for.

Specimens of blood and spinal fluid together with a clinical history as outlined in SGO Circular Letter 74, published in 1943, are requested in all cases of lymphoctic choriomeningitis and encephalitis. Specimens should be drawn, packaged and shipped as described in the Circular Letter and sent to the Division of Virus and Rickettsial Diseases, Army Medical School. In appropriate cases where frozen blood serum or spinal fluid from patients who are still febrile is received, it is possible to isolate the virus directly. More often, however, rise and fall in neutralising anti-bodies and complement fixation titers must be used as a diagnostic aid.

Colonel Harry Plotz, Director of the Virus and Rickettsial Division, has asked that publicity be given to the fact that specimens are not ordinarily desired on poliomyelitis cases since the Laboratory is not equipped to do virus isolations on the large numbers of specimens received. There is no serological procedure which is practical for general use in the diagnosis of poliomyelitis. There may be occasions when it is particularly important for epidemiological reasons to do virus isolations and in such cases we suggest direct communication with the Preventive Medicine Service, SGO.

For several years blood specimens have been requested by the Virus and Rickettsial Disease Laboratory from patients with rickettsial diseases, chiefly endemic typhus fever and Rocky Mountain spotted fever. This program is continuing and is adding a good deal to our knowledge of serological reactions in these diseases as well as being of service to the medical officers in making their diagnosis. Some service commands have, I believe, gone into the business of doing endemic typhus fever complement fixation tests, which is all to the good. It is still desired, however, that all stations submit specimens to the Army Medical School in addition to any examinations which are done locally.

We attempt to get sub-cultures from every case of typhoid and paratyphoid fever for confirmation and study at the Bacteriological Laboratory, Army Medical School, under the supervision of Colonel Callender. The importance of this in relation to the immunization program is obvious.

In this connection, since it is not set forth in any directive, it may be wise to indicate the present policy regarding disposition of typhoid carriers who, as you know, are to be reported to The Surgeon General after they have retained their carrier status for six months. If there are no other indications for discharge from the service, the carrier should have bile drainage to determine if he is a gall bladder carrier; if so, and if there are no medical contra-indications, cholecystectomy should be offered. If this is refused or if the individual is not a biliary carrier, he should be placed on limited service in the United States and prohibited from all food handling. Since very few typhoid carriers have been discovered, all cases to date have been handled on an individual basis.

Suggestions have been received that the manner of investigation of outbreaks of bacterial food poisoning can be considerably improved; from our observations, this is certainly true. One of you has suggested a proposed form to be used on such investigations and another has suggested that a directive be issued to serve as a guide. Each outbreak must be handled individually and it is not possible to set up in advance any rigid procedure that will apply to all, yet there is merit in a general plan which would be ready to be put into effect upon the first indication that an outbreak is under way. This should diminish the frequency of investigations which determine neither the offending food nor the responsible bacterial agent. It seems important to emphasize that the first step in an investigation is to secure samples of all foods served at the suspected meal before there is an opportunity to discard them; second, to take brief dietary histories from a sufficient number of patients to provide a clue; third, to find out as carefully as possible the exact method of preparation and storage of the suspected foods; fourth, to see that the laboratory has an opportunity to carry out a search for the Salmonella group of organisms and staphylococcus on the suspected foods, feces and vomitus.

There is one additional matter on which the Epidemiology Division has too little information and hopes to be informed by this group. We are interested in knowing how close a degree of cooperation is maintained in health matters with the Public Health Departments of states, counties, and local communities where stations are located. In particular, we are interested in knowing whether problems have risen over the reporting of communicable disease to civilian authorities and the application of civilian isolation and quarantine requirements on military posts.

The time remaining to me will be devoted to a very brief sketch of the current communicable disease incidence picture in the United States. There have been prepared two reviews on Morbidity of the Army in this country from disease and from the respiratory diseases. I have brought along copies of these two reports which anyone who is interested may look over. I do not have sufficient copies for distribution but they may be obtained if you will leave a request.

This winter, as mentioned before, the incidence of common respiratory diseases has been exceptionally low and the average rate for 1944 has been lower than any year since 1938. There seem to have been two phases of the war so far as its effect upon common communicable diseases is concerned. First, the period from 1940 to about 1943, which was characterized by a sharp increase above the peacetime incidence of respiratory diseases, pneumonia, diarrheal diseases, measles, mumps, scarlet fever, meningitis and other infectious diseases.

The second phase which we are now getting into is one of decline to pre-war levels or even lower for many of these diseases. There is no doubt that seasoning of troops is a major factor in this transition. There are other factors to be considered, however, such as the changes in housing conditions; there is perhaps less overcrowding existing now than earlier in the war; differences in the training program; and variations in the civilian incidence of these diseases.

Comparing the record for 1944 with that for 1943 there are certain outstanding differences between the military and civilian incidence of communicable conditions in this country. The civilian incidence of measles was much the same in both years while it declined sharply in the Army. Scarlet fever showed an increase in 1944 in the civilian population and declined in the Army.

Meningitis fell much more sharply in the Army than in the civilian population. The factor of sulfanomide prophylaxis may have played an important role in the case of scarlet fever and meningitis. Certainly the diminished relative number of recruits accounts for at least a part of the fall in meningitis since this disease shows the most striking concentration in newly inducted recruits.

Variations in these diseases by service commands have been marked and unaccountable. Respiratory diseases have consistently been high in the Fifth, Sixth and Seventh Service Commands. Scarlet fever has been outstandingly high in the Seventh and less so in the Sixth. Rheumatic fever has shown a similar pattern -- I am speaking in comparison of Service Commands over a period of several years.

Measles and mumps have tended to be high in the Fifth, Sixth and Seventh. The differences referred to were quite noticeable in 1942 and 1943 but were less well marked in 1944. A good deal of attention has been focused upon the high prevalence of streptococcal diseases and rheumatic fever in the Seventh Service Command, particularly in the States of Colorado and Wyoming; however, there is not time to go into this matter now.

Among the less common but potentially serious communicable diseases the following showed a decline in 1944 as compared with 1943: coccidioidomycosis; encephalitis; Rocky Mountain spotted fever; and tularemia. The decline in each of these conditions except encephalitis may be attributable to the smaller proportion of troops on maneuvers in this country last year and to the more adequate safeguards taken against them.

While the numbers are so small that not all of the changes are significant, increases were recorded in diphtheria, endemic typhus fever, paratyphoid fever, poliomyelitis and undulant fever. The increase in diphtheria may be attributable in part to a considerable number of cases occurring on the West Coast among troops just returned from the Pacific areas.

The endemic typhus fever increase is parallel to a similar increase among the civilian populations of the Southeastern and Gulf States which has been going on for some time. Typhus fever has not, however, become in the military population a disease of any real importance

While poliomyelitis increased over 1943, the increase was not nearly as marked as it was in the civilian population.

GENERAL BAYNE-JONES: Perhaps you have many questions. We might start in with sulfadiazine prophylaxis. Has anybody here had any experience with it under present regulations?

COLONEL TILLMAN: We had a respiratory epidemic in the replacement center, the armored forces replacement center which started the second week in December and the pattern, the first two weeks, was much like the great increase we had last year. It gave us about two weeks' warning and then up it went. In most of these cases, the rest of the post had a slight increase with the replacement center but mostly cases arose in the replacement center.

We charted the respiratories that entered the hospital on a chart for each battalion and each company and broke it down. From their flow chart in the replacement center, the time that a company filled and the time they were in the first, second and third week of training, we found it took about the third week in their training before these patients would reach the hospital so to apply this TB Med 112 we struck a line ac

across this chart that was mounting in certain battalions and gave one gram of sulfadiazine every day for five days.

That five days was taken as an arbitrary figure because the TB Med said if you got any results you are going to get it in three days and if you stayed below seven days you didn't have any reactions so we struck that figure and tried it out that way. The first group we gave to amounted to 4200 troops and the curve was beautiful. It went straight up. In this group the peak rate was 1200 per 1000 per year. In the third day after the sulfa it dropped off sharply to 200. We thought that was the answer to everything. That was fine.

Another group started up about that time and we tried to apply the same thing and taking into consideration this third week affair, we tried to lead one battalion and we picked one out in the second week just coming up to the third to see if we could not give them sulfa in the second week and stop this happening. They went to their third week and went straight on up. Now we are giving a third group sulfa and we changed from five days to ten days and this one battalion I tried to lead is getting the sulfa for the second time, because the first five days didn't work.

The second group of 3200 men, we got a very good response too on our line chart there but at the same time we had a few days of nice warm sunshiny weather and the whole post dropped off so there were other reasons to account for it rather than the sulfa but this affair continued on and started up again. We took this third group and tried to give it to them for ten days and see if that would make any particular difference.

There was a question of overcrowding. When this first started we went through the whole replacement training center and made a survey of the housing and so on and recommended that they go to 60 square feet. Of course, the Army Regulation said they only have to go to 50. We had difficulty there. Then we went back a week later and checked it again; they would have a hundred men in a 63 man barrack and as soon as it dropped off they wanted to crowd them back in again. That had some effect on the situation but the sulfa as far as we could find out, is up in the air.

There were so many different factors to take into consideration that except for the first group in which there was a sharp drop-off, when the rest of the camp was still climbing up, so that we couldn't make any definite conclusion.

COLONEL LEE: We have had a few experiences in the Air Forces with sulfa prophylaxis for various things. As a matter of fact, I think the first time it was ever tried extensively was the scarlet fever epidemic at Santa Ana in the late summer of 1942. We were running a hundred cases a day when we tried sulfonamide prophylaxis with rather spectacular results. The rate dropped to zero in 48 hours. At that time we had about 25,000 rather young recruits. They were all aviation cadets, newly mobilized and of course in the most susceptible period.

Since that time we have used it in a great many conditions. I have just received a report of the committee who investigated the sulfa prophylaxis in the Air Forces. I won't take your time for the details of that and if you will pardon me in being a little dogmatic, I can give you some of the conclusions which I think are valid but perhaps some of them are still open to question.

I think as far as meningococcus meningitis is concerned you can say without any possibility of successful contradiction that the results are 100 per cent. You can certainly stop meningococcus epidemics right now.

Some of you saw the meningitis in the first war; I saw it at Goat Island in San Francisco when they had 65 per cent mortality among the young naval recruits. As far as meningococcus is concerned, it is 100 per cent.

For the streptococcal groups, particularly scarlet fever, it is very good. I think if your bacteriological work is done, if you have the opportunities of checking the strain with which you are dealing for susceptibilities you can guarantee between 85 and 95 per cent protection against streptococcal infections of that type.

There are some strains, 17's, 18 and alpha strains, that are seemingly non susceptible to sulfa and have refractory qualities. That question I think is still open. We have not encountered that to any extent. The Navy has to a considerable degree.

As far as rheumatic fever itself is concerned it is also one of the subjects where there is some doubt. There are those who believe with pretty good figures that by keeping rheumatic fever patients constantly on a half gram a day of sulfadiazine year in and year out there will be very few recurrences. I think that still requires more observation and is not a settled matter yet.

In the matter of total respiratory diseases there seems to be no doubt that there is some effect. I just got yesterday the report from the Eighth Air Force in which they ran a very nice series of controls and experiments. They had 6,000 patients or 6,000 of their personnel on sulfa and about 5,400 off. The next period they had 6,000 in each group. The total respiratory diseases, you can't see this but here is where it started. They are even.

In the untreated cases their rate went up to about 2,300 and the other went down. At this point they stopped the sulfa and reversed it. The controls took it and those who had had it, stopped. Those two lines, as you can see, exactly crossed. The rate in the controls went up while in those taking the Army, it dropped. That was for total respiratory diseases. Respiratory disease was by no means abolished and the virus diseases were entirely unaffected by prophylaxis except in so far as the complications occur. The streptococcal complications of the common cold can be materially reduced by sulfa prophylaxis.

With detachments with a high degree of gonorrhea, we have made them take sulfa before they go on leave and after they come back. The results on that indicate that there is about 30 per cent of the gonorrhea controlled in the groups that take the sulfa prophylactically. They have about 30 per cent as much gonorrhea as those who don't. That is not finished. Curiously from this report of General Grow in the Eighth Air Force, his control group watches the gonorrhea at the same time, while it was given for experiment in respiratory diseases. They had about 25 per cent of the gonorrhea in the sulfa group as compared to the control group during the same period of time. That was just an incidental but beneficial effect they observed.

The way in which it is given for the gonorrhea for these Negro troops I don't think is very good. I think if it were applied quite strictly and over a longer period of time -- the ordinary procedure was to give them three tablets when they went on leave and four tablets when they came back. That did have a certain appreciable effect. I might give you the figures we have on reactions.

I went over Coburn's figures in the Navy. The Navy had a big experiment with 400,000 on sulfa and 600,000 off. Their experience corresponds pretty closely to ours. I published a series of 25,000. We gave the two grams of sulfadiazine on one day. I watched those reactions pretty carefully. We got about the same percentage as the Navy.

About one half of one half of one percent of those who got it got some sort of a reaction. About one-hundredth of one per cent got serious reactions. There are two kinds. The exfoliative derm titis which can be exceedingly severe. They had a total of about 15 deaths in their sulfa program. I believe that nine or ten of those were derm - titis. I know of six that died of exfoliative dermatitis. Of the ones I saw three severe cases were exfoliative dermatitis. Those cases can all be saved, I believe, by giving penicillin. Two of our cases were quite obviously going to die. With penicillin they made a 48 hour recovery.

The Navy had the same experience. They had six deaths from exfoliative dermatitis before they gave them penicillin and I think they have had no deaths from exfoliative dermatitis since that. I believe -- it is a small series not published but I believe the exfoliative dermatitis, which is the most serious toxic effect you get from sulfa, can be controlled with penicillin. The other cases are cases who come down with an acute fever. I saw one man with a temperature of 106½ but he recovered and it took a lot of prompt work with plasma and various things which I think helped with him.

All the cases that we have seen except two with severe fevers, when the history was gone into it appeared that they knew they were sensitive to sulfadiazine. They had fevers before.

Following that we attempted to question each man before giving sulfa whether he know he was sulfa-sensitive. If he said he was, he was not required to take it, he was put aside and subjected to a more detailed study to see if we could determine whether or not that was a fact, but it is quite remarkable the febrile cases that we saw, all but one or two or three in all I guess had known and had fevers before from sulfa. So when you are going to give it on a widespread scale, if it is possible -- sometimes it is difficult to arrange that, the men should be interrogated as to their possibility of sulfa sensitivity. Those febrile reactions can be combatted, I think, by adequate amounts of intravenous salt, glucose and plasma, if they get shock. A good many showed shock. A good many cases will show a little mild delirium. Cases of high fever will show sometimes wild delirium and one case I saw was comatose for eight hours but recovered.

The other group of cases, the half per cent, will be all cutaneous reactions or mild nausea and diarrhea. Most of those are trifling. Most of the cutaneous reactions are not severe except in the case of photosensitive individuals who get a sun bath after sulfa prophylaxis. That is in California more frequently than in Washington, D. C., I am sure, and we had some trouble from that score. I think that is one precaution that should be stated, that they should not take any sun bathing when they are full of sulfa or sulfa prophylaxis. Just in resume, I believe that in diazine prophylaxis we have an extremely important preventive medical process. For meningitis certainly; for streptococcus infections certainly, pneumococcus less doubtful, gonorrhea almost certainly. That has been in the past an important group of military disorders for which the sulfadiazine while by no means perfect, it does give us quite an extra-ordinarily potent weapon.

The full story is not yet written. I think the full facts are almost in our possession now and all the time that has come in, parti-

cularly during this last year, it gets organized and published and a resume, I think we have most of the answers as to how sulfadiazine prophylaxis should be carried out.

GENERAL BAYNE-JONES: Does anyone else wish to comment on the administration and results of this?

A VOICE: I believe Colonel Brooks used this at Camp Shelby.

COLONEL BROOKS: I know they have used this on a small scale.

COLONEL KOGEL: I wonder if Colonel Lee will tell us of the use of penicillin on dermatitis.

COLONEL LEE: I think they die because of secondary injection with staphylococcus in the skin. I think that it is this from which penicillin saves them. I think it is the extensive secondary injection that kills the patient.

COLONEL MINOR: We have a similar problem of prophylaxis from the standpoint of the individual soldier or sailor when they go home, having had prophylaxis and so on or maybe treated at another camp. As far as penicillin is concerned, I am afraid at least in the cases I have observed very closely I must disagree because the patient promptly dies although he had large amounts of penicillin.

That patient had liver damage and uremia so he was not a very good prospect. He happened to be a sailor who had prophylaxis and given by an unwise civilian physician and large doses of sulfa for a skin eruption obviously due to sulfanilamide.

Another thing that occurs to me is not to complicate Army procedure or papers that soldiers and sailors have to carry. Such a case as this one I spoke of makes you wonder whether we would not be justified in giving prophylaxis in preparing a simple little card for a soldier or sailor or giving him a standard card which says, "I have been taking sulfadiazine" and so on and then told to show it to a doctor if he gets sick at home or goes to another post. You might save some lives that way.

GENERAL BAYNE-JONES: We have been discussing that.

CAPTAIN SARTWELL: The necessity has been realized for those who were found to be sensitive to have a record of it made and that is provided for in the new immunization register which Colonel Long mentioned this morning, those who have reactions of an allergic type or hypersensitivity to vaccines and sulfonamides should be listed there. It has not seemed necessary yet to have all individuals who have been on prophylaxis given a card of that sort.

COLONEL MARSH: Ten days ago we had a transport come in with both sick and wounded and prisoners of war in which there was an outbreak of 560 cases I think of streptococcus sore throat enroute. The total strength on that ship was around 1900. When they got them into Halloran Hospital they were all screened and they found 24 cases at that time. None of them were very severe, and all contacts were immediately given sulfadiazine and two or three days later when they entrained for other hospitals that was continued for a period of a week.

The prisoners of war who were on board, of course they were taken off on trains and immediately shot out to prisoner of war camps and they were given a gram of sulfadiazine a day for seven days, we were advised. We don't know what happened to them but it may be that the epidemic was over but there were not any more cases following that.

COLONEL BANTON: While we are on that case I would like to know if there are any more developments on mumps? Last summer we had some workers down our way and were looking for something to happen.

GENERAL BAYNE-JONES: What do you mean by "developments on mumps?"

COLONEL BANTON: Whether we have something that can stop this nuisance Our large posts report this and it goes all winter. Is there anything that will stop it?

GENERAL BAYNE-JONES: I think you can immunize against mumps. Drs. Enders and Stokes say that you can do it but it seems an unnecessary procedure to put it on all troops at present.

They also had a skin test that was applied in your group. The mere fact that you did the skin tests seemed to protect a certain group of men. Of course, that didn't work all the way through. My impression is that mumps has been nothing like the serious problem in this war that we expected it to be.

CAPTAIN SARTWELL: One of the most striking reductions in comparison with the last war. The Fourth has had more than its share, however.

GENERAL BAYNE-JONES: As for an immunization program it does not seem to be justified at present. I don't know of any other thing that you might use. Gamma globulin given in large amounts modifies the disease and probably protects but that takes quite a large injection of the material and also doesn't seem to be worth while.

Are you having a serious problem? Does the Fourth Service Command get a lot of these men all the time? Is that the reason? Is this increased induction affecting you?

COLONEL BANTON: Not greatly. We have one or two wards full of them all winter on some of the large posts and that is really quite a few sick men.

GENERAL BAYNE-JONES: Speaking about mumps, the thing that interests us very much is probably the more frequent occurrence of mumps encephalitis than one would expect. No doubt some of these negative reports of spinal fluids that have been sent in were because they may have been mumps encephalitis instead of some other things that you may be looking for. If you think the problem is serious enough, perhaps we better go and see what we have and see if we can help out a local situation.

Captain Sartwell had a good deal to say about reporting. Are there any special problems that you have in connection with that? He outlined a good many of the difficulties that come in to us in administrative epidemics. If you go through and clear out a lot of cases we suddenly find an epidemic of meningitis due to an accumulation of the records.

We would like to know about these outbreaks of serious food poisoning as soon as we can and as Colonel Long said this morning about what you think is influenza, we may be able to assist you through the Army Epidemiological Board by virus identification.

COLONEL MARSH: Just one question in regard to what Captain Sartwell spoke of, the disposition of a typhoid carrier. What are you going to do with a PoW carrier?

CAPTAIN SARTWELL: I don't know anything other than not letting them handle food.

COLONEL MARSH: That is what I say, but there is no special place to send them.

CAPTAIN SARTWELL: That is something that can be done soon, I hope.

GENERAL BAYNE-JONES: They won't agree to a gallbladder operation?

COLONEL MARSH: An elective operation -- a compulsory operation is forbidden on a prisoner of war.

GENERAL BAYNE-JONES: Captain Sartwell asked you for any comments on your relations with civilian health authorities in the communities in which the post is closely related to a community. Have you any difficulties along those lines?

You meant something beyond what the liaison officers of the Public Health Service could do? Each Service Command Headquarters has such an arrangement with the Public Health Service and it has proved a very effective plan.

CAPTAIN SARTWELL: Apparently there are no problems in that direction.

GENERAL BAYNE-JONES: This murine typhus problem in Texas and in the Southern States is of great interest to us. Colonel Hart of the Eighth Service Command has expressed special interest in it. There is increased troop strength in his region. Have you anything to say about it?

LT. COL. DEWEY: Nothing in particular. The Army has not, so far, been affected by it to any appreciable extent. We have had just a few scattered cases in the Southern part of Texas from the murine typhus problem down there. That is a thing that has been there for a considerable length of time. Apparently from reports it has been increasing in the last ten years. Whether that is a natural increase or whether it is just an apparent increase, due to better reporting and recognition, we don't know.

I think that that probably has quite a little to do with it. It is quite a terrific problem and we are trying to handle it though the rat control program that has been stimulated in the health departments down there. So far it has not accomplished a great deal as far as we can tell. It isn't working. I think there is a new study going on in San Antonio this summer in regard to flea control. General Bayne-Jones knows a great deal more about that than I do.

GENERAL BAYNE-JONES: Murine typhus was right sharp around Nashville last summer, or last fall. Then in Florida and in Georgia,

it is all increasing. In addition to the reporting, it is increasing among the civilians in communities in those areas. In Texas there is a considerable increase in Lavaca County and the figures of San Antonio show it has gone up in the last few years. I believe last year in the city they had about ninety-some cases and three deaths. This year so far ninety cases which is considerably above the ordinary incidence at this time. The disease occurs among soldiers but I think they don't get it on the post.

In nearly every case we have run down either a soldier who has gone out to a roadhouse or some restaurant or store where he has been infected by rat fleas. I don't know if you have any rat fleas on the post. Maybe around some of the grain stores, warehouses or freight depots, but most of the cases among the soldiers, I think this is right, have been contracted by those men while they were off the post.

That transfers the military problem to the civilian because he would like to have those places cleaned up so the men won't get infected but it is a pretty large problem.

COLONEL HARDENBERGH: I might have more to say on the attack of the problem as it has gone on in the past through rodent control. As far as I can see it is a fairly slow moving operation to get rat-proofing of houses in the poorer district where the rats are more prevalent and the houses are less suitable for rat-proofing.

It is a very difficult problem. The new attack was begun in a small way. It probably has already begun in Georgia and I think to some extent in Texas, to see what you can do with DDT against the ectoparasites of the rats, particularly the fleas. We have pretty good information that by sprinkling DDT around the house, on the floor, ratruns and ratholes that you can greatly reduce the flea counts. You use the flea count on the rats you catch and fleas in the human habitations disappear.

At Dakar it looked as though they were able to control plague to some extent and it is true of Algiers so that what the idea now is, is to take a section say of San Antonio and dust it, controlling the fleas rather than the rats at that particular time and meanwhile the rodent control problem would be forwarded.

It may be a useful thing to undertake to do that from the Army point of view, particularly in the regions from which a large post or large plant draws a good deal of civilian labor. That is one argument put forward, that the labor is healthy and they keep anxiety out and it would be good for the military service.

The San Antonio work has not started yet. It is under discussion and may begin soon but it looks like an interesting thing to do, both on murine typhus control and for the information it gives us on plague control.

GENERAL BAYNE-JONES: This is the type of thing that you are familiar with. It went from the Army Medical Center to Public Health Liaison and the civilian system here.

COLONEL LONG: With respect to one or two of the questions that Captain Sartwell raised about reporting, I would like to say one word about some of our activities that may appear to some of the Service Commands to be in the nature of gadfly activities. I would like to explain why and how we do some of these things.

Now and then you will receive a telephone call from us saying, "We understand a certain situation is going on. What about it?" I bring this up myself because I am very apt to be the fellow who is on this end of the telephone.

There are several reasons why we do that, of course. It is not to try and show you up or to bother you in carrying out of your work but it is because very frequently, more frequently than we like, the situations do come up and you will be surprised how rapidly they get into very high levels.

We like to be in possession of information as timely as possible. Not infrequently we might even get a call from the War Department or from the Hill, so that when we are calling on special situations to Service Command Headquarters, please don't feel that we are being critical and saying, "Why haven't you called this to our attention?"

We would like to know about unusual things but sometimes things are unusual to us that are not unusual on the spot at all and very frequently it is a matter of reassurance that we want as much as anything else. In addition we like to have you know and remind you that we are always very glad to be of any assistance that we can. So please feel perfectly free to call us any time, not because we can necessarily always be of help but if there is any question in your mind, "Is this something that we should get out," why just give us a ring and also remember that when we call you we are not doing it in a manner to irritate you but just because something has been called to our attention that we think we may need to have more information on before it will come through regular channels.

GENERAL BAYNE-JONES: I see Colonel Ahnfeldt in the back of the room now. It is his turn to talk on a number of topics that are listed. We will take a little ten minute recess.

GENERAL BAYNE-JONES: Colonel Ahnfeldt is the Director of Sanitation and Hygiene Division and he has a great deal to cover - insect control, intestinal disease control, oiling of floors in respiratory disease control, trench foot and footbaths. I have the pleasure of introducing Colonel Ahnfeldt.

LT. COLONEL AHNFELDT: Mr. Chairman and fellow officers: I am certainly delighted to have this opportunity to speak to you gentlemen and to talk about certain problems in which you have expressed a special interest.

The first problem I wish to discuss this afternoon is the DDT control of insects. Effective control measures must in every instance be directed both towards exterminating insects at the places where they breed, and towards the destruction of adult forms when or where they come in contact with man, or at the places where their presence is a danger to health. Solution of the problem of insect control has been made much easier during the past year with the extensive use of the DDT insecticides. The matter of acceleration and increase in DDT production required our ceaseless efforts during a large part of the year but now I am happy to say production is sufficient to meet all military requirements.

Nine forms of DDT have been placed on Quartermaster supply tables and are available according to the allowances, indicated in War Department Circular 151 and a revision thereof to be published shortly, except for the three newest items added, - the liquid finished spray, the DDT emulsion concentrate and the DDT aerosol dispenser.

The following list indicates the catalog name, QM Stock Number, formula, packaging and primary use of each of these insecticides:

1. Insecticide, powder, louse, 2-ounce can, QM No. 51-I-173, 10% DDT in pyrophyllite, packaged 48 cans to a carton, is intended primarily for individual use in the treatment and prevention of louse infestation.

2. Insecticide, powder, louse (bulk), QM No. 51-I-180, also 10% DDT in pyrophyllite, put up in 5-pound metal containers and packaged six containers to a box, is for use primarily in mass delousing with hand or power dusters. Its uses for control of other insects will be described later.

3. Larvicide, DDT, powder, dissolving, QM No. 51-L-120, a commercial grade of pure DDT put up in 10-pound metal containers packed 4 containers to a box is issued for the preparation in the field of oil solutions for mosquito larviciding, or for making up residual spray and other DDT preparations when the finished product is not available.

4. Larvicide, DDT, powder, dusting, QM No. 51-L-122, 10% DDT, micronized, that is, in talc, put up in 5-pound metal containers, 8 containers to a box is designed for use as a dusting powder in mosquito larvicidingp it can be used in place of louse powder for mass delousing when louse powder is not available as well as for the control of other insects such as roaches, ants and fleas.

5. Insecticide, spray, DDT, residual effect, QM No. 51-I-305, 5% DDT in refined kerosene, put up in five gallon metal containers and 55 gallon steel drums, is issued primarily for fly and mosquito control and secondarily for the control of a number of other insects, such as fleas, bedbugs, roaches and ants to mention those of military importance. It is designed for application to surfaces upon which insects crawl or rest being applied as a wet spray or with an ordinary paint brush, and exerting its effect by the prolonged residual action of the DDT deposit. This item probably has the widest usefulness of any of the DDT insecticides and gives long-term control in many instances. However, it should be applied by trained personnel.

6. Insecticide, liquid, finished spray, QM No. 51-I-169, now containing 1% DDT and 2½% thanite in kerosene and put up in 5-gallon metal containers, is for use as a general utility insecticide against all types of insects. It is applied directly to the insects in similar fashion to the common "flit-gun" type sprays. Stocks on hand of the old formula can easily be converted, if desired, by adding an equal amount of refined kerosene plus the necessary amount of DDT for a 1% DDT solution. Labels should be altered to indicate the DDT content.

7. Insecticide, spray, delousing, QM No. 51-L-310, containing 6% DDT, benzyl benzoate, 12% benzocaine and 14% Tween-80, a hydro carbon solvent, put up in 1-gallon and 5-gallon metal containers, is a concentrate and must be diluted 1 part concentrate to 5 parts water by volume to form an emulsion-type spray. This emulsion is not stable and must be prepared just prior to use and used within 24 hours. It is employed principally in conjunction with fumigation or steam disinfestation procedures for delousing and includes and effective scabicidal agent.

8. Insecticide, aerosol, 1-pound dispenser, QM No. 51-I-159, containing 3% DDT, 2% pyrethrum extract (20% pyrethrins), 5% cyclohexanone, 5% hydrocarbon oil and 85% Freon-12, common refrigerating

gas, put up in steel cylinders under pressure, equipped with a release valve and packed 24 to a carton is designed primarily for control of adult mosquitoes. The DDT aerosol cylinders are finished in olive drab; the old formula which depended entirely on pyrethrum for its insecticidal activity had its dispenser finished in black.

9. Insecticide, DDT, emusion concentrate (formerly called Insecticide, DDT, louse-proofing, underwear) QM No. 51-I-95, containing 25% DDT, 10% Triton X-100 and 65% xylene, and put up in 5-gallon metal containers is issued primarily for impregnating underwear to make them louse-proof. It must be diluted 1 part concentrate in 11 parts water to form an emulsion before treating underwear. After dipping and wetting the underwear, excess emulsion is squeezed or wrung out so that the weight of the underwear with the retained emulsion will be approximately twice its dry weight. In this way the recommended dosage of slightly over 2% DDT of the dry weight of the garment will be present in the fabric.

A great deal of investigative work has been done during the past year on the relative effectiveness of various insecticides and procedures for the destruction of insects. Control measures for certain insects have been radically modified and hope of effective extermination is much brighter due to the advent and application of DDT. I will take up first, fly control which has acquired prominence in several theaters.

The control of houseflies depends on knowing their habits, ruining their breeding places, destroying their larvae and killing the adults. In this, prevention of breeding is the most effective part of a fly-control program. To control breeding places, all human waste, animal manure and garbage must be disposed of or treated promptly and effectively. Powdered borax for the treatment of pit latrines and compost piles will likely be replaced with DDT residual spray. The spraying of refuse piles, latrines and the like will be of considerable value in reducing the fly population. Neighboring native habitations in poorly sanitated areas are also frequently a major source of flies and should receive careful attention if at all possible, thereby allowing greater opportunity for contact action of the DDT. In treating latrines, the walls, ceiling, door and screens, as well as the inside walls of the latrine box, the walls of the pit and the fecal contents should be sprayed. If use of the latrine can be spared until the spray deposit dries, the outside of latrine boxes should be treated also. Present indications are that application of DDT residual spray is much more effective than the previous preparations used to prevent or kill fly larvae breeding in the fecal material of pit latrines when fly-proofing has been inadequate. The use of 2-ounces residual spray per latrine seat hole ($\frac{1}{2}$ ounce per square foot) applied twice weekly at first to the surface of fecal material is suggested. Local experience will determine if larval treatment need be repeated less often. The extensive use of DDT residual spray in areas with high diarrhea and dysentery rates constitutes an essential part of all fly control programs. Where temperatures are 70 degrees or higher throughout the day and night, PDB (paradichlorobenzene) has been found highly effective also in controlling fly breeding in pit latrines. Experimental work is going on in two theaters as well as in the continental United States to compare the effectiveness of PDB with DDT in this regard. You, no doubt, will hear much more about PDB if it proves satisfactory.

In mess halls and kitchens where flies are a problem, it is advisable to apply DDT residual spray thoroughly to the walls, doors, screens, ceilings, cross beams, light wires, light cords and similar places. All food, cooking equipment, eating utensils and table tops must be covered before spraying is begun. The application of residual spray

with a paint brush to door and window screens alone sometimes will reduce the fly population considerably. However, more thorough application is advised to include walls, ceilings, cross-beams, light cords and the like. Cloth strips soaked in the residual spray and when dry hung from the ceiling similar to present fly-tapes are surprisingly effective. These should not be hung directly over mess tables for obvious reasons. Application of residual spray to surfaces at the rate of 200 mg. DDT per square foot will destroy flies for several weeks to several months or more, the duration of effectiveness depending on the type of surface and the degree of exposure of the treated area to weathering. At this rate, a quart of 5% DDT residual spray will cover approximately 250 square feet of surface. The spray should be reapplied when flies begin to show a definite increase in numbers.

When immediate clearance of flies from a room is desired, Insecticide, liquid, finished spray which now contains 1% DDT and 2-1/2% thanite, should be used. This is dispersed by means of the ordinary hand "flit" gun just as household type sprays in the past. No special precautions need be taken except to exclude gross contamination of food. Repeated use of this insecticide may in time result in the deposition of sufficient DDT on surfaces to obtain a slight residual action but its use for such purpose would be wasteful.

Coming next to the control of mosquitoes with the DDT insecticides, this use of DDT has greatly simplified mosquito control for the Army and is now playing a large part in keeping the incidence of malaria at a low level in highly malarious theaters. Larvicide, DDT, powder, dissolving, which actually is pure, technical grade DDT, when dissolved in various oils and solvents makes an unusually effective mosquito larvicide, and also an adulticide. The solutions should be mixed and applied by trained personnel indoctrinated in the precautions to observe. Solutions varying from 5% to 0.5% DDT may be used. The concentration may be varied depending on method of application. The important factor is the amount of the active ingredient, DDT, used. It is recommended that oil solutions be applied at such a rate as to give 0.1 to 0.25 pounds of DDT per acre. A 5% DDT solution requires approximately 1 quart per acre, and a 0.5% DDT solution, 2-1/2 gallons per acre at the dose of 0.1 pound DDT per acre.

Since the effectiveness of DDT depends on the material reaching the larvae, sufficient oil should be used to permit coverage. The minimum amount of DDT solution in oil which can be sprayed on an acre and obtain satisfactory results will vary with the type and DDT concentration of the spray available. The amount necessary will also depend on the density of vegetation in the area being treated. In breeding places where the larvae are difficult to reach with a larvicide, heavier applications of DDT should be made. With such heavier applications considerable residual toxicity to larvae from the DDT may occur even after the oil has evaporated.

DDT oil solutions can be applied by any of the methods used in the past for applying oils alone in larviciding. Pouring solutions from containers such as a bottle, can or bucket where numerous, small, separated areas are to be treated; application by containers of the drip-can type for flowing streams; soaking porous materials such as sawdust, sand or wet gravel and scattering over the water surface, or placing the porous materials in a bag and submerging in ponds; spraying with various types of equipment available--all are effective means within their proper limitations for larviciding with DDT oil solutions. Drip-cans should be checked frequently since some of the DDT may precipitate out and occlude the openings. Spraying is the best method where large and fairly inaccessible areas are to be treated, taking advantage of

wind-drift. Nozzles of spraying equipment should be adjusted to give a fine spray depending upon the wind velocity and the area to be covered. Of the types of spraying equipment in the field the C.W.S. sprayer (Decontamination apparatus, 3-gallon) if available will prove the best. Knapsack sprayers issued by the Corps of Engineers (Sprayer, insect, knapsack types, 5-gallon capacity; Stock No. 41-7839.5-5) are satisfactory but prone to spill solution on the back of the operator unless only partially filled. I think you are all acquainted with that disadvantage of the knapsack sprayer.

In running streams, open roadside ditches, and pools, a 5% DDT in oil solution is advised. Applications to running streams may be made at widely spaced points along the stream allowing the flow of the stream to spread the larvicide. The amount and distance between points of application will vary depending upon stream type, width and rate of flow. For places where drip-cans and porous materials soaked in oil have been used in the past suspended over or in streams to apply oils alone, DDT may now be added allowing a reduction is the amount of oil required. In calm waters a small amount should be poured on at different points in the breeding places. A squirt-type oil can will facilitate application where several small places are to be treated. In larger places a lower percentage of DDT and a greater quantity of oil, applied with spray equipment, is recommended.

Coverage can be obtained with smaller quantities of oil in area treatment if a fine spray is developed and advantage is taken of the wind drift as already pointed out. Swaths of 50 to 100 feet or more can be obtained depending upon type of spray, vegetative cover and amount of breeze. This technique will overcome any difficulties that might be encountered caused by the non-spreading of oils. Under suitable conditions, area treatment may be used also where the breeding is in numerous disconnected places, such as for depressions, ruts and hoof prints.

As to effectiveness, an initial larvae kill of 95 per cent or better is obtained from the recommended dosages. One application is usually adequate for 6 to 9 days. Heavier dosages of DDT in moderate to dense vegetation can be expected to give high residual toxicity to mosquito larvae, continuing even after the oil has evaporated. With the heavier applications, the DDT deposited on vegetation (until washed away by rains) will exert a continuing lethal effect upon adult mosquitoes who rest thereon. Similarly, the larger doses of DDT in oil spread over water also will kill the adult mosquitoes who have alighted upon the water to deposit eggs. Hence, a very effective dual control -- larvae and adults -- can be achieved persisting 3 to 4 weeks and longer under suitable conditions.

In preparation of new areas for occupation by troops in highly malarious regions the use of DDT oil solutions against adult mosquitoes is an even more important application than their use as mosquito larvicides. For this purpose, spraying of DDT solutions from airplanes has been developed and is ideally suited. This has proven extraordinarily effective and equipment is continually being improved.

Another item which can be used for mosquito control is Larvicide, DDT, powder, dusting, consisting of 10% micronized DDT for use on mosquito larvae as paris green has been used in the past. This powder is a stock mixture from which to prepare the final larvicidal dust by mixing with any available diluent such as pyrophyllite, talc, cement, condemned flour and road dust. A final dust containing from 1 to 5% DDT is suitable for practical application, but 2 per cent is recommended for average conditions. It is applied with hand dusting equipment

at a rate of 0.1 pound of active ingredient per acre, and will give practically 100% control for 1 week. The rotary hand duster supplied by the Corps of Engineers is suitable for dispensing this item.

In thick vegetation, which will prevent shifting of surface dust films from wind and wave action, a residual kill for several weeks to two months after treatment may be expected if larger applications of 1 to 2 pounds of active ingredient per acre are made. Dusts with a percentage of DDT higher than 1 to 5 per cent may then be used. In open breeding areas with relatively sparce vegetation, however, it is wasteful to apply more than 0.1 pound of DDT per acre since the treatment may become ineffective within a week due to this shifting of surface film. The time for additional treatments must still be based on dipping records.

The use of Insecticide, DDT, residual effect for adult mosquito control is a highly effective long-term measure similar in effectiveness to that described for flies. When used in mosquito control, it is necessary to spray thoroughly the walls, doors, ceilings, screens and other places in buildings, hutments or tents where mosquitoes are prone to rest. Dark corners or other portions of sleeping quarters where mosquitoes are seen to rest in large numbers should receive an extra heavy spray application. In malarious regions, native habitations within a radius of at least one mile of perimeter of the cantonment area should receive a residue spray treatment, and this may well precede spraying of military installations to kill infected mosquitoes at the source. Certain species, especially some of the anopheline mosquitoes, also rest in out-buildings such as barns, chicken houses and privies, and fly into human dwellings at night to feed, making it necessary to treat such buildings also. These, as well as mosquitoes that rest on the walls of living quarters either before or after feeding, will then be killed by contact with the DDT on the treated surfaces.

An outdoor use is also suggested. For encampments, outdoor theaters and other assembly places surrounded by dense vegetation in areas where the percentage of malaria infested mosquitoes is high, apply the residual spray to all the vegetation in a 50-foot or wider band encircling the area to be protected. Experimentally this type of treatment has been found to cause up to a 95% decrease in the number of mosquitoes in the protected area up to a week and even longer. The duration of effectiveness will vary with the amount of rainfall, since rain will eventually wash the DDT deposit off of the vegetation. The use of a vehicle for the DDT with greater viscosity than kerosene may prolong its effectiveness. This barrier treatment is well worthwhile trying. Reports concerning its effectiveness under field conditions will be appreciated.

The use of DDT residual spray offers an efficient and easy procedure for continual destruction of mosquitoes over prolonged periods of time, and from the preventive medicine viewpoint is a highly important use of DDT in destroying mosquitoes infected with malaria, yellow fever, filaria and dengue.

The aerosol insecticide dispenser has already carved a secure place in the insect control armamentarium against mosquitoes. This handy, self-discharging, dispenser has proved invaluable to troops in highly malarious theaters for adult mosquito control. The addition of 3% DDT makes this insecticide even more effective. It is suited for use in all types of enclosures--barracks, billets, pup tents, bomb-shelters, trenches, foxholes and the like. The insecticide is released in almost gaseous form (aerosol) which pervades the whole atmosphere in contrast to the ordinary sprays, and remains in a still atmosphere

from 2 to 4 hours, thus giving continued protection against additional insects coming into the enclosure after time of application. Due to a scarcity of pyrethrum flowers the distribution of this item has had to be limited to overseas theaters and ships hospitals. In the continental United States it is used only in disinsectization of aircraft to comply with quarantine requirements, and a few are made available for training purposes.

The item, Insecticide, liquid, finished spray, is a general utility spray and completes the array of DDT insecticides available for mosquito control.

The control of other flying insects such as sand flies, midges, gnats, punkies and dog flies (Stomoxyx calcitrans) whose breeding places may be impracticable to destroy can be controlled by the application of the DDT residual spray (Insecticide spray, DDT, residual effect). Residual spray applied to screens and the outside of buildings and tents will usually reduce the number of such insects which may gain entrance. Application to the interior of the quarters as well will further enhance the effectiveness of control. The spraying of mosquito nets will fortify the protection afforded by such equipment.

The control of lice is of special importance, particularly under combat conditions, because of the seriousness of the diseases, epidemic typhus, relapsing fever and trench fever, which they transmit. Due to the development of highly satisfactory prophylactic measures, the disinfestation of troops has not presented any great problem during this war. For both the treatment of lousiness and the prevention of further infestation the application of DDT louse powder is the method of choice. For individual use, the 2-ounce cans of louse powder are available. For mass delousing of either troops or civilians with powder dusting equipment, louse powder in bulk (10-pound cans) is available. In the latter, disrobing of the individual is not necessary for application of the powder. Dusting is accomplished by means of compressed air equipment (Outfit, delousing, gasoline engine driven) and a special dusting gun developed by the Sanitation and Hygiene Division. This equipment is supplied by the Quartermaster.

Disinfestation of head lice or crab lice may be accomplished by dusting louse powder into the hair of the head or of the body, allowing to remain for 24 hours, and repeating twice at intervals of one week. The powder is not effective against eggs -- hence the necessity for re-application.

Residual spray is useful in controlling lice if applied to the floors and lower walls of quarters and of conveyances such as trucks, coaches and troop compartments of ships. Seats, bunks and other furnishings should also be treated. Residual spray applied in this way will also be effective against bedbugs, fleas and other non-flying insects at the same time.

For use in delousing centers such as have been established in continental U. S. Ports of Embarkation and overseas, there is available the delousing spray (Insecticide, spray, delousing) which may be safely sprayed on the hairy parts of the body and on the head. This insecticide is employed following the bath required in the fumigation or steam sterilization methods of disinfestation. The spray is both lousicidal and ovicidal and is also an effective scabicide when applied to the skin. Detailed instruction for the use of the delousing spray have been furnished ports of embarkation and fumigation and bath units and will also be included in the forthcoming manual or TB Med on the DDT insecticides.

For sake of explanation, methyl bromide fumigation was the first method for disinfestation developed by the Sanitation and Hygiene Division during this war. Later an individual field method with methyl bromide using Bags, delousing, was developed. And finally, the development of DDT louse powder by this Division has largely supplanted the other methods except for special situations. Methyl bromide fumigation or steam disinfestation are used where immediate and complete disinfestation (including lice eggs) of clothing and baggage is required. A new model steel fumigation chamber is now available on requisition to the Quartermaster to all named general hospitals upon approval of the Surgeon General's Office. Smaller hospitals with a lower admission rate may find it just as satisfactory to dust louse powder by hand or with a dust gun onto the clothing and into the barrack bags of patients requiring same as they are admitted to the hospital and prior to placement in the patient's clothing room. As an alternate, Bags, delousing, and 20 cc methyl bromide ampules may be employed

I point this out particularly because I believe these items have not been available until very recently to the service commands, and now that the service commands are charged with the responsibility of the hospitals as well, I think it would be appropriate for the medical inspectors to call to the attention of the C.O's of those hospitals, the availability of these several means of disinfestation. Present directives and those in process of preparation will require complete delousing of troops overseas prior to embarkation. Physical inspections will be made prior to debarkation and if any lousiness is detected then, further disinfestation will be accomplished at the port of debarkation. No disinfestation will be required, nor should any be necessary, at inland reception centers. Troop ships are to carry stocks of louse powder which will be used as conditions indicate.

For control of bedbugs DDT residual spray bids fair to entirely replace fumigation methods. The application of 4 to 6 ounces of residual spray per bed, including springs and mattress, will completely eradicate bedbug infestation for 6 months or more. Approximately 1 quart of the solution should be used for every 5 beds and mattresses. Spraying will be facilitated by placing mattresses 8 high along the middle of the floor and standing the beds on end against the wall with the underside facing inward. In treating beds, application of the spray should be to the underside, paying attention to favorable hiding places, and allowing the surplus spray to fall on the wall behind the beds. In spraying mattresses, particular emphasis should be placed on treating all seams, crevices and tufts, for obvious reasons. For expeditious handling a team of two men is recommended -- one to do the spraying, the other to turn over and remove each mattress after spraying. If no spraying equipment is available, application of the solution by means of a paint brush is satisfactory. A slight moistening of the surface is all that is required. The insecticide acts slowly, but when the above procedure is followed all bedbugs will be dead in 24 hours as a rule. No smoking or fires should be allowed in the quarters during spraying and the barracks should be aired out completely following the treatment. Operating personnel should be required to wear suitable masks or respirators while in the barracks being treated.

Roaches and ants may be controlled by the 5% DDT residual spray or a 10% DDT powder. A thorough application of DDT residual spray will give several weeks' or more protection from roaches or ants. The duration of the effect will depend to some degree on how quickly the residue is removed by the daily cleaning of the messhall.

The residual spray is preferred for roach control work because treatment for control of flies and mosquitoes can be accomplished at

the same time. It is applied by ordinary hand sprayers of power sprayers to such resting and hiding places of roaches as under serving tables, sinks, cupboards, refrigerators, around water pipes and hot water tanks, and into cracks and crevices of the wall. It will be found that the German cockraoch is more resistant that the American cockroach and an increase in dosage over 200 mg DDT per square foot when applying the residual spray may be necessary to effect its control.

For control of ants residual spray may be applied to nests, door-sills, window-sills, foundations and other places where ants crawl. Lawns or grass plots where ants are prevalent can be treated with residual spray with the liklihood of better coverage and more prolonged action due to improved adherence of the DDT deposits to the grass, than when using DDT powder. In that regard, some of your commanding officers might object to the use of the DDT spray because it may spoil their nice lawns. I understand it stains grass to some extent, but the powder will work almost as well as the DDT spray.

The 10% DDT powder (Larvicide, DDT, powder, dusting) for roach and ant control is applied lightly with an ordinary hand-operated dust gun. Not over 10 pounds of powder is necessary to treat the largest messhall. Application is made to the same locations one would apply residual spray. The powder is less desirable than the residual spray because it is more readily removed in cleaning, and also is unrightly.

Fleas, important as vectors of bubonic plague and endemic typhus fever, are best controlled with DDT by treating infested human dwellings as well as the occupants and pets. In conjunction with rodent control programs, DDT louse powder or DDT residual spray may be applied to the floor and lower parts of walls of infested quarters. Dosages of 200 mgm. of DDT per square foot are advised. On earthen floors the dosage must be considerably greater. Louse powder should be used for the occupants and pets and may be applied by the same individual and mass delousing methods applicable in the control of lice to prevent epidemic typhus.

As for mites or chiggers, these breed in areas of grassy vegetation and feed on rodents at a certain stage of their development. In addition to individual protective measures, control should be directed toward clearing camp areas of low-growing vegetation as well as toward the extermination of rodents. Heavy DDT spraying or dusting of the ground around beds and in the camp area may prove effective in eradicating mites but has not been fully evaluated as yet. For individual protection the wearing of dimethyl phthalate impregnated clothing is now used for temporary protection of troops operating in mite-infested areas.

In control of ticks the DDT preparations have not been found to be particularly effective and their use for this purpose cannot be recommended. The use of the standard triple-mixture repellent is the best measure available for individual protection against ticks. The wearing of clothing impregnated with an emulsion of dimethyl phthalate or sprayed with dimethyl phthalate also will give partial protection.

I have felt that the matter of toxicity of the DDT insecticides also should be discussed with you at this time, if only to indicate the precautions to be observed. It should be pointed out that although DDT can be handled safely it is nevertheless a toxic material. Personnel should be trained thoroughly in the application of the DDT insecticides and the precautions to observe, and should not be allowed to dis-

regard precautions recommended.

Symptoms of DDT poisoning in laboratory animals are loss of appetite, wight loss, hyperexcitability, tremor and finally convulsions. Disfunctioning of the liver and kidneys may precede the onset of nervous system manifestations. An increase in the prothrombin time paralleled by a rise in the icterus index were noted in one instance followed by an increase in the urinary output to several times its normal volume. These findings plus a moderate leukocytosis occurred prior to the onset of nervous symptoms. When tremors first appeared they were coarse in nature, involved the entire musculature, and were particularly marked in the legs upon standing and in the muscles over the eyes. The tremors decreased when DDT was withdrawn for a day. Animals given DDT until a fatal termination show a toxic necrosis of the liver and kidneys frequently enough to be significant. Most of these animals show some evidence of degeneration of the anterior motor neurons of the spinal cord. Other organs are essentially negative.

Toxicity for man must be decided from these animal experiments since no proven case of DDT toxicity in man has occurred. Three individuals subjected accidentally or otherwise to extraordinary amounts of DDT in the course of their work were carefully examined and observed for an extended period to note any variations from the normal. Repeated physical, neurological and laboratory examinations revealed no symptoms or signs of untoward effect from their exposure to DDT. While these findings were not considered conclusive they did indicate a certain degree of tolerance for DDT on the part of human beings.

Any individual using DDT insecticides in the field and suspected of displaying evidence of toxicity to DDT should be removed from further contact and placed in a hospital with adequate facilities for making a careful and complete examination including neurological and repeated liver and kidney function tests. Report of such study should be forwarded upon completion to the Preventive Medicine Service, Office of The Surgeon General, to add to the present knowledge concerning toxicity for man. If possible, information should also be furnished concerning the following:

(1) DDT insecticide employed.
(2) Estimate of amount of DDT contacted.
(3) Manner of contact -- skin absorption, ingestion or inhalation.
(4) Duration of contact.
(5) Any other factor of significance.

Dry DDT as used in inert powders and dusts is not absorbed through the skin nor is it readily absorbed when injected subcutaneously or intramuscularly. The use of 10% DDT louse powder in conjunction with insect repellent, though, is not recommended. Repellents are solvents for DDT which then can be absorbed through the skin. If underwear dusted with louse powder are accidentally and grossly contaminated with oil, they should be changed and the contaminated area of the skin washed with soap and water.

Inhalation of 10% DDT powder as normally used in the field will not produce any toxic effects as indicated by laboratory studies and corroborated by the large scale typhus control dustings in Italy. Yet, it might be wise for operators engaged in mass delousing or large scale dust larviciding to use suitable respirators or dampened gauze masks when dusting indoors or under conditions where the atmosphere does not carry the dust cloud away from them.

By mouth, DDT is acutely toxic to laboratory animals. Because of wide variation in individual susceptibility, the determination of a safely tolerated dose is extremely difficult. The upper limit of tolerance in dogs on daily ingestion of dry DDT powder appears to lie between 50-100 mg. per kilo per day; tolerance in some of the other smaller animals is considerably less. Moreover, when the same dosages are given dissolved in corn oil, tolerance is reduced over 50 per cent. Hence, care should be taken to prevent contamination of food. This is especially important because DDT is a whitish, odorless and tasteless powder bearing a physical resemblance to flour and offers no warning upon ingestion. All foodstuffs, cooking utensils, eating utensils and tabletops must be covered when dispensing DDT in any form in messhalls. Storage of DDT with food should be strictly prohibited in order to prevent mistaken identity.

Solutions of DDT in oils and organic solvents can be absorbed through the skin making it necessary to avoid unnecessary contamination of garments and skin. Coveralls and suitable gloves should be worn when mixing and dispensing such solutions. Occasional contact is apparently not dangerous but prolonged contact must be avoided. When individuals accidentally contaminate themselves they should change their clothes, including DDT dusted or impregnated underwear, as soon as practicable and wash their body thoroughly with soap and water. To reduce the possibility of contamination in dispensing such solutions, paint sprayers and the decontamination type sprayer are preferable to the knapsack type. When knapsack sprayers are employed they should not be more than three-quarters full to prevent spilling.

Continued inhalation of oil or kerosene sprays containing 5% or more of DDT may produce toxic effects since absorption of DDT from the respiratory tract is facilitated by such solvents. In this connection, it has been shown that solution of DDT in fatty oils increases its toxicity from inhalation over that observed when dissolved in an organic solvent such as cyclohexanone. While dispensing Insecticide, spray, DDT, residual effect (5 per cent DDT in kerosene) indoors for prolonged periods as for treating walls, ceilings, fixtures, beds, matresses and the like, suitable respirators or cloth masks should be worn by the operators. Procurement of a new formula for Insecticide, liquid, finished spray containing 1% DDT and 2-1/2% thanite in kerosene instead of the present 5% thanite in kerosene as mentioned previously was recently initiated. No special precautions need be taken in the normal use of this latter spray other than those which will exclude the gross contamination of food. Rabbits were exposed to a heavy mist of 1% DDT in kerosene 48 minutes daily for four weeks without toxic effect.

By mouth, DDT preparations in oils and organic solvents exert considerably greater toxic effect than in powder form. The ingestion of 50 to 80 mg. per kilo per day in a solution of corn oil causes fatal poisoning in dogs in three to five weeks. Hence, operators should take precautions similar to those prescribed in dispensing DDT as a powder to prevent contamination of food when spraying in mess halls. DDT solutions should not be stored with foodstuffs.

As for DDT in aerosols, the concentration of DDT in the atmosphere when dispensed according to instructions (4 seconds per 1000 cubic feet) in a 1 to 5% DDT aerosol formula is exceedingly small and can be breathed under the normal conditions of its use without ill effects. A 3% DDT aerosol will give approximately 0.06 mg. DDT per cubic foot at the above dosage. Exposure of dogs, rats and guinea pigs to initial concentrations respectively of 54.4, 12.44 and 6.22 mg. of DDT per liter of air over a period of 45 minutes caused no

toxic signs or symptoms. Chronic toxicity studies demonstrated that exposure of monkeys for 2 hours and 15 minutes daily for four weeks and mice for 45 minutes daily for 5 weeks to a concentration of 0.176 mg. DDT per liter of air (5.0 mg. per cubic foot) produced no toxic effect. Daily exposure of human subjects for 1 hour to a concentration of 1.0 mg. DDT per cubic foot showed that a 1 to 5% DDT aerosol offers no health hazard under conditions required for its use. It was further found that the DDT in the atmosphere settles out fairly soon.

Underwear impregnated with a DDT emulsion prepared from Insecticide, DDT, emulsion concentrate were worn in field tests for periods from 1 to 4 months without toxic effect or irritation of the skin, and retained their lousicidal effect during that time. The only potential hazard involved when they are worn is to personnel handling fuel or lubricating oils. Spilling of oil on the underwear may bring the DDT into solution again which could then be absorbed through the skin. Changing to another pair of underwear, and a bath with soap and water will prevent untoward symptoms. Personnel engaged in impregnating underwear with DDT emulsions in the field should avoid dipping their arms in the prepared solutions or handling the wet garments with bare hands when wringing them out and hanging them up to dry. Ladles or tongs of some sort should be provided for immersing the underwear, and preferably rubberized gloves for the operators' hands.

The 1% DDT emulsion used as a delousing spray to hairy parts of the body and prepared from the stock of mixture, Insecticide, DDT, spray, delousing by diluting with five parts of water was submitted to toxicity tests and found safe to apply to the skin. Since the stock mixture contains 6% DDT, personnel preparing the final solution should take ordinary precautions to avoid contaminating their hands with the stock mixture. Good ventilation should be provided and rotation of operating personnel is recommended when spraying for long periods indoors.

In a comprehensive statement the toxicity of DDT may be summarized as follows:

"The DDT insecticides adopted for use can be safely employed, but it must not be overlooked that DDT is a toxic material. In general, inhalation of dusts, sprays or mists containing DDT should be reduced to a minimum. Whereas dry DDT as used in inert powders is not absorbed through the skin, solutions of DDT in oils and organic solvents can be absorbed through the skin and, therefore, unnecessary skin contact should be avoided. For this reason, use of repellents in conjunction with DDT louse powder is not advised; and garments, including DDT dusted or impregnated underwear, accidentally contaminated with oils in the presence of DDT should be changed as soon as practicable, the individual washing himself thoroughly with soap and water. Contamination of food with DDT must be prevented. This is especially important because DDT is a white, odorless and tasteless powder and offers no warning upon ingestion. Storage with food should be strictly prohibited to prevent mistaken identity. Symtoms of DDT toxicity in animals are anorexia, weight loss, hyperexcitability, tremor and convulsions. Signs of liver and kidney disfunction may precede nervous manifestations. Pathological findings in fatal poisoning induced in animals consist in some evidence of degeneration of the anterior motor neurons, and may include toxic necrosis of the liver and kidneys."

I have purposely taken considerable time to discuss the DDT insecticides since this is the topic of most general interest. Now, I would like to make certain remarks regarding measures for intestinal disease control. Within continental United States water supplies are relatively well controlled and practically no intestinal disease is due to contamination of water. The principle cause of diarrheal diseases in this country appears to be defective mess sanitation in posts, camps and stations. Sporadic cases also are occurring among army personnel who have eaten at unsanitary civilian establishments. It should be pointed out that the control of those establishments located near a camp area is a responsibility of the post medical officer in conjunction with local civilian health authorities and effective measures should be taken. Outbreaks of intestinal disease occurring within a camp have most often been due to food infection or food intoxication indicating that examination of mess personnel and supervision of food preparation were at fault.

Particular attention should be directed towards the periodic examination of permanent food handlers and towards the daily inspection of all mess personnel when coming on duty. Not only should care be taken to insure the elimination of intestinal disease carriers, and those having purulent skin infections, but continued training should be given food handlers so as to keep them constantly aware of factors involved in mess sanitation.

Where sufficient hot water is not available for rinsing dishes in accordance with AR 40-205, the use of Compound, germicidal rinse, QM No. 51-C-1606, is advised. It is suggested that even where adequate hot water facilities are present, a small amount of this material may be kept in stock for emergency use.

Compound, Germicidal Rinse is a powder, packed in cardboard boxes, which when placed in solution liberates chlorine. When dissolved according to directions printed on the label (one unit in twenty-five (25) gallons water) the resultant solution contains twenty-two (22) parts per million chlorine upon testing by ordinary methods. The solution is buffered so that the free chlorine is gradually replaced by more free chlorine from the azochloramid in the powder, as it combines with organic material added to the solution. Thus at the end of a dishwashing period, after treatment of the mess gear of 200 men, the solution will still show by test between five and ten ppm free chlorine.

A wetting agent is contained in Compound, Germicidal Rinse which lowers the surface tension of water to less than forty (40) dynes per square centimeter. This insures intimate contact of the solution with all surfaces and assists in draining the solution from mess gear as it is air-dried.

Compound, Germicidal Rinse should never be used in boiling water or even very hot water since the heat will drive off the chlorine and inactivate the solution. Neither is its use advised in cold water (below 60 degrees) since chemical activity is slowed down at low temperatures. For disinfection of dishes at army messes, the effective temperature range for the solution probably lies between 60 degrees F. and 90 degrees F. (NOTE: Actual tests were at room temperature of approximately 75°F.)

After immersion of mess gear in germicidal rinse solution, proper stacking of dishes is sufficient to insure air drying. Care should be given to invert cups so that they do not stand in a pool of solution after draining, and to silverware so that bowls of spoons do not

hold solution. If these items are handled properly, there should be no residue to give an unpleasant odor or taste to dishes. The rinse with compound germicidal rinse solution is to be the final one. Between the washing procedure and the final rinse a rinse in clear water is advised.

In addition to its present use for the disinfection of mess gear, where adequate amounts of hot water are not available for their proper disinfection, Compound, germicidal rinse can be used to disinfect vegetables and fruit that are to be consumed raw by employing the following method:

a. After the removal of visibly soiled or damaged outer leaves (stalks of celery, heads of lettuce, cabbage, cauliflower, etc. are not to be broken or cut until after treatment), the vegetables (or fruit) are rinsed thoroughly in potable water.

b. Place the trimmed and rinsed vegetables or fruit in a clean container, cover with a germicidal rinse solution prepared by dissolving one unit (one(1) package containing 3.36 ounces) of germicidal rinse in approximately eight gallons of potable water and allow to stand for thirty minutes. After removing the germicidal rinse solution, re-rinse the vegetables or fruit thoroughly in potable water. This procedure has been found satisfactory by the National Research Council to kill pathogenic bacteria, amebic cysts and schistosomal cercaria. The germicidal rinse solution should be discarded after each use and a fresh solution prepared for each succeeding immersion.

It is likely that there will be no occasion to use germicidal rinse for the disinfection of vegetables and fruit in continental United States, although it may be used any time the medical officer considers it desirable.

The next item that I would like to talk about is the oiling of floors. I would like to acquaint you with a procedure which is likely to be standardized soon. During the past year the Commission on Air-Borne Infection, Army Epidemiological Board, has been studying the effect of oiling of floors and bedclothing in barracks upon the incidence of acute respiratory diseases. These studies have demonstrated clearly the advantage to be derived from such procedures in reducing the bacterial count in the air. Moreover, oil treatment of floors and bedclothes appears to definitely reduce the admissions to hospitals for these infections among men living in barracks where such oiling has been accomplished. It has actually been demonstrated with regard to bacterial count of the air in a test performed at one camp that bacteria were reduced from 3500 per cubic foot to 500 per cubic foot by oiling floors alone and to 75 per cubic foot when both floors and bedding were treated, which you can see is quite a remarkable reduction.

The first oil preparation used for treating bedclothes developed some rancidity and unpleasant odor. It was discarded and another preparation is now being tested. This appears to be as effective as the first preparation and is satisfactory from the standpoint of odor. However, sufficient testing has not been carried out to warrant its standardization at this time.

The oiling of floors has proven successful from the start and this procedure has been submitted to ASF Headquarters for standardization. The Office of the Chief of Engineers has requested that standardization of the oiling of floors be delayed until they can test it out on the various types of materials now being used for flooring and also on floors that have already been treated with a

sealing compound. While the oiling of floors may be designated as an Engineer function, it should be of interest to briefly describe the procedure: The oil used is a pale floor oil. It is applied at the rate of 1 gallon of oil for each 150-175 square feet of surface. One application is effective for six months except for the center aisle and bathroom floors which will require additional applications at intervals of two months. A detail of 6 men require 30 minutes to apply the oil to the floors of a 32-man barracks. In addition to barracks, the oil treatment is of value in mess halls, classrooms, dayrooms, offices and other rooms where men congregate in numbers.

One point to remember is that when a mess hall floor is oiled, the adjoining kitchen and pantry floors should also be oiled because men walking from the oiled floor onto the unoiled floors will leave track marks which appear unsightly.

I remember that particularly in a trip I took to Fort Bragg. I spoke to one of the mess sergeants and asked what he thought of the oil treatment of the floor in his mess hall. He liked it very much, except for one objection. He said, "Look at my kitchen floor" and there were track marks all over the kitchen floor that had been carried in there from the treated floor in that portion of the mess hall where the mess tables were.

The essential thing in oiling any floor is that the floor should be thoroughly cleaned with soap and water, and as much dirt as possible removed from the cracks in the floor. Unless this is done, the oil will loosen all the dirt and the floor will have an unsightly appearance. Men walking on the floor with their bare feet then will transfer the dirty oil to their clothing and other personal effects. Where feasible, the floors may be smoothed with a sanding machine before the oil is applied. This makes a much more presentable floor in that the oil brings out the grain in the wood.

Floors covered with linoleum, asphalt, tile, etc., which are not suitable for this type of oil treatment may be treated daily by using a sweeping compound composed of 2-1/2 gallons of the floor oil mixed with 100 pounds of sawdust. In sweeping the floors with this compound, sufficient oil will be deposited on the floor to retain all dust. As soon as standardization of this procedure has been accomplished, a War Department Circular will be published giving full details and establishing responsibility for carrying out the procedure.

The method of bedclothing treatment which is now undergoing tests is accomplished by adding oil during the usual process of laundering the bedclothing. An oily, aqueous emulsion is used. If and when this procedure is standardized, it will only be necessary to add an additional step in the laundry process, and consequently the entire procedure will be carried out in the Quartermaster laundry.

The medical inspector's chief concern in this procedure will be to see that all the bedclothing of a given unit is oil-treated at the same time. Otherwise, the oiled bedclothing will soon become mixed with the untreated clothing, since it will be difficult to determine which has been oiled merely by looking at or feeling the bedding. I might say that there is no sensation of oiliness in touching either the blankets or the sheets and pillow cases that have been treated in this manner.

The ideal procedure is to have the treated bedclothing used in barracks, the floors of which have been oiled, because only by the use of this combined floor oiling and bedding treatment is the maximum

benefit derived. A War Department Circular also will be published when the oiling of bedclothing becomes a standardized procedure.

The next topic on the agenda is trench foot. Trench foot has become a tremendous problem this winter in European combat areas. The high incidence of this condition is in part due to environmental factors difficult to correct, but a great deal can be accomplished through individual foot hygiene.

The Quartermaster is supplying improved foot wear developed in conjunction with the Sanitation and Hygiene Division and adapted to the conditions present on the western front. The theaters are advised that training programs within service commands be carefully reviewed so that proper emphasis is placed on foot hygiene in the prevention of trench foot, and also on the intelligent use of the footwear provided.

To designate what they are, Shoe-pac, 12-inch, and heavy ribbed wool socks (Socks, wool, ski) are issued. As an alternate, the man can use artic overshoes over the combat boot and various combinations of wool hose, that is, for example, they can use a pair of light wool hose and a pair of heavy wool hose over same. From the standpoint of equipment that is best suited for this purpose, however, it is the Shoe-pac worn with two pairs of Socks, wool, ski, as we see it now. Further investigative work is going on concerning this particular problem.

I can call your attention particularly to Sec. IV WD Circualr 312, 22 July 1944, TB Med #81, 4 August 1944, and also to articles published during the past year in the Army Medical Bulletin and in the SGO publication "Health". I think it is perfectly obvious that the best of footwear would be useless unless properly worn, and other measures prescribed are carried out. WD Circular #312 makes the prevention of trench foot a command responsibility, prescribes instructions to be given to the individual soldier and also the footwear he is to wear. Therefore, training of the soldier in the prevention of trench foot becomes highly important. We would be pleased to have you give this matter your attention.

The next thing I wish to discuss is the matter of foot baths. As you all know, this has been a controversial question in the Army for years. I am certain that all of you have doubted for some time the value of present foot baths. I can say that skepticism has now been confirmed by the National Research Council. However, we have been slow to issue specific directives regarding the use or disuse of chlorine foot baths, due to differences of opinion which have existed until recently among authorities on this subject.

The consensus now is that hypochlorite footbath solutions are not effective in the prevention of spread of dermatophytosis. Failure to prevent spread of fungous infections by the use of foot bath solutions which liberate free chlorine has been attributed to various factors inherent in chlorine solutions.

Of chief importance among these factors are the variable rate of decrease in concentration and limitation of range of effective fungicidal concentrations. The former factor is more or less common to all foot bath solutions; the latter is peculiar to chlorine solutions. Limitation of range of effective fungicidal concentration is due to the following features:

a. The active fungicide, hypochlorous acid, is not formed in

effective amounts above pH 8.

b. Strong solutions of calcium or sodium hypochlorite yielding 1000 parts per million of free chlorine have a pH above 8 and are too alkaline to form effective amounts of the active fungicide. While the use of this concentration would be practicable as regards maintenance it would be ineffective as a fungicide.

c. Although dilution of hypochlorite solution produces greater dissociation, a lower pH, and more of the active fungicide, an effectively low concentration yielding 100 parts per million of free chlorine would require hourly replenishment when used by as few as fifteen men. The use of this concentration is therefore obviously impracticable.

It seems probable that any footbbath solution would be ineffective for the following reasons:

a. Even if footbbaths killed all the free spores, a certain proportion of spores are encased in the keratin of epidermal scales.

b. Any solution which would dissolve keratin rapidly enough to be effective in killing keratin-encased spores in a foot bath would also dissolve the horny layer of the sole and produce a severe dermatitis.

c. The spores which are keratin-encased are tracked onto floors adjacent to foot baths, subsequently become freed from the scales, sporulate, and then serve as the main source of reinfection.

It is therefore suggested that emphasis be placed on the following methods of prophylaxis:

a. Flushing of shower room and dressing room floors with water under pressure.

b. Scrubbing of floors with brush and detergents.

c. Exposure of flooring or duck-boards wherever practicable to direct, unfiltered sunlight after application of the methods described above.

d. Preventing men from walking around barefooted in dressing rooms and barracks but instead insist on them wearing socks, slippers or shoes.

In conclusion, I should like to thank you for your very kind attention, gentlemen, and state that sanitation in general in the Service Commands has been beyond reproach and for this you gentlemen deserve unstinted praise. (Applause)

GENERAL BAYNE-JONES: Colonel Ahnfeldt very thoroughly covered a number of intensely interesting subjects coming under sanitation. I would like to open it up to you for any questions that you want to ask him. About the DDT paper, Colonel Ahnfeldt has copies that you can have to take with you.

COLONEL AHNFELDT: Captain Shaffer has a number in the back of the room. I have enough for everyone here if they care to take one with them. I thought you might like more detailed information on the DDT insecticides. There hasn't been too much published on DDT because of restrictions.

MAJOR WALKER: I should like to ask him if these sheets shouldn't bear a classification of "restricted"?

COLONEL AHNFELDT: I was afraid someone would ask that. This information is the same as we propose to put out unclassified in the revision of War Department Circular 151. I think

that that has now been cleared around the War Department, we haven't received any objection whatsoever and the same applies to this material. As a caution for the timebeing I suggest you don't divulge the information to anyone except to those to whom the information is important in your own service commands.

GENERAL BAYNE-JONES: We are having a great many arguments with the Joint Security Control over the whole publicity and release of DDT. Nearly all of it is in the open now except for security reasons the larvacidal part and I hope that that will break down, too, soon. Practically all of it has been in the newspapers, but it hasn't been cleared entirely by Joint Security Control simply because of the tie-up with larval control in overseas areas.

COLONEL KOGEL: I would like to ask one question. From the teaching standpoint; it seems as if there is very little liaison between The Surgeon General's Office and the Chief of Engineers. We will get through talking to the men against dry sweeping with respect to disease control and the next day a student will bring a poster which he has taken off the barracks wall and it says, "Preserve wood, conserve the floor, dry sweep".

GENERAL BAYNE-JONES: Will you get us one of those posters and send it?

COLONEL AHNFELDT: That might be one of the reasons for the Engineers hesitancy about floor oiling. The ostensible purpose is to try it out against various types of flooring.

I thought we had an effective liaison between The Surgeon General's Office and the Engineer's Office. Colonel Hardenbergh, isn't it Major Pohlman, Sn.C. over there who is our contact usually? He has always been very cooperative. But from what you say, Colonel Kogel, there apparently have been some contradictions in policy distributed.

A VOICE: Yes, sir.

GENERAL BAYNE-JONES: We are glad you brought that up, Colonel Kogel.

COLONEL KOGEL: There is another similar thing. We get through talking to them about giving the men the maximum floor space and the Chief of Engineers will put out a directive to us, "In every bit of available space, put as many men in as possible in a particular location." He could word it a little more diplomatically, so as not to make it so hard for us to put some of these points across.

GENERAL BAYNE-JONES: The question of floor space per man in the barracks has been a subject of intense anxiety with The Surgeon General for a long time. It was taken up by the Committee, Dr. Welch and others and we have had it up over and over again during this war. The decision to limit the floor space below original recommendations that were made on the subject is a decision of the Chief of Staff and highest authority, because they felt they had to get all these troops in at the beginning of the war, that that was more important than we estimated to be the risk of infection coming from overcrowding.

You may remember in 1942 and 1943 we sent members of the Army Epidemiological Board to most of the large posts in this country for a survey of of those housing conditions at that time. The recommendations that they made resulted in a little bit more allowance of floor space per man, but crowding continued. They can point with some pride to the military decision because there hasn't been any extreme respiratory disease incidence in the Army since that time, but what you say, Colonel, is quite right.

The Engineer is probably acting under a higher directive than the one that would come from the medical side. This is a case, I think, in which the medical advisors very thoroughly educated the military authorities, they considered the problem from both sides and said, "That is the risk we are going to take."

What is going to happen now with the increased induction rate? I would like, before we get through with this conference, to know what is happening in various posts. If they are going to bring in a lot of new troops and new men between now and July, we may have some serious conditions. We will try to talk with the Engineers about it, and about this oiling.

COLONEL AHNFELDT: I do have information recently from the Office of Chief of Engineers that they plan in new construction to provide 72 square feet per bed. (NOTE: Proposal altered later to 80 square feet per bed including center aisle.)

GENERAL BAYNE-JONES: We will be hoping, too, that they consider ventilation and heating in barracks. This is an enormously important problem that hasn't been properly investigated. Barracks are not well ventilated and not properly heated.

COLONEL MINOR: I think that is an important subject.

COLONEL BANTON: This question of delousing, I don't believe that there is an adequate coverage of that. When I came home from France in 1919 I got deloused three times and one time I didn't need it, but I find people now who have never been so much as inspected that have come back from theaters where they had plenty of typhus and various other things. One man was coming from Persia. They had a typhus case on the boat and put into Alexandria. Men came onto the boat and dusted about a little powder. When they got to New York there was no question about it, everybody got off the boat.

Another instance, a hospital on the Mississippi River was asking for more DDT because they were getting patients over there who had never been deloused and they were afraid that some disease might break out. I wonder what we can do to cover that point a little better.

GENERAL BAYNE-JONES: Colonel, I know about that ship because I went aboard it at Alexandria last April, General Fox, Wheeler and I and the rest. What happened at that time was this: It happened to be a navy gunner on the ship who was taken off at Suez somewhere with a very severe case of typhus and the boat went around to Alexandria.

I would like to tell you about this ship because it will show the problems. It was the basis of one of the decisions that Colonel Ahnfeldt spoke about. At Alexandria this ship was in quarantine. The Naval Port Officer and the Army were to hold that ship there and not let anybody ashore. There was typhus in Egypt the previous year. They had had 33,000 cases and they had had typhus in Alexandria all the time, so the Egyptian officials don't see why you should quarantine a ship against one case of typhus, particularly as long as this crew wanted to go ashore. They had been out a long time, come around from the Persian Gulf and they wanted a little holiday in Alexandria, so when we went out to this ship the Captain was ashore and a great many people were ashore.

In addition, there was a boat tied up at the dock. In the brig of this boat there were about 50 more seamen who had been rescued from ships in the Mediterranean and they were to be put right in this ship,

so that there was nothing done at that port to handle the typhus situation on the ship or keep people from going ashore and spreading the disease or coming back infested.

That was a fair job of dusting. Everybody on that ship was dusted with DDT and a great many of them were vaccinated. We followed that ship as best we could all the way along through the Mediterranean and I got the report of the voyage after the ship came in.

I don't know whether the people were deloused at the Port of Debarkation, but they had no more typhus on the ship. At that time the Ports were debating the question of whether they should give up all delousing by steam and methyl bromide delousing at the ports and depend on two things, delousing by DDT at the Port of Embarkation overseas, application of DDT during the voyage and then simple inspection for delousing on arrival here and maybe some more DDT spraying of some men when they got off.

Knowing just the points that you brought up, knowing how these ships could touch at various ports and have infected people on them, we stuck to the plan of having delousing at the ports here with methyl bromide and steam, with an exemption provided for the people who had been thoroughly inspected and found not to be lousy. When other people come in by air, I think some come through, as you say, without any inspection. I made two trips. I wasn't inspected at all.

I have seen men coming aboard at various places without being inspected for lice and they don't make any last inspection, do they, of passengers and crews coming in by plane?

COLONEL AHNFELDT: No sir. I think that is the greatest loophole, air transport, and I think Colonel Knies is looking into that question with the Air Corps to design some procedure whereby we can routinely check everybody who comes by plane.

GENERAL BAYNE-JONES: The introduction of typhus in that way or even a fever that may be louse-borne is not of much danger to people in camps here, but there have been two or three outbreaks of typhus in the middle part of this country brought in by Mexican laborers in Iowa and other states. There were quite a number of things that were reported.

I would like to say a word about the oiling of the bed clothing and floors. It is the most effective procedure of keeping down the bacteria in the air. It is particularly interesting in the reduction of streptococci in wards and barracks and especially valuable to individuals who carry streptococci in the nose and are of rather a dangerous character.

Some of the blankets of men who have been studied really are full of streptococci and those spread around when the blanket is shaken. Reaching the decision that impregnation of blankets is an effective method of overcoming acute respiratory disease comes from the fact that the men go out of that environment into other locations.

We had a very fine meeting on this subject at the San Antonio Cadet Center the other day. There was a conference of the officers, brought together by the Air Surgeon, and one of the interesting things brought out was that a group that had been living in the oil environment, where the bedclothing and floors were thoroughly oiled, had a higher respiratory disease infection rate than the group that had not been in that environment.

It really turned out to be that the people in the oiled group were mostly in the electronic school and they were crowded in class rooms with

their heads close together and conditions were, actually, that pneumococci were found in the dust of the cement floor they were walking on. It was badly ventilated and their infection seemed to be more or less related to their classrooms. The classrooms are a very important source or region for the transfer of respiratory infection, but it looks pretty good from the point of view of control of the spread of bacteria in the barracks. Whether they have applied this method all over and are getting equally good results is not certain.

What we are doing at Fort Bragg this year is to try it out again with a part of the new formula and really to try to see what the effect is on the total admission rate to dispensaries and hospitals from the Field Artillery Replacement Training Center there. The interesting, new thing that developed out of that was that it looked as if the ordinary respiratory diseases and hemolytic strepococci infections had been considerably reduced during the past season.

The other day we had something that looked like influenza down there and the difference between the oiled and the unoiled barracks group disappeared, but I think this will proceed to a standardized procedure both for the floors and the blankets when we get the engineers along with us.

COLONEL AHNFELDT: There is one other thing of current interest that I didn't include in the agenda and that is the matter of readjustment and redeployment of personnel from overseas. I wish you would look into the sanitation around these ASF personnel centers that have been established for the taking care of such personnel and see that they are adequate, because you can well realize the problem that is likely to obtain from crowding in those places and it will necessitate that every precaution be taken against the spread of communicable diseases including insect-borne disease in some instances.

GENERAL BAYNE-JONES: Are there any questions?

CAPTAIN COOPER: Has powder been used in combating Athlete's Foot? If so, a 2-ounce can can be used as a foot powder, particularly on ships. We have a tremendous problem on ships going into the South Pacific where the footbath apparently hasn't controlled it at all.

COLONEL AHNFELDT: I presume you are from the San Francisco Port. The Red Cross came to us inquiring about some powder that you were procuring locally, and had used with reported success aboard ships. I forget the name of the company at the present time. We had no information concerning it, so we had to come back to you and inquire where you were getting it and what the ingredients were. It was a proprietory preparation with no apparent virtues over the Army foot powder.

The present Army standard foot powder, (on the Medical Supply Table), as you know, has fungicidal agents in it, but my own personal opinion is that it isn't too satisfactory in the prevention of fungus infection of the feet. In fact, some of these discussions at the National Research Council and the opinions of the foremost authorities on fungus diseases and fungicides are to the effect that they aren't even sure that fungi cause Athlete's Foot.

CAPTAIN COOPER: I am not familiar with the powder that you are referring to.

COLONEL AHNFELDT: The Red Cross wanted a similar powder. They thought it was a standard Army foot powder and I had to inform them that

it wasn't, but I told them I would be very happy to find out what you were using and supplying these ships with. That problem has been quite a tremendous one in the Pacific Ocean area and Southwest Pacific theater particularly. Right now we don't have any answer for it, but there is a lot of work going on and I am hopeful that something beneficial may come from it.

GENERAL BAYNE-JONES: If there are no other comments or discussion we will adjourn for today. (Whereupon, at 4:45 p.m. the meeting was recessed.)

MORNING SESSION - 15 FEBRUARY 1945

The conference resumed at 9:00 o'clock a.m., pursuant to adjournment, Colonel William A. Hardenbergh, SnC., Chairman.

ORGANIZATION OF SANITARY ENGINEERING IN SERVICE COMMANDS - CURRENT RECOMMENDED POLICIES IN SANITARY ENGINEERING - GENERAL DISCUSSION OF SUBJECTS SUBMITTED FROM FLOOR -

COL. WILLIAM A. HARDENBERGH, SnC, DIRECTOR, SANITARY ENGINEERING DIVISION.

COLONEL HARDENBERGH: To get down to business, it seems to me that preventive medicine is one of the three major jobs of the Medical Department. That is to say, we have the problem of caring for the sick and the wounded. We have a problem of medical supply and we have a problem of preventive medicine or the conservation of the health of the troops.

In carrying on this preventive medicine program, organization is necessary. We have learned that through years of State and local public health work. Our own particular interest in that lies in the fact that it is going to be much easier for the Sanitary Corps, non-medical specialists, to work effectively under a trained preventive medicine organization.

Looking at it in a different way, there are in the Army now some 44,000 doctors who were taken from civil life. Many of those are specialists, highly trained specialists with no acquaintance whatsoever with the environment and factors that affect the health of the community, and no more knowledge of it than they learned in a brief and sketchy course at medical school. It is obviously very difficult in the short time that we have had, comparatively short, though it seems mighty long sometimes -- it is difficult, if not impossible, to teach these 44,000 doctors the essentials of preventive medicine and to teach them how to use the various non-medical specialists that the Sanitary Corps is interested in, that is to say, sanitary engineers, entomologists, laboratory personnel, nutrition and occupational health specialists.

From that viewpoint alone it is obviously very much to the advantage of the Sanitary Corps to deal with a smaller number of folks who know the essentials of health work.

As I told General Simmons when this preventive medicine program was started, I was highly in favor of it because I felt that our sanitary engineers, entomologists and so forth could work 100 per cent more effectively under trained leadership. I was especially interested in it because it looks sometimes as though we were going to have quite a good-sized post-war Army, and as though within that post-war Army it would be necessary to have a post-war Regular Army Sanitary Corps. If I have anything to do with it I would like to see it set up in the soundest possible fashion so that it will go on and contribute materially to the welfare of the Army in peacetime.

With that in mind and perhaps more for discussion purposes than anything else, I have prepared a program of sanitary engineering for our Service Commands. I don't know that you will have time to read this in detail, though I would like to go over with you some of the factors that are covered in it.

My reason for preparing this plan for sanitary engineering organization was; First, I felt that we had come to the point in the preventive medicine program where the duties and responsibilities of the sanitary engineer ought to be pretty clearly outlined; and secondly, I worked up the best plan and program that I could and brought it here in the hopes that you would make comments or criticisms.

Generally speaking, I believe that practically all of the service commands and most of our overseas theaters are working on essentially this program. I will be glad when we come to specific points to have comments, questions or objections or whatever you want.

The sanitary engineering program, of course, covers a rather broad field. For the purposes of discussion here, I have put down what it includes, but I have not put down all of its scope. It includes, but is not necessarily restricted to, water supply, its distribution and purification, including the sanitary surveys of installations and technical supervision of operating procedures that may affect the quality of water; sewerage and sewage treatment, including plant operation, and of course factors in design; refuse collection; and the engineering phases of mosquito, insect and rodent control; port and ship water supply, purification and protection, which is a very important problem; swimming pool design and operation; and factors in regard to health hazards in buildings, especially such as arose when the Army took over so many hotels and colleges. In this connection, I don't know how familiar most of you are with such problems, but when you put four times as many people in a hotel as has ever been there before and get them up all at one time when somebody presses a button or blows a bugle, you are going to get a tremendous load on the water system.

It seems to me that in order to perform all of these sanitary engineering duties within the service command organization certain elements are essential. Duties of the Sanitary Engineer should include: First, the responsibility, through proper command and technical channels, for the sanitary engineering functions under the surgeon. Of course, such functions are primarily under the preventive medicine organization because the only place for the sanitary engineer is under the preventive medicine officer or medical inspector as a part of the health organization.

Second, he should determine the needs for a Sanitary Engineering organization and should discuss these with the preventive medicine officer and, if necessary, with the surgeon to effect an organization that will do the job out in the field.

Third, he should have technical coordination of the work of the men in the field. You have to have leadership and control over what these ten or twenty or fifty engineers are doing in each Service Command.

All of you know how difficult it is to take a building that is not designed to be a hospital and try to make it into a satisfactory hospital. Supposing the doors are too narrow to get beds in, the elevators are too small, and the stairways are narrow and winding, it is going to be extremely difficult to make that into an effective and satisfactory hospital. In the same way, if we have a water plant or a sewage plant that is designed on a totally incomplete and outdated basis, it is impossible to produce good water or a satisfactory sewage effluent. Therefore, we must go back to the elements of design and that means that we must have a hand in planning, which is our fourth essential.

The Sanitary Engineer should be consulted in regard to placements of Sanitary Corps personnel and to promotion. Unfortunately, in most

of our service commands, the Sanitary Engineer is the only representative of the Sanitary Corps at Service Command Headquarters. In one or two of the service commands we have nutrition officers; in only two of them, I believe, do we have entomologists. The sanitary engineer can and should be of assistance in the handling of all Sanitary Corps personnel, even though his main duties and responsibilities are in sanitary engineering.

Then we have the maintenance of necessary liaison with various agencies, and that is essential. The close relations that so many of you know we have with the Corps of Engineers have been of immeasurable assistance in getting sound work done in the sanitary engineering line. Finally, the Sanitary Engineer should be responsible for sanitary engineering training programs and conferences and for sanitary engineering advice to other Medical Department echelons.

I would like very much to have any questions or comments. Who will be the first one? I am sure it is not so perfect that there is nothing more to say about it. Colonel Norton, from the Ninth Service Command, as I understand it, you have essentially this set-up out there now. Is that right?

COLONEL NORTON: Yes, sir.

COLONEL HARDENBERGH: I believe that you have, also, in the Eighth, Col. Dewey and in the Seventh, Col. Allen, you are doing about the same thing on that, too. Col. Hilldrup in the Sixth has had probably fewer sanitary engineering problems than anyone else but he has a very good man out there who has kept us out of trouble in the Sixth. In the Fifth, Col. Lacock, I know that they have had an excellent organization for a long time. And in the Fourth, of course, Col. Banton, we are very proud of what has been accomplished down there. One of those charts that is coming around covers the Fourth Service Command and another covers the Eighth, in both of which outstanding work in water control has been accomplished.

The Third, Col. Schrader, is another one where we have had an engineering organization continually since early in 1941, I believe. I would be very happy to have any comments or disagreements, if they are not too severe, on this. Well, these may come up later on because we have some topics here for discussion. I do hope that we will have well established programs in all the service commands, and I mean by that a program that is down on paper so that we will have no cause and no chance for misunderstanding.

We have gone along for the last four years, since we started this sanitary engineering program, simply on an unwritten basis, one idea being that as our preventive medicine program developed we were also making advances in sanitary engineering and we did not wish to freeze the program in any one place by putting it down on paper too soon. We feel that the time now has come when it should be written out clearly.

I sent around some charts, though unfortunately, I did not have enough of them for everyone, covering the results of water supply control in the Fourth and Eighth Service Commands. I know some of the other service commands have been doing an excellent job.

COLONEL NORTON: The record for the Ninth is very much like the record for the Fourth. We don't have a chart showing it but is is very similar.

COLONEL HARDENBERGH: I have been trying to get the Service Command Engineers to get the records together so that we could have similar water quality charts for all of the service commands. It is of interest that during the second half of 1943 our nonpotable samples were just under 2 per cent and so far in 1944 they have run 1.28 per cent non-potable, which is very good. I might say that the young men we have trained and sent overseas have done a similar job. For the last few months in the South Atlantic theater non-potable samples have been under 1 per cent.

We have had several other theaters where the rates are almost as good. I believe that if we had the facilities for bacteriological examinations in overseas theaters we would find that the water quality is excellent. In other words, we have a good preventive medicine organization in most of the overseas areas now. I certainly hope when you go back that you will remind your sanitary engineers to keep at work on this water chart for all service commands. Charts such as those I sent around, and as the one showing malaria control in this country, have been of tremendous benefit in selling this preventive medicine program to the Army, to General Kirk, and to others.

We conceived the idea some couple of years ago of comparing World War II with World War I. As you see, from the chart, we ran down mighty near the bottom on World War II. Our rate now is, as I recall, about one-thirtieth yet of what it was in 1919. Getting back to water supply, are there any questions or comments or objections on our chlorination policy?

COLONEL MARSH: I have two questions: One is, how do laboratory people rate a specimen as being non-potable because it has 500 colonies per c.c.?

COLONEL HARDENBERGH: Yes sir.

COLONEL MARSH: Nevertheless the laboratory sends a report back to the post saying it is non-potable, which entails considerable correspondence afterwards.

The second question, let's take as an example Governors Island, the water supply of which is from the city water supply than which there is probably no better water supply in the United States or the world. Every once in a while in some particular spigot somewhere on the post they will get some gas formers. The question is, should that supply be rechlorinated? You know the New York City water supply as well as I do.

COLONEL HARDENBERGH: I will answer those questions because they are quite typical of what we get from a good many areas.

TM 8-227 is the laboratory manual which prescribes the method of treatment, in the guise of fixing methods of reporting actually fixed standards of water quality; it was not intended that that should be done but it was done. Ever since I have been in the Army, I believe, the TM 8-227 has been under revision. How many more years it will be under revision, I don't know. In the meantime, there are technical objections or technical reasons why we can not modify it. It is a technical manual which is under revision. That stops us from making any marked changes.

I might say that we have prepared a technical bulletin, or manual, or Army Regulation on water supply in which we are going to try to eliminate not only that problem that you speak about, but we are going

to clarify the procedure as to what to do when you do get a non-potable sample. That is, we are trying to work out a system where if the past records of the post had been good and we get one bad sample it is not going to throw the whole economy of the post into reverse, whereas if we get two or three bad samples in a row, then we ought to take some strong measures. This has been pretty well written out but it is still not very near the publication stage.

The second one in regard to chlorination, our policy to cover the point that you bring up, Col. Marsh, is this: If a post is within the network of the water system it would not require rechlorination if the sum total of the quality of the water measures up to Army standards, which is a rather vague thing. We wouldn't require rechlorination on the basis of one or two or three bad samples. If your water supply were consistently bad in New York, then I think chlorination would be the wise procedure.

For instance, in a large city in the South that Col. Banton is familiar with, out of 686 samples taken before chlorination by the Army, 10.5 per cent were non-potable. That is a lot. After rechlorination by the Army, of 854 samples, 1.4 per cent was non-potable. There I believe rechlorination was more than justified.

I would like to have some more questions or comments. Maybe Col. Banton would like to tell us a little about that, if there have been any further developments in regard to the situation that I have just spoken of.

COLONEL BANTON: I think it is clearing up, Colonel Hardenbergh. The people there, I think, began to take interest in it and the local Army Commander threw his weight into it, so I don't think there will be any more trouble. This thing which Col. Marsh mentioned about getting reports from the laboratories, we tried to control that by a very close check on our laboratories. We had a system of rating laboratories, sending them out test samples and things of that sort. We have eliminated a great deal of that sort of useless reporting by better training in the laboratories from the Service Command Laboratory.

COLONEL MARSH: The reports I speak of all come from the Service Command Laboratory.

COLONEL HARDENBERGH: Col. Lacock, you used to have some difficulty with that out in the field. Is that pretty well fixed up now?

COLONEL LACOCK: We still get some telegrams being sent out about non-potable samples but we have minimized the danger or importance of those telegrams, knowing the supply pretty well. As was stated, we don't get excited over one non-potable sample on the post.

COLONEL HARDENBERG: You had a little trouble with chlorination out there, Colonel Norton, in the Ninth? No serious trouble, I mean but your Repair and Utility officer out there get a little flighty.

A lot of these folks get terribly excited about this chlorination before they ever start to apply it. We understand thoroughly that there are some places, some waters, where we are going to have chlorinous

tastes or other difficulties in our chlorination program, but it has been a strange thing that probably 95 per cent of the complaints came before they put the chlorine in the water. Not over 5 per cent, I guess, of the complaints came after they had actually applied the chlorine. In other words, it was one of those anticipatory things that do not materialize. How about you, Colonel Carroll?

COLONEL CARROLL: No trouble at all.

COLONEL HARDENBERGH: Are there any further questions or comments on our water program or on the mosquito control program? From our point of view, those two programs have run so smoothly, that it takes a very small amount of our time in Washington. We decentralize all of that at the service commands and they have done a beautiful job on it. When I go around to visit the service command headquarters, it is more in the nature of a vacation than it is in solving any difficult problems.

In regard to sewage treatment; I wonder if anyone has any problems? We are going to consider rodent control and prisoner of war camps presently, so we will discuss at this time the problem of sewage treatment, in our camps, posts and stations. Have there been any problems in that respect or are there any questions to ask?

I am not particularly surprised that there are not. I think we sent out to you copies of Dr. Parran's letter in which he complimented the Army on the fact that they have received no complaints from state or local health departments in regard to nuisances or dangers to health from stream pollution due to Army sewage treatment plants. We immediately sent copies to the Chief of Engineers and he called back rather happily about it. The Corps of Engineers have done a good job, they seem to be very proud of it, and we are proud of it, too.

The next thing I have here is rodent control and we did have a couple of questions sent in on that problem in advance. One was the advisability of building rat and insect-proof wards in case of plague and other similar diseases occurring in epidemic form. That was from one of our ports of embarkation.

In answer to, I would say: the presence of plague or other similar diseases does not justify extensive building alterations over and above present Army hospital standards for construction. All wards should be reasonably rat and insect-proof and should receive attention if there is any evidence of infestation. Wards should be inspected regularly for defects in vermin barriers and these defects should be promptly remedied. Any building housing patients suffering from insect-borne disease should be treated with DDT and this treatment should be repeated at regular intervals to secure a continuous residual insecticide effect.

The other question was: "How is it possible to estimate the rat population?" That came from an eastern port. It doesn't tell how heavily they are infested with rats. My reaction if that we ought to get somebody who knows about rodents on the job.

About three years ago, in order to be ready for this situation, we commissioned several men skilled in rodent control, getting them from the Fish and Wildlife Service. They have been very handy. I think the Ninth Service Command has used most of them; the Eighth has used some. We sent one over recently to take care of the plague problem in West Africa and he did a great deal of work on the control of fleas with DDT. I would say, where there is any rodent control problem that

the thing to do is to ask us t send someone to you who knows his business and have him make a survey and get an answer.

Now, if you have to guess at it, yourself, here are the recommendations: A crude census may be made by observing the evidences of rat infestation such as droppings, tracks, runways, burrows, nests, gnawing,-damage done, rat-baiting and observation of the number of live or dead rats; also, from pre-baiting tests.

After the species of rat is determined and a readily accepted bait is found, the numbers of rats fed can be figured from the total amount of bait consumed and the average per rat. Trapping will yield additional information if it is necessary to secure specimens, but it gives only very rough information on the numbers of the rates present.

We had another question on rats from another port of embarkation; "Is it possible to deodorize a building other than by removal of the dead rat? If one dies in the walls, what are you going to do about it, put a clothespin on your nose or what?"

The answer is this: Most of the commercial remedies, such as chlorophyll wicks, ozone generators and other odor removers have no established practical value. Dr. Ormsby of the National Research Council suggested recirculation of air through an activated charcoal deodorizer which would possibly reduce the intensity of the odor. In the same way, air scrubbing in an air conditioning unit and improved ventilation will reduce the intensity of the pollution. Some relief may be obtained by masking the odors of decomposition through introducing aromatic odors of one kind or another, as by using incense burners, or dispensers, with creosote or pine wood oil. These may be passed through the wall of the building in the same general area as the dead rat. However, for your peace of mind, the death of rodents in walls is an exception rather than the rule, as burrowing rodents usually retire to their burrows when poisoned.

To minimize the possibility of nuisance, emphasis should be placed on rat-proofing and removal of food supply before poisoning or fumigation, and trapping might well be employed within buildings before the rats are poisoned. I would certainly be glad to have more comments on this rodent business or questions.

COLONEL TILLMAN: At Fort Knox we pre-baited the whole camp at the General's request. Using the pre-baiting method we figured out that we had 7.5 rats around there.

COLONEL HARDENBERGH: Colonel Carroll, you might tell about your experience at Camp Edwards or Fort Devens where you really got a surprising number of rats.

COLONEL CARROLL: I don't recall the exact number obtained but the method there was that of setting baits and having a count to find out how many baits were taken, the following morning. Then the following day, setting more baits and continuing that same process day after day until we built up to the maximum number of baits taken. When you level off, then they poison the bait and have the big kill. After a time resume that again.

There was an officer, Captain Coogan, who was specially trained in rat and rodent control and he carried on that work at Fort Devens. An enormous number was killed but it would be just a guess to state the exact number. That method had been used extensively in the City of St. Louis..

COLONEL HARDENBERGH: As I recall, there was a big difference of opinion as to how many rats there were at Fort Devens. Some of the really conservative folks thought there might be several hundred there and you finally got about 4,000 out of that one dump, is that right? The number present may be rather surprising at times.

COLONEL KOGEL: There is such a thing as a rat pound which is used at times. I think they use it in India, and compute the number of rats that are caught in 100 standard traps and then by doing that at regular intervals, they can estimate whether there is an increase or decrease in the rat population. That might be used to give a fair idea of the rat population in an area.

COLONEL HARDENBERGH: I am glad to hear that. I had not thought about the procedure before. I believe, though, that it would still be desirable if a program be set up initially by somebody familiar with rodent control and then the post could continue to carry it on and probably get excellent data. Is there any more discussion on this rat situation?

CAPTAIN COOPER: Is there any method of keeping rats from getting on or off ships? Apparently when the rat guards are used it is quite inadequate. The method has not changed any so far as I know of rats getting on or off ships, particularly in a port where the ship comes from plague infested areas.

COLONEL HARDENBERGH: Would anyone like to answer that? The usual method as I recall in keeping rats from getting on or off ships is the use of guards, the maintenance of lighted gangplanks at night with a guard to keep rats from going back and forth, and other precautions of that nature. Can anyone add to that?

CAPTAIN SHAFFER: This isn't my information, Colonel Hardenbergh, but the Inter-Departmental Quarantine Commission was working on that problem and they finally recommended the abandonment of the rat guard as being very inefficient and as giving false security and their recommendation was that when a vessel entered a plague port or a known port where the rat population was high, that the only way to avoid rats was to tie up no nearer than three feet from the dock, and preferably not to remain longer than necessary. If their recommendations were followed, I think rat guards and lighting the gangplanks would be abandoned except where required by law.

CAPTAIN COOPER: How can you tie the ship with no lines to the pier?

CAPTAIN SHAFFER: I know nothing about the practical side of this but having talked briefly with Colonel Knies, I understood it was desirable to take off the cargo while maintaing a fairly accurate watch. Anchoring away from the dock at night would be recommended.

COLONEL HARDENBERGH: I think probably the rat guards are left on the cables because that would be essential, but perhaps some of the two-legged guards can be dispensed with under the system you are mentioning.

CAPTAIN COOPER: They have MP's always stationed on regular transports but it is almost impossible to station a guard on any freighter that comes into a port to dock at San Francisco, we will say. It is also impossible to take up gangplanks as the crew are getting on and off pretty nearly any time during the day or night.

COLONEL HARDENBERGH: Lighting doesn't discourage the rats?

CAPTAIN COOPER: I have not actually stood guard, myself, to see if they have been discouraged. The presence of someone there, I think, would be sufficient unless they are particularly overrun with rats. In San Francisco, particularly, where we have so many ships coming back from Pearl Harbor, which although it originally was a plague port, apparently is not now, it means the problem of guarding almost every ship.

COLONEL HARDENBERGH: Any more discussion? (Discussion off record.)

COLONEL HARDENBERGH: Perhaps, if there is nothing more on the rodent situation, this is a good time to shift just a little bit and bring up one point in regard to the Sanitary Corps and the utilization of the various specialties within the Sanitary Corps. As I believe all of you know the Sanitary Corps is now composed of groups of specialists: Sanitary engineers, Entomologists, Bacteriologists, Bio-chemists, Serologists, Nutrition officers, and Occupational Health.

One of the things that you will have to watch out for is the problem of using each man in his own specialty. An engineer is no good in planning a nutrition program. The nutrition man could not be put out on a mosquito project or on the operation of a water plant; there he is a total loss without insurance. You have to use a little common sense to put each man in the job for which he is intended. If you have surplus in any category, we can take him off your hands. We don't have to ruin a good nutrition officer by trying to make a sanitary engineer out of him and thereby also balling up your sanitary engineering program. I am sure that that does not happen much any more though we had just a few days ago an instance of one of our surgeons changing an M.O.S. on a man, from bacteriologist over to engineer, because that is what the job changed to. We have that come up from time to time. I don't know that there is any comment that anyone wants to make but if there is we should be very glad to hear it.

We had some questions on the prisoner of war camps and that is the thing that I guess is giving as many headaches as any other non-specific thing that I know of. In regard to the prisoner of war camps, one of the problems that come up to us is "What shall we do about chlorinating the water at prisoner of war side camps and branch camps? I believe that the service commands have adopted a fairly uniform policy in respect to that. Where running water is supplied under pressure and is chlorinated by the utility, that is, the supply comes from the city or water company, it is not necessary to rechlorinate, provided a reasonable number of the samples are bacteriologically potable.

Where treatment of delivered water is not adequate or where the supply is procured locally, at a branch camp, that is, you may set up a little treatment plant there. Then the water supply should be chlorinated, either with a hypochlorinator or by the batch method of treatment, whichever is advantageous to you. If that is impossible to do, then the water should be chlorinated in Lyster bags. If provision of a hypochlorinator is unduly costly, or if you have to buy new equipment, I would say either use the batch system of chlorination in tanks or make the prisoners use Lyster bags. I don't think that great cost or purchases of new equipment are justified for our prisoner of war camps. Are there any comments or questions on that?

COLONEL ALLEN: Colonel, what if you have a prisoner of war camp that has a reasonably large population, four or five hundred, that you know is going to be operating for a year or more? We have such a situation in Missouri. The camp has a population of 400 prisoners. It has been in operation now for nine months and will be continuing perhaps indefinitely.

COLONEL HARDENBERGH: Colonel Allen, what kind of water supply do they have?

COLONEL ALLEN: Shallow wells, driven points, in the Mississippi River Valley.

COLONEL HARDENBERGH: And you would have difficulty in chlorination there because your wells discharge directly into your system without any contact?

COLONEL ALLEN: Right.

COLONEL HARDENBERGH: And because you have several wells, they go into the--

COLONEL ALLEN: Two wells.

COLONEL HARDENBERGH: Do they go together?

COLONEL ALLEN: Yes sir.

COLONEL HARDENBERGH: I would be inclined to put a hypochlorinator in that line after they join and not worry too much about the contact period on your shallow wells. In fact, the Army chlorination policy, where you have an Army owned and operated well, does not require a contact period. In other words, I would put a hypochlorinator on the line where the two wells join and not worry about the contact period. I believe in that respect some camps are short on hypochlorinators and some have surpluses. I believe if you need any information on your PoW camps you should talk to your Repair and Utility officer and ask him to query the Chief of Engineers' office to see if some hypochlorinators are not available, if they are needed. I don't think it is necessary to buy any more new equipment. Are there any more questions on the water supply part of the prisoner of war problems?

If not, we will go over to the next question on the extent of malaria controls procedure. That is another thing that some people are not very clear on. Our own feeling in regard to that is covered in ASF Circular 206, 5 July 1944, Section III.

In paragraph 3 of that circular, it gives the procedures that will be employed to deal with the malaria problems among prisoners of war. That was worked up in the SGO between the various divisions concerned and I don't think that we have anything to add to it. I might say, in summarizing it, that we do not feel that extensive work around prisoner of war camps can be justified. It is a matter of money and, what is perhaps more important, of trained personnel to do the work. We do not feel that any extensive measures should be required to protect either the civilian population or the prisoners. You may provide a screened recreation building, and, of course, give them bed nets and require them to be in one or the other of those places after

dark. I believe, however, the whole situation is well covered in that circular.

We have another question on the disposal of liquid wastes from kitchen and bath facilities at the prisoner of war camps. That is, of course, where there is no regular plumbing and no sewer to carry the wastes off.

There we are on the same old problem of how to get rid of wastes without going into very much trouble. It is a difficult situation. About all I can say is to put in your soakage pits and put them in carefully. If possible, send one of your sanitary engineers out to make a test of the porosity of the soil, determine the most advantageous place for location, see to it that surface water is drained away and perhaps you can get by all right. You may have to reduce the water usage; you may have to reduce it down to 5 or 10 gallons, as it will not be nearly the problem to dispose of the waste as if you have 40 or 50 gallons per person. That might, also, well be a factor in the initial location of your camps. I know that you don't have very much to say about that. The Fourth Service Command has had an excellent system whereby the location of these camps is being passed on by the surgeon's office, the labor branch, and the engineer office. Is that right, Colonel Banton?

COLONEL BANTON: Yes, sir, and the requirements of the State Health Department are also considered.

COLONEL HARDENBERGH: That is an excellent way of doing it and I am sure that by following that method, even though it may not be perfect, you will eliminate some of the worst problems that you have in location. Have you had any trouble up there, Colonel Marsh?

COLONEL MARSH: Not materially. We have more or less the same system. We have to pass on the location before it is used.

COLONEL HARDENBERGH: How about you, Colonel Dewey?

COLONEL DEWEY: We have the same system, including the State Health Department, but we get some very peculiarly located camps in the hinterlands, swamps, and all sorts of places. How they get located there, I don't know.

COLONEL HARDENBERGH: How about you, Colonel Allen?

COLONEL ALLEN: It goes from bad to worse. We have the same system set up on paper but we find that in the end political and labor pressure rules.

COLONEL HARDENBERGH: Any comments from the other service commands? How about the ports of embarkation? Don't you have any prisoners or haven't you learned any lessons that you can tell us about here?

COLONEL MARSH: I don't think they use prisoners.

COLONEL HARDENBERGH: Just the Italian service troops. Then we have another question here on amoebic dysentery. Col. McCoy, of the Tropical Disease Division or Major Matthews will be

here later on in the program to discuss that matter. All we need to say here is that we feel that with the existing excellent purification measures for surface water supplies, as practiced in the United States, we have little to worry about the transmission of amoebic dysentery by means of water supplies.

We still have one more set of questions that I would like to go into: The Seventh Service Command sent in a question that is of much interest to all of us and it is concerning the effect of sewage treatment processes on various ova, Ascaris and so forth. They are now doing some work out there on that, but have not come to a final conclusion on the results of drying of the sludge.

It seems to be without question that these organisms will pass through the sludge digestion process of a sewage treatment plan and Dr. Wright of the National Institute of Health apparently found that drying, also, did not destroy them. Would you like to go on from there, Col. Allen, with a brief resumé, perhaps, of your experience out there?

COLONEL ALLEN: I believe I can discuss that better, Colonel, by just reviewing the queries we have sent in. The discovery of adult specimens of Ascaris in the tank of the sewage disposal plant, has raised the question of potential danger in connection with the use of sludge from such sources for fertilization purposes on low-lying vegetables that are consumed raw, such as lettuce and radishes and so forth, without danger of reinfestation.

Available records indicate that the presence of Ascaris at the treatment plant was due to infestation of one American patient in a PoW camp hospital. Ascaris or viable ova were found in the tank scum as well as in liquid sludge drawn from the tank but were not found in the sludge after normal drying on the sludge drying beds. This would tend to indicate that the digestion ordinarily accomplished in Imhoff tanks is not effective in eliminating viable forms but that the mere drying of the sludge after digestion is effective. Inasmuch as extensive use of dry sludge as fertilizer may be expected from irrigated areas in production of low-lying vegetables, the effect of normal sludge-drying on the viability of the Ascaris or other ova may be a very important preventive medicine problem. I understand that since this was sent in there has been a paper published in which results were reported different from the findings of our laboratory.

COLONEL HARDENBERGH: That was only on the effect of drying, I believe.

COLONEL ALLEN: Yes, on the drying effect.

COLONEL HARDENBERGH: I don't see why drying would have any effect on such organisms. If digestion doesn't kill them, I don't feel that drying would. It is just possible that by using the higher levels of heat digestion we might get something better. I would like to see this tried in some of our sewage treatment plants, using the upper temperatures, maybe above 100 degrees. There are not very many places where that is done.

In that connection, last year we were asked by the Corps of Engineers to approve the use of liquid digested sludge as a combined fertilizer and irrigation component for certain grass areas around camp. We went over it with them very thoroughly and finally agreed to let them use the sludge in those areas where troops did not have access to the fields on which the sludge was used. We felt that without any

evidence at that time of drying having any effectoon the ova and other organisms in the sludge, it was no worse to put on a wet sludge than a dry sludge. As a matter of fact, this sludge dried very quickly in the small amounts that they put on. However, I understand very little of it was used. Are there any questions or any comments on that part of it?

It not, I would like to bring up the point of inactive installations. There have been a good many posts put on an inactive status and every time we do that we have a problem in regard to water supply, sewage treatment and insect control. We prepared an outline of procedures which were sent out to the service commands. The Corps of Engineers liked this so sell that they adopted it practically without any change.

Are there any discussions or comments or report on that sutuation, including some of the problems that you have faced, maybe even on reduced personnel? How do you keep your sewage plants operating properly when you have 5,000 people served by a plant that is designed for 25,000? Have you had any trouble in the Fourth, Colonel Banton?

COLONEL BANTON: No, sir. They have reduced the number of units used at some plants.

COLONEL HARDENBERGH: What have you managed to do about mosquito control? Have you been carrying that on?

COLONEL BANTON: Yes, sir. MCWA is very good down there.

COLONEL HARDENBERGH: That ties in with my next question which is in regard to these personnel centers being used in the readjustment program. These personnel centers, would normally be some of your existing camps that have been used very little recently. Is that right?

COLONEL BANTON: Some of them have not been curtailed so much. That is to say that there is simply a change in the function of the camp.

COLONEL HARDENBERGH: Are you having some of those problems, Col. Allen?

COLONEL ALLEN: The principal trouble we have been having in this connection are in the smaller camps in which they want to inactivate the sewage treatment plant altogether. For example, at a prisoner of war camp, a city of about 3,000 has been dumping raw sewage into the river since time immemorial and the State Hospital for the Insane, one branch of which is located there, have been doing the same thing. The Army comes along and builds a PoW camp and invests several hundred thousand dollars into a sewage treatment plant. The Commanding Officer being short on personnel, that is the first thing he wants to eliminate, of course. We had a terrible fight to keep the sewage plant operating.

COLONEL HARDENBERGH: Col. Lacock, don't you have quite a few camps that were being reduced in strength. What are you doing with those? Closing them up?

COLONEL LACOCK: Our two large Division camps, Campbell and Breckinridge, are in sparsely settled areas, and they are on partial operation.

COLONEL HARDENBERGH: You are not having any trouble?

COLONEL LACOCK: No, sir.

COLONEL HARDENBERGH: Have you had those problems, Colonel Carroll?

COLONEL CARROLL: No.

COLONEL NORTON: We had a few in the Ninth. One of our men in the Ninth had written a report on his experience at Camp Adair. I thought it was a very interesting report. He brought out a lot of problems that they ran into from cutting down from about 5,000 to six or seven hundred.

COLONEL HARDENBERGH: I would like to see that. I hope it comes to the office.

COLONEL NORTON: We will publish it in our next monthly bulletin, very likely.

COLONEL HARDENBERGH: We don't always get that bulletin. We are about to send out a letter from the SGO in regard to these personnel centers, getting ready, of course, for the troops who may come back here after VE-Day and we are asking you to make certain surveys of those areas. I presume you have all done it already because we find normally that by the time we get around to asking you to do something most of you have done it already but we are sending a letter out to you in regard to these personnel centers and their preparation for VE-Day.

The next item I have is pest control and all I can say is that it seems to us that the Army does a better job of that than the commercial operators do, and a lot cheaper. That is a kind of bold statement to have any discussion or comment on, but I should certainly be happy if someone told us about that. Have you done much of that down in Camp Blanding, Col. Coleman?

COLONEL COLEMAN: No, sir. Blanding is pretty well filled up with IRC troops.

COLONEL HARDENBERGH: With reference to pest control --

COLONEL COLEMAN: Yes, sir. We have to keep up a program of pest control, mosquitoes, flies, rodents the year round.

COLONEL HARDENBERGH: You do that with your own forces?

COLONEL COLEMAN: Yes, sir.

COLONEL HARDENBERGH: Is Lt. McGahan still there?

COLONEL COLEMAN: Yes, sir, he is still with us.

COLONEL HARDENBERGH: Throughout the service commands we have been holding a good many of these DDT schools. It has been our feeling that the Medical Department personnel ought to know a little more about DDT than any other component of the Army. In furtherance of that, we have tried to send out whatever literature was available to service command headquarters, for re-sending to the posts. We sent, I believe, all of our service command engineers with the exception of one, down to Orlando to take a special course worked out with the Department of Agriculture. It seems to us that was a very wise thing. We find now a number of excellent schools are being carried on throughout the various service commands and it seems that Medical personnel has been able to take the lead in that program which is exactly what we wanted them to do. Are there any comments or questions about these schools or any way in which we can help you in regard to them?

COLONEL DEWEY: We in our school in the Eighth Service Command would have appreciated a little more information from The Surgeon General's office about what our position is supposed to be in the school because a representative came out from the Chief of Engineers' office and if it had not been that we had a very progressive entomologist in out Headquarters, the school would not just have come off at all. He took it upon himself to run the thing.

COLONEL HARDENBERGH: He did an excellent job. I saw that program.

COLONEL DEWEY: But he did it without any authorization whatever. It just happened to work out quite nicely.

COLONEL HARDENBERGH: Do you think it would be well if the SGO took the lead in recommending these schools and fixing it so that the Medical Department could more easily provide leadership in them?

COLONEL DEWEY: Yes, it would help quite a bit. As it was, the thing almost went haywire because he had to do everything through the Corps of Engineers.

COLONEL HARDENBERGH: It shouldn't be that way.

COLONEL DEWEY: And they didn't carry out some of the things that our entomologist outlined for them. He didn't find it out until the last minute.

COLONEL HARDENBERGH: Did you have something to say on that, Col. Allen?

COLONEL ALLEN: As you know, Col. Hardenbergh, we had arranged for what we thought was a very good conference. We cooperated with the engineers, the Chief of Staff approved it and we had arranged at Kansas City a three-day conference for the latter part of this month. The Air Corps were invited and about 200 of us were going to be present -- 170 some-odd reservations were all ready and Control found out about it. The result is that we are not going to have a conference. That is based, of course, upon the directive pertaining to conferences attended by 50 or more. Whether we are going to be able to have a number of smaller conferences or not, I don't know. This broke just before I left headquarters Monday morning.

COLONEL HARDENBERGH: I got the notification just before I left yesterday.

COLONEL ALLEN: Yes, sir. Now, if we can get some support, from The Surgeon General's office, that this conference is necessary and that these conferences are desired, I think we can go ahead, but as it stands now, I believe Control has us whipped.

COLONEL HARDENBERGH: I think we can get out a notice to you. I think you might have to keep it down to 49. Is there any more comment on this?

COLONEL MARSH: We had no trouble at all in the Second Service Command. Lt. Osmun, our entomologist, put on a conference at North Monmouth last summer, a two-day conference for officers, medical inspectors and Air Corps. Then it was continued for another two days for enlisted men. These posts sent down a certain number of enlisted men and they were sent back and all had learned how to use DDT. Our Control Branch let us have it.

COLONEL HARDENBERGH: I think Col. Marsh's suggestion that a place be provided in the instruction program for the enlisted men is an excellent one.

MAJOR HOPKINS: Our conferences were in the middle part of January, for three states. We set up the conferences in three ci cities of three states. After having had one day of conference, a man spent a second day in the camp mess hall and barracks for actual demonstrations, and the conference was set up for the personnel that were to do the work. The leader took the civilian employee of the Engineer's office, an enlisted man of the Surgeon's office or whoever was actually going to handle that spray gun and gave him training in the handling of the spray gun and in the handling of his equipment on that second day.

COLONEL HARDENBERGH: We have been very much pleased with these instruction programs. I am not competent to judge of their quality beyond the fact that it does indicate that the service commands are trying to and are doing, I believe, a very fine job in these instructions. Are there any other comments on our DDT schools? Are there any questions on any subject?

I have reached the end, except for two small items, of the subjects that I was going to discuss. I wonder if anyone has a problem to bring up that we might be able to get various viewpoints on from here? If not, I would like to hear from the Ports of Embarkation, which are quite well represented here. We also have Col. Franklin over here from the Second Army and Col. Primer from the Fourth Army.

We have quite a group from the ports of embarkation. I am sorry I didn't get all of their names. I think that everyone here would like very much to hear from Col. Franklin and if he would like to come up here and talk we would certainly be pleased to hear from him.

COLONEL FRANKLIN: I don't believe there would be anything of general interest that I have to say.

COLONEL HARDENBERGH: I talked over a lot of things with Col. Franklin about a week ago and he had a lot of interesting things to say then.

COLONEL NORTON: Could I make a comment here? I served under Col. Franklin in the Seventh Army over in Sicily and just didn't want to let this opportunity pass without saying that he certainly has been interested in the general program of preventive medicine. I am delighted to see him again. I know that he has done a good job in the Second Army.

COLONEL HARDENBERGH: Col. Primer, how about it? You have some problems in Texas such as typhus and other diseases that the Texans won't admit.

COLONEL PRIMER: Thank you, Colonel. I have nothing to add to the conference. I was very interested in these schools on DDT. I didn't know about them. I know that we would be glad in the Army, and in the various posts and camps, if when they put these schools on locally, if they would be sure and let our medical officer, and the special troops headquarters, know we will try to get as many of the officers in the various units, especially detachments and smaller units, so they could attend those meetings, get all the information, and learn how to put these various measures into effect in the field. After all control of a lot of these diseases is going to be a problem of the field forces. I have been very interested in the program as a whole. It has been very good.

COLONEL HARDENBERGH: Thank you, Col. Primer. I would certainly like to hear from the Transportation Corps folks. Suppose we start off as far away as we can. Is there anyone here from the Seattle port?

CAPTAIN GOODNIGHT: I think that most of the points have been covered pretty well. We are interested, of course, in rat control programs because there have been plague infested fleas on the rats in Tacoma, which is very near to Seattle. They are trying to do quite an extensive rat control program and the newspapers have been giving pretty good publicity to get the citizens interested in it and that is one of our major things right at the present time.

COLONEL HARDENBERGH: Thank you, sir. San Francisco -- I know we have someone here from San Francisco.

CAPTAIN COOPER: I don't have much to add. The question that almost always comes up, particularly on ships, is the use of salt water for showers of enlisted men on ships and of late it has become a particular problem when you have as many as 500 or 600 ships in the bay, all of them loaded with troops ready to go off in a convoy and all of these ships taking on salt water without any methods of purifying it and it being used always for showers and not infrequently for washing dishes. The fresh water supply is limited and the need of a large amount of water for the washing of mess trays or regular mess gear has required the use of salt water. We have been installing regular washing machines which use a minimum amount of fresh water and steam which has eliminated the problem but the use of salt water taken in by the ships for showers for the enlisted men has apparently been a real problem, especially with the possible contamination of fresh water lines. I am wondering what the benefit of the use of chlorine with salt water would be.

COLONEL HARDENBERGH: Very little.

CAPTAIN COOPER: Are any other suggestions for using salt water, as they have been and always will when carrying as many troops as our ships are forced to carry, and with water purifiers the only provision for taking care of the military need.

COLONEL HARDENBERGH: There is nothing that we can do for the salt water that I know, except to prevent it from mixing with the drinking water. We have to check the pipe installations of the ships to see that there are no cross connections and then we have to safeguard the quality of the drinking water. I don't think that we can go much beyond that.

CAPTAIN COOPER: Do you think the threat of this salt water in the showers is anything to be considered? A certain amount of that is ingested. Frequently you will find men using it for washing teeth and other purposes.

COLONEL HARDENBERGH: I would say that much depends on where they take the salt water on board. If they are going to anchor over a sewer in the harbor and take on salt water they are going to have trouble. If they were out in the ocean they would not have so much.

CAPTAIN COOPER: In many places they don't have sewers but each ship has a sewer of its own, putting out its sewage of 2,000 men on each ship. When you have as many as 200 transports and a couple of thousand men on each ship you have as much sewage in that small area as from a large sized city.

COLONEL HARDENBERGH: That is right.

CAPTAIN COOPER: Another thing in connection with our transport service, which I doubt has been considered in setting up your shower facilities for troops in barracks, is the effect of steam pipes running through the decks below the areas where the men take showers. In a particular ship, the transport surgeon reported that among the men in one particular compartment, who used the showers where steam pipes ran through the deck, making that deck much hotter than elsewhere on the ship, he saw very, very little athlete's foot. The men in the other compartments had a great deal of athlete's foot. I wondered if the benefit of increased heat on surfaces has any effect on keeping down the amount of athlete's foot?

COLONEL HARDENBERGH: I would have to ask somebody else about that. I do not know but I would be glad to hear comments on it. I think Col. Marsh has something to say, too.

COLONEL MARSH: I don't know why we worry about salt water showers, even if the water is somewhat polluted. If you go to Coney Island on a hot Sunday. ---

COLONEL HARDENBERGH: Or Atlantic City.

COLONEL MARSH: Coney Island is a little worse, --- and see the people in the salt water shoulder to shoulder. I had occasion to make some bacteriological analyses of that bathing water some years ago because of a little controversy I was having and I have forgotten -- I think it was something like 10 billion bacteria per cubic centimeter and nothing but gas so I am not worried about salt water showers.

COLONEL HARDENBERGH: There was standing room only for bacteria in the water, just like bathers on the beach.

COLONEL MARSH: People don't usually drink much of that salt water, either. Another thing, in regard to this heat on the floor and the prevention of athlete's foot, I wonder if the hot floor doesn't allow a man to dry his feet a little better? I believe firmly that the best prevention of athlete's foot is thorough drying of feet.

CAPTAIN COOPER: I wonder if the Colonel ever tried drying his feet after a salt water shower.

COLONEL MARSH: I have.

CAPTAIN COOPER: It is almost impossible.

COLONEL HARDENBERGH: How about the Los Angeles port? Do we have anone from there? (No response.)

COLONEL HARDENBERGH: New Orleans?

MAJOR CANNON: We have some new problems in New Orleans with salt water because there are 20 miles of docks and all have access to the city water line. The General has been very interested in DDT control and we have had excellent support from all sides in the treatment of the mess halls and barracks.

COLONEL HARDENBERGH: You had an unfortunate occurrence about two years ago, I believe.

MAJOR CANNON: I might mention that in just a moment. We had, on one of the ships that was visiting the city, a cross connection between the fresh water line and the river line. The day the ship was going to sail, they had a city pressure on their power line of about 50 pounds and they were taking on water at the same time indirectly, with a difference of about 100 pounds pressure. They got back-pressure through a valve and polluted the city water line with some of the river water. They had, the following day, within a 24 hour period, about 75 to 80 cases of diarrhea among the dock workers.

This is a good example of a cross connection, which is dangerous, due to the fact that they have difference of pressure in the fire hose and the city water supply.

LT. COL. FRICK: We are very much interested in rodent control, but I have nothing to add.

COLONEL HARDENBERGH: You have quite a flock of Sanitary Corps folks down there at Charleston, I believe, waiting for your ships to go.

LT. COL. FRICK: We have.

COLONEL HARDENBERGH: I hope you are keeping them busy becuase if you don't keep them busy they write me and I have to explain to them why they are not being used.

COLONEL HARDENBERGH: How about Hampton Roads?

MAJOR KENNA: We haven't much to offer, except that there was a question here asked a little while ago on the relative value of rat guards on ships. Recently I heard Dr. Oleson in New York, in the port-surgeon's conference mention that rat guards were absolutely useless and he didn't recommend their use.

What he did recommend was that when ships came in from contaminated ports the quarantine officials should inspect the ships thoroughly and then if the rat population was found to be above a certain figure that the ship was fumigated rather than simple measures used. I might add also that he noticed that on English ships they had their own method of guarding their lines using a burlap bag covered with tar and creosote, which they claim is very much more efficient than the use of our own type of rat guards.

COLONEL HARDENBERGH: I never heard of that. How about New York?

MAJOR BUZZERD: We carry on quite an extensive program of general sanitation of ships. We are constantly aware of the dangers from rodents and vermin and we helped solve our rodent control problem by sending six non-commissioned officers to the Public Health Service to train them. These men went out with the Public Health Service Inspectors and on their quarantine inspection of ships. We continued that training in the office and really we had better inspectors than the Public Health Inspectors. They are closer in estimating the rat population of a ship than the Public Health Inspectors.

We carry on a constant Army extermination program. We are using DDT almost exclusively; however, we have found that sodium fluoride works a little better on roaches; with the DDT residual spray for bedbugs we make one application and go back and inspect the beds and matresses, and there are no bedbugs. We use that as a prophylactic measure. Whether there are any bedbugs there or not we spray them anyway.

As soon after a ship comes in as possible we have the water analyzed. We have a small water laboratory on Staten Island and a trained Warrant Officer in charge of it. He obtains his own samples, taking water directly from the tank through the manhole. He also takes a few samples from taps. We get almost 24 hour service on water. If it is found non-potable, the Warrant Officer personally takes care of chlorinating the tanks before the ship leaves. Of course, there are a great many of our ships that are equipped with automatic chlorinators and some with the super and dechlorinating apparatus which we have really found to be the very best type of water treatment.

COLONEL HARDENBERGH: We think that super-and dechlorination are very good.

MAJOR BUZZERD: With regard to the rat guards, we agree with Hampton Roads. We talked to Dr. Oleson, the Chief Quarantine Officer, many times in New York. He does not believe in them at all but we use them on our transports, and we instruct our surgeons to watch the situation in foreign ports. If they get into a plague port, we recommend that the ship be moved away from the dock at night and the lines cut so that the rats can not get on the ship. We have very little disease of any kind aboard the transports, especially in the nature of diarrheal diseases or other communicable diseases. We have been very fortunate. I don't know whether it is just through

our own efforts or just by an Act of God but we have been very fortunate.

COLONEL HARDENBERGH: Thank you, sir. How about Boston?

CAPTAIN WARD: I have not much to add to what has just been said. We follow that pretty closely. I can attest to the fact that DDT does work very well in spraying for bedbugs. We try to recommend, with as much pressure as possible, to have chlorinators aboard ships where the layover is long enough for them to install it. We have recommended the installation of monel metal units for dish-washers. They rust rather badly and we find that installation of monel metal inserts serves to eliminate that.

At present the principal problem seems to be in the setting up of the hospitals for returning personnel. We work rather closely with the veterinarian, who has the policy of putting on enough frozen milk to accommodate the returning patients so that they get about a pint of milk a day.

COLONEL HARDENBERGH: Thank you, Captain Ward. We are running a little close to the end of our time period. I want to give everyone a chance for a cigarette before the next period but I think we would like to hear from the representative of the Chief of Transportation if he is here.

MAJOR NEWMAN: I don't know that I am from the Chief s office.

COLONEL HARDENBERGH: We look at it that way, from our point of view.

MAJOR NEWMAN: Unfortunately, Colonel, I have not been there long enough to know too many of the policies of the Chief's office. I was formerly in Boston and Captain Ward has given the report from there. I think we are all very proud of much of the sanitary work that has been done, particularly aboard ships.

Capt. Ward and the other port outfits have outlined it. It has been well-handled. One thing that has taken considerable attention is the contamination possibilities on ships in introducing fresh water and the possibility of getting a cross connection with the salt water. That has been studied thoroughly. I know in Boston that the First Service Command and the Port Sanitary Corps Officer got together and made quite an extensive survey, checking into it thoroughly.

The question of food being put aboard ships for returning patients has had quite a bit of attention in our own office because of the desirability of giving these boys an increased ration on returning, over what they have been used to in the hospitals overseas. It has been handled very well and they are giving considerable fruit juices and many of the dietary items that they feel they need.

COLONEL HARDENBERGH: Thank you sir. Col. Walker. (Western Defense Command)

COLONEL WALKER: We have no particular problems, Colonel.

COLONEL HARDENBERGH: A happy condition.

COLONEL WALKER: But I would say that we have an extensive command but rather small in numbers and that we would appreciate -- we are quite a ways over on the Pacific Coast, -- getting on the mailing list of The Surgeon General's office for some of this material on DDT.

COLONEL HARDENBERGH: I am sure that the Ninth and Eighth Service Command, all of them, in fact, that border on the Armies or the defense commands or the ports of embarkation, will be happy to join together, as far as they can, in theseschools and in any kind of help.

COLONEL SMITH: (Eastern Defense Command) I would like to make one comment. I don't know whether you know it or not, but we have arrangements with the first four service commands whereby their sanitary engineers include the EDC in their routine inspections. We feel free to call on their sanitary engineers to make any emergency inspections, due to the fact that we have no Sanitary Corps officers. We have received excellent cooperation but it has come via the grapevine to me that there will be a reorganization of the Eastern Defense Command in the near future. As a result of that, we expect to lose some of our medical officers who have conducted inspections in the past. I would like to encourage or request that the Sanitary Engineers of the service commands include our units in their inspections and send copies of reports to our office. The Eighth Service Command now, since we have taken over the Southern Defense Command, is involved in this process and I would like very much if you would include our installations in your inspection.

COLONEL HARDENBERGH: Thank you, Col. Smith. Gentlemen, I had intended, as I said, to give you ten minutes to smoke a cigarette in. On that basis we are running about seven minute late. It takes me seven or eight minutes to smoke a cigarette. Let's try to get back on the job about five minutes after eleven and we will just have to hand over to those who follow, about five minutes late. (Recess.)

COLONEL HARDENBERGH: Right now, I would like to introduce a man from Carlisle. Col. Kogel has been in charge of the health training program work at Carlisle. He will speak the activities of the Military Sanitation Division at the Medical Field Service School.

DESCRIPTION OF ACTIVITIES OF DIVISION OF MILITARY SANITATION, MEDICAL FIELD SERVICE SCHOOL, CARLISLE BARRACKS, PENNSYLVANIA.

LT. COLONEL MARCUS D. KOGEL, MC, DIRECTOR.

COLONEL KOGEL: Col. Hardenbergh, fellow officers; my subject this morning is the work of the Department of Military Sanitation. As you probably know, the Department of Military Sanitation is one of the eight teaching departments of the Medical Field Service School. The Medical Field Service School came into being 1 September 1920 with the objective of training Medical Department personnel in their field duties. Since the first class reported in May 1921 the principles of disease prevention have been stressed in the training program.

The Department of Military Sanitation performs two basic functions. First, it teaches students the established measures for the preservation of the health and prevention of disease among troops and, secondly,

the department performs research in problems of field sanitation. Teaching and the writing associated with teaching occupies most of the time of the department.

At the present time there are three courses offered at the Medical Field Service School.

1. An 8-week Basic Officers' Course which constitutes the main effort of the School.

2. A 5-week Medical and Field Sanitary Inspectors Course.

3. An Officer Candidate School -- this is an intensive seventeen week course conducted for enlisted men and leading to a commission as second lieutenant in the Medical Administrative Corps.

We have also in the past conducted Officer Cadre Courses, as divisional and non-divisional organizations sent officer cadres to us for training for special assignments; and advanced pool courses for Medical Department officers who remained in the pool after having completed the basic officers' course.

Out of a total of 375 hours of instruction for the basic officers' class the Department of Military Sanitation is credited with 44 hours, or approximately 11 per cent. Actually, we give many more hours but we get no credit in the final tally for the field problems demonstrations, and applications which are put on by the Department of Military Art and in which we take an active part; and for the lectures and demonstrations presented by the Department of Veterinary Field Service.

The breakdown of the 44 hours of Military Sanitation may be of interest. Five hours are devoted to the control of droplet and airborne infections including housing and tent sanitation. A total of 21 hours are given over to the control of intestinal diseases, including waste disposal, mess sanitation, heating in the field and water purification. Two hours are spent on the subject of venereal disease control. Fourteen hours are spent on arthropod and animal pests, vectors and reservoirs of disease and their control, and two hours are devoted to special sanitary problems, particularly those of the tropics and extremely cold climates.

The student gets a practical down-to-earth course in military sanitation and when he leaves our school, he should know how to safeguard the lives of his men in the field. He is familiar with field methods of waste disposal and water purification. He has been taught recent developments in mosquito control, louse control, rat control, fly control, flea control and mite control. He is abreast of the latest developments in communicable disease control. We try more than anything else to make him preventive medicine conscious. When students come to us, particularly Medical Corps officers, they are not preventive medicine conscious.

Since the first basic officer class went through the Medical Field Service School in December, 1940 -- that is, since the mobilization -- we have graduated 24,516 officers from the basic officers' courses alone and 18,276 of these were physicians; 4,272 were dental officers; 584 were veterinary officers; 488 were Medical Administrative Corps and there were 872 Sanitary Corps officers.

The Medical and Field Sanitary Inspectors Course was started on the 2nd of November 1942 with the mission of instructing especially selected officers in all phases of field sanitation and military preventive medicine so that they may satisfactorily carry out their advi-

sory and supervisory duties as preventive medicine officers or assistant medical inspectors in divisions or at posts, camps, and stations. While all the departments of the School cooperate to make it a finished and thorough course, most of the instruction is given by the Department of Military Sanitation. It is a five weeks course and there is an interval of one week between classes. The next class is scheduled to begin 12 March 1945.

The Medical and Field Sanitary Inspectors Course is a well-rounded, intensive, practical course in preventive medicine, well worth while for all preventive medicine officers whether already assigned or preparing for such an assignment. At first only carefully selected Medical Corps officers were designated to take this course of instruction but a letter, AGO, 21 January 1943 added Sanitary Corps officers to the authorization and the first Sanitary Corps officer appeared in the 4th Class.

Since then the number of Sanitary Corps officers has steadily increased and the ratio is now reversed. In the last two classes we had one Medical Corps officer each and the rest were Sanitary Corps officers or Medical Administrative Corps officers awaiting assignment to the Sanitary Corps. Four Dental Corps officers have taken this course; and more physicians than I care to mention -- who have not the slightest interest in preventive medicine and who seem to have been sent to the School because they had nothing to do at the time candidates were being selected. I recall in particular the puzzled and at times pained expression of a plastic surgeon of considerable experience who was sent through this intensive course in military preventive medicine -- possibly with the idea of improving his technique.

This course was set up to take care of approximately 50 students each session but only in four of the 21 classes graduated were there more than 50 officers. Lately the tendency has been for the classes to be quite small. In the 19th Class, only 16 officers were given the opportunity to attend. The last class, the 21st, had an enrollment of 33. This is not economical since it takes as many instructors and as much time and effort to teach 16 officers as 50.

Experience in combat areas has demonstrated that training in sanitary control measures is of paramount importance and it seems reasonable that better utilization should be made of existing training facilities.

We have graduated so far from the Medical and Sanitary Inspectors' Course a total of 841 officers broken up as follows: 466 MC; 4 DC; 76 MAC; 288 SnC; 6 PC and 1 CE. The officer candidates receive during their 17 weeks course 63 hours of instruction by the Department of Military Sanitation. This does not include the hours coordinated with the Department of Military Art and the Department of Veterinary Medicine.

In order to keep the instruction alive and up-to-date we have had to do considerable writing, both in the form of guides for instructors and issues for students. Our mimeographed material, particularly our issues to the medical inspectors, have become well known throughout all the commands and we have to fill numerous requests for this material. I have a good example of this type of material here which you are welcome to take, and if any of you are interested, if you will write to us we will be very glad to give you all of our memeographed material.

We operate an insectorium so that sufficient living material is available for demonstrations to the student. Nothing can take the place of the officer actually seeing and doing and feeling. At the present time we maintain colonies of mosquitoes, the house fly and the common bedbug. There are so many other pests available, readily available in the post that we don't have to maintain special colonies.

We have developed at the Medical Field Service School a most extensive demonstration area, with actual full-size working models of practically every useful sanitary device and appliance that might be needed by troops in the field to maintain the highest possible standard of health.

In the matter of research the title of some of our reports will give an indication of our work: Study of Chlorpicrin as a Delousing Agent for Clothing; Efficiency of Katadyn Water Filter in Removal of Cysts of Endamoeba histolitica; Test on Orthotolidine Tablets; The Diatomaceous Earth Pack Filter; Efficiency of Foot Baths; Japanese Water Treatment Sets; Water Chlorinating and Dechlorinating Units.

The bulk of our work, however, does not appear in reports to The Surgeon General but is reflected in the instruction to the students. We may spend months trying to get a U - shaped piece of pipe to serve as an effective gasoline burner or make downdraft heaters from 105 mm shell cases and our students get the immediate benefit of these investigations. I do not intend to imply by these remarks that these simple improvisations originate at the Medical Field Service School. We originate very little. We get our ideas from men who are really doing things in the field and at times we improve on them.

We in the Department of Military Sanitation feel very grateful for the opportunity that has been given us to serve -- we feel proud when we remember that since the present mobilization began we have taught preventive medicine to more than twenty-nine thousand Medical Department officers. Are there any questions, gentlemen?

There was one question presented before this session started, on the use of a preparation on board a ship where suitable, sufficient hot water is not available for the washing of mess kits. I assumed that practically everyone is familiar with the Compound Germicidal Rinse which is available for use under those conditions. Col. Ahnfeldt yesterday brought out another very important use of the Compound Germicidal Rinse, in the washing of contaminated vegetables. Again, it is used where boiling water is not available, and sometimes it does not ruin the vegetable as much as boiling water would.

There was one other question, I believe, about covers for meat blocks. As far as covers for meat blocks are concerned, I think a very excellent device was written up in the Army Medical Bulletin and we have no objection to covers on meat blocks. The main thing is to keep the cover clean. If you are going to cover the meat blocks to keep the inside of it clean, the idea is not to let flies and animals defecate on your meat blocks and to urinate on them. It is a very important thing. Meat blocks have to be kept clean. Any device that will keep a meat block from being contaminated is a worth-while device.

Another question that was brought up concerned the recent advances in field sanitation. We still bury our wastes and still burn them. We now have intriguing methods of burning them and we have an interesting "hot squat" which we demonstrate at the field service school for the disposal of human waste. Under certain conditions

where ground water is very high and nothing else can ever be done, we can always put a nice seat and a self-closing lid-cover on a 55-gallon drum and make out of that sort of a multiple shelf type of incinerator. You can have a little ramp heading up to it and it makes a very clean latrine that can be used where you have fuel.

I once took a foreign officer through our area. We are very proud of our new demonstration area and he sort of made a face at every device I showed him. When I showed him a lot of wood, he said, "Where am I going to get wood to use as fuel?" When I showed him oil as fuel, he said, "I have no oil to use as fuel." Most of our devices use gasoline as fuel. He said, "Gasoline is very difficult to get. We have no gasoline." He was also not much interested in our devices for human waste disposal. In fact, feces is a very valuable commodity where he came from and in certain places they don't like to dispose of it. We really have developed nothing that can utilize air by itself as a fuel. We have gone into the use of the oil-water flash burner considerably and as many of you know, in certain installations it works very effectively.

We have gone into a great deal of the use of this U-shaped pipe in heating water for mess-kit washing. We have some dandy devices for taking showers in the field, just an ordinary five-gallon drum with a couple of holes in it. It makes a very effective shower bath. I wish every one of you would get the opportunity to go through our new area, which goes into everything, including rat control. We have even constructed a stream in that area; we have a rambling brook that leads into a pond. We have a swamp and everything. Every possible device that can be used in maintaining the best possible health conditions among our troops is demonstrated. We would much like to get ideas from the various service commands.

COLONEL HARDENBERGH: Col. Kogel was a little bit modest about that demonstration area that he has. It is really a remarkable place and well worth going through. I hope that sooner or later all of you will arrange to go there and see it. They have done a fine job there. I was interested, myself, in knowing that we had passed through some 872 Sanitary Corps officers. I did not realize that that many had gone there.

I must say here that the Training Division of The Surgeon General's office has done a magnificent job in fitting our Sanitary Corps officers for duty with the Army. In that connection, you may be interested to know that on the 30th of December, we had 2,738 Sanitary Corps officers on active duty. It has grown to be quite a Corps.

Now, changing the subject a little, one of the bright spots in the preventive medicine program was the initiation and smooth carrying out of our occupational health program and at this time I would like to introduce Lt. Col. W. L. Cook, who is in charge of that program in The Surgeon General's office.

SCOPE OF INDUSTRIAL MEDICINE PROGRAM, INCLUDING RELATIONSHIP WITH SAFETY AND SECURITY BRANCH, OFFICE OF THE CHIEF OF ORDNANCE -- DESCRIPTION OF MEDICAL OPERATING MANUAL FOR DISPENSARIES - CIVILIAN NURSING PROBLEM -- PURPOSES AND PROCUREMENT OF SET, INDUSTRIAL HYGIENE ENGINEER, FIELD -

LT. COL. W. L. COOK, JR., ACTING DIRECTOR, OCCUPATIONAT HEALTH DIVISION.

COLONEL COOK: Col. Hardenbergh and fellow officers: That introduction sort of puts me on the spot, I think, because I am sure that the initiation and smooth carrying out of the activities of the Occupational Health Division are entirely up to the work that Col. Lanza did. Perhaps you all know, Col. Lanza was retired from the Army December 6, 1944 and I hope not too unfortunately General Simmons decided it would be all right for me to at least stay at 1818 H Street for a little while longer.

One thing that I have been interested in and mentioned at some of the Division Chiefs' meetings is informing the people out in the field, of exactly what the Preventive Medicine Service does.

I am sure that the officers whom I have met don't know that the Occupational Health Division does a little bit more than develop the precepts by which the Industrial Medical Program is run.

We have three branches in the Occupational Health Division, the first and foremost of which is perhaps the Industrial Medical Program Branch. The second is the Toxicology Branch, which is a branch that we more or less adopted when Col. Stone left The Surgeon General's office. That branch deals with the giving to other technical services the O.K. of The Surgeon General's office on those new products such as water repellants, fungicidal agents creams, soaps, solid fuels etc w which the soldiersuses. When they want to go from steel to aluminum to galvanized ware for kitchen utensils, we are asked whether it is all right. When they wanted to develop the new fuel tanks which when burning develops high cyanide gas, they wanted to know whether it was all right to use and what precautions should be used. One comment for instance is that your Compound Germicidal Rinse can also cause dermatitis. We get asked a variety of questions of that nature.

The other branch in our office is what I like to call the Washington Clearing House for the Armored Medical Research Laboratory which is stationed at Fort Knox, Kentucky. That laboratory was originally set up by the foresight and forethought of General Simmons. Col. Lanza arranged to get most of the men who are down there. The laboratory was originally turned over to the Ground Forces. Col. Willard Machle, who is the Commanding Officer of the Laboratory, has insisted that even though it is now a Class 4 installation of The Surgeon General it be used as an experimental laboratory for defining for the Ground Forces, particularly the Armored Command of the Ground Forces, those things which will improve the fighting soldier's efficiency in the use of mechanized equipment and the various types of clothing, food, water and so forth which he has to use in the type of job he is doing.

Out of this laboratory at Fort Knox have come the standards for water and salt requirements in various types of climate. They have recently put out some very interesting information on the physical limitations of a soldier in various types of environment.. They have changed the ventilation of tanks in order to keep the man from passing

out with carbon monoxide while firing his gun.

They have made the escape hatches escapable -- they have fixed the seats so that the driver now has a place for his left foot. They have fixed the hand controls for aiming guns so that you can really use them efficiently, and I can go on and name a lot more, but to get down to the thing that you people are mostly interested in, I will now discuss the Industrial Medical Program.

The first thing I would like to say is that industrial medicine is going to stay in the Army. It is not going to be dropped when the present emergency is over. We are at the present time preparing WD Circular No. 198 for publication as Army Regulation 40-220. I think Col. Lanza can be proud of the Industrial Medical Program is going to become governed by an Army Regulation.

One question that has been asked numerous times is why the service is limited to those installations which are mentioned in the Circular. I think you gentlemen all know the answer, and it is that we don't have enough medical officers; we have not got enough civilian doctors who want to work with us and we have not got enough nurses, to include everybody. We originally tried to pick those places which most needed care for civilians and we picked our arsenals, depots, industrial plants, and later added ports of embarkation.

I think one thing that should be brought out at this time and which has been mentioned over the last two days is that the troop strength has been cut in the United States. But I don't think that you will find that industry has been cut much and I would like to make a plea for a little more attention on the part of the Service Commands for the industrial medicine program. I think at the present time we can all say that there are buildings, personnel, and adequate equipment for running an industrial medical program at those installations which come within the scope of the industrial medicine program as defined by the War Department circular. It is the belief in our office that the program having now been set up, is not working efficiently enough and we want to spend the rest of our time in making it work more efficiently.

You may ask us what we are doing about it. Well, one thing we are doing about it is getting published, and we have control troubles, too, Col. Allen, a manual which will define for everybody in the industrial medical program just how any industrial medical Dispensary is going to work.

This manual has included in it six forms: a physical examination form a report form which goes from the Medical Department to the Personnel or other departments interested at the plant; a record treatment form and an absentee form. The fifth is what we call a daily log sheet of work done. All of these forms will stay at the post. The sixth form is to be forwarded through channels to The Surgeon General's office in order that we will know a little bit more about what you are doing.

I have copies of some of these forms with me. They will not be stocked at AG depots until the publication of the manual, which we hope will be soon. I will be glad to let you see them and you may carry any of them home with you. They all at the present time have their AGO numbers and are being printed.

There are other things which this manual tells which I think are important. In the introduction it tells just exactly what we think an industrial medical program ought to be and what we expect of any

industrial medical program. It also tells what that particular service will do for the installation.

It describes what we mean by a pre-placement physical examination and what someone should know about his plant and his prospective personnel and his civilian job sheet records before he can say that John Jones is fit to be a fork lift operator or that he is fit to be a machinist.

It tells what we mean by a vaccination program in plants; it tells what we mean by a so-called VD program. Should you or should you not take Wassermans on everybody and whom should you hire as a result of such a test.

It tells how you can get a chest X-Ray survey on all the civilians. Sometimes we are asked to get a chest X-Ray survey and we can't give it to you right away. There is possibly a little bit of fault on two sides, one ourselves and the other, the Public Health Service who, by the way, have been very helpful to us and upon whom we rely for these chest X-Ray surveys.

This manual tells what we mean by the reports and records which the plant shall keep and how they shall be kept. It tells you where you can get your medical supplies and how you can gettthem and what are available to you.

So much for this manual which we were trying to get out. I might say it has been our foremost effort of the past year and it took us about two and a half years to convince ASF Headquarters that such a manual ought to be put out. In the comments I have heard here, I think that perhaps we may be jumping the gun on some of the other divisions in the Preventive Medicine Service.

We have put a request in and are hoping to get the permission to have an MOS number for industrial medical officers. I don't know how much good that will do but at least it is an attempt on our part to have you keep industrial medical officers working in industrial medicine.

We have, as you know, sent a letter to the service commands, asking for assistance in re-editing the supply list for the industrial medical dispensaries and we hope that that new list will be published soon.

I think there is one other way that we can help the service commands and that is by better usage of the Army Industrial Hygiene Laboratory. I might say that quite a few of the officers of the laboratory are here today. I suppose they came because they wanted to make sure that there would be at least a small audience, but they are here, and I am sure that they will be glad to talk with you and discuss anything with you concerning the usage of the laboratory.

I had prepared for me yesterday some information which I think is rather interesting: In the First Service Command in 1943 we did one industrial hygiene survey and in 1944 none. In the Second Service Command we did five in 1943 and four in 1944. In the Third Service Command five in 1943 and three in 1944. In the Fourth Service Command we did four in 1943 and one in 1944. In the Fifth Service Command we did two in 1943 and two in 1944. In the Sixth Service Command we did two in 1943 and one in 1944. In the Seventh Service Command we have not done any complete industry hygiene surveys. In the

Eighth Service Command we have done none. In the Ninth Service Command we did none in 1943 and five in 1944.

When you look over the list, you find that in almost every place where we were in 1943, we were asked back in 1944, except for the Fourth Service Command and one in the First Service Command.

When I talk to people in the service commands, they tell me, "We haven't got enough personnel to do this, we can't do that, we can't do the other thing, you will have to assign us more medical officers". You undoubtedly realize that it is beyond my control. I think you ought to use the Army Industrial Hygiene Laboratory more than you do.

Another interesting thing, when you look down this list, Ordnance, Ordnance, Ordnance, Ordnance, all the way down. We have a few C.W.S. Fortunately, this year we have been to every port except Los Angeles, and I would like to know why we have not been there.

We have been to a couple of Quartermaster installations and a couple of Signal Corps installations. I am sure there are more installations than those I have been to in my two years working with Col. Lanza, and I wonder why some of these other places are not asking to be surveyed. When I go out in the field I ask, "What have you got to lose in having a survey? It doesn't cost you anything." Sometimes I come back and will have convinced two or three out of four or five seen, that an industrial hygiene survey won't do them any harm and can be of material benefit.

Later on I want Captain Postman of the Laboratory to tell us a little bit about his experiences at Frankford Arsenal. I don't want you to understand from anything that he says that we have sufficient officers in the Industrial Hygiene Laboratory to assign them for 90 days a year to one installation, which I think comes fairly close to the number of days that Captain Postman spent at Frankford Arsenal, one year; however, I do think that he can tell you a little bit about the help that such officers can give the Medical Department and even convince the Command Officer that they have been helpful.

We don't want to decry the Industrial Hygiene Engineers or detract from their work at Command Headquarters. We do feel, however, that the Industrial Hygiene Engineer in the Service Command Headquarters has not got as much equipment to work with nor does he have a chemistry laboratory back of him which is equipped and staffed for that type of work. We feel that we can be of help to those people, do a complete survey for them once, then let them carry on and any time they need additional assistance we will be glad to come out and see if we can be of any more help.

I think another thing we have to do in this industrial medical program is to start finding out whether it is being effective. I go around to various places and the Commanding Officers tell me "we think this Medical Service is a wonderful idea, and we don't know what we would do without it." I ask them, "How do you know it is a good idea?" They are a little surprised and taken aback by that question.

I think that there is a good possibility that any service command that asks the industrial medical installations within the service command, "How much does it cost you to treat a man per year?", "How much is this service costing per employee?", "How much is it

costing?", would not be able to receive a satisfactory answer.

There are figures available from which you can get this information. In Washington we don't know it today, because we don't know how many people work in many of the plants and we don't know how many people are working in the industrial medical program. We will when the new quarterly report starts coming in.

I think you can tell a little bit about the effectiveness of the program by seeing about the turnover in the plant. Almost every place I go they say, "Turn over 10 per cent a month." I think we can find out why that turnover is there. If we find that out that a certain number of people are leaving the plant because they didn't feel that they were physically fit to work on the job assigned -- and I think that that is a combination of the fault of the Medical Department and the Personnel Department -- such individuals may perhaps be kept on the job by putting them in a job where they can do an adequate piece of work.

One other thing I think is very important; I don't like to check up on people too much but I do use the Employees Compensation Commission to find out the effectiveness of the program and it is rather discouraging to find out that a man was off 65 days due to a tetanus reaction following a slight cut on his finger. Was he off 65 days due to T.A.T. or was he off 65 days because he just went home and nobody cared whether he came back. If at the end of 65 days he comes back and says, "I was sick as a result of that infection.", who knows the real story?

I don't think it is right to lose an employee 31 days because he strained his shoulder. There is a diagnosis that is wrong there or else somebody is not following up their cases. Another case revealed twenty-four days lost time for a laceration of the little finger. I can mention a lot more for you. I have been to installations, shown them these figures and they have said, "Wait a minute, let's look," and they always come back with, "I guess you are right. We didn't follow that fellow well enough, I admit."

Another thing, when we send people to marine hospitals, they are awfully busy and lots of times they don't want to report to us on how soon a man can come back, whether he is hospitalized, whether they have sent him home, to the clinic, or what the story is. I do know that when the medical officer gets to know the doctors at the Marine Hospital he can get any sort of information he wants, generally speaking. I would like to know any time they can't get satisfactory cooperation because after all, General Parran is in Washington. I think General Parran or one of his assistants might be able to help us a little bit on that score.

What I think we have to tell the Commanding Officer of an installation is how he can "move more tons per man" or how he can "produce more per man." If we can show him that the Medical Department is so assisting him, very few will mind when a medical officer makes a suggestion.

There is one thing that has been a thorn in the side of lots of people for a long time and that is medical officers assigned to the Safety and Security Division, Ordnance, in Chicago, Illinois. The chief medical officer there is Lt. Col. McConnell who was working with Col. Lanza prior to his coming in the Army and I think there is probably no one in the Army today who knows more industrial medicine than Col. McConnell. Why did we assign him there? We assigned him there because Safety and Security, Ordnance, is in charge of - and when I say "in charge of," from the health stand point I mean it -- all plants

of ordnance which manufacture, store or process pyrotechnics or explosives. The point is that you can't put an electric exhaust fan in an explosive plant in order to cut down the amount of T.N.T. dust exactly the way you would some place else because occasionally you produce a spark and suddenly have no plant with which to deal. Every recommendation made for the control of health hazards in one of those explosive plants is passed upon by the Field Director of Ammunition at St. Louis, who is also the Director of the Safety and Security Division, Col. T. C. Gerber.

Col. McConnell works for Col. Gerber. When we do an industrial hygiene survey -- and I might say that practically all of the Ordnance industrial hygiene surveys mentioned today were asked for by Col. T. C. Gerber, not by the service commands -- the recommendations are passed upon by the Engineers and the Medical Department of Safety and Security Ordnance before any order goes saying, "This will be put into effect."

How much good has this careful check done? I think there is one little story I can tell you, and there are many concerning the effectiveness of their program, and that is this: in the last war over a period of 7-1/2 months in TNT plants in the United States there were some 475 deaths from TNT. I mean acute yellow atrophy and anemia type deaths. I am not speaking of explosive type deaths. These are TNT illness deaths. In this war up to the present time -- and I think we are manufacturing maybe a couple ounces more TNT in this war than the last war -- there have been a total of 17 deaths. I think that one little comment is enough to make General Somervell feel perhaps the industrial medical program has been worth while. That is the reason that we have written into the War Department Circular that inspections and recommendations covering the control of occupational health hazards in those plants assigned to Safety and Security, Ordnance will not be done by the Service Command but will be done by representatives of Col. McConnell's office and such agencies as they draw upon which are two, the Army Industrial Hygiene Laboratory and the United States Public Health Service (the latter for the contractors' plants only).

We feel that there are faults on both sides in this arrangement. We know that the Medical Service has to be run by the Service Command. I am sure that perhaps Col. Gerber would love to have us give him some medical officers and let him run his own medical show, and control his own occupational health hazards. Unfortunately, that can't be done and therefore those service commands that have such ordnance plants must supply them with an adequate on the job medical service. I know also that Col. McConnell suggests and sends out ordnance letters which direct that people working in such and such a plant will have a periodic physical examination every so often, that they will have a red count done, a hemoglobin or urina examined for TNT, and so forth. I have told Col. McConnell, and I am not talking behind his back, that I don't think he has been a good enough salesman with the service commands. I don't think they know him well enough. I don't think they know what he is trying to do and I think also, that he does not understand that the service command is not looking for work and when they send one of their officers into such plants it is because they have certain responsibilities there, not becuase anyone wishes to inferfere with a job being well done.

One of the things that I want to get from this talk is suggestions from you people as to what I can do to make the relationship between Safety and Security, Ordnance and the Service Caommands a better one.

We have some questions from some installations as to the nursing problem. Are the nurses going to be drafted? Are the civilian nurses

working in the Army industrial medical program going to be drafted. We have discussed this question with the P. and A. and some of the lower echelons of the War Manpower Commission and Col. Blanchfield, head of the Army Nurse Corps. The best information to date is that the nursing situation, should they be drafted, will be handled the same as the doctors. In other words, if they are of a certain age and not in an essential position they will be drafted the way the doctors were, I mean not actually drafted but subject to rather warm pressure. If they are working in an essential industry from the standpoint of the war effort, they will probably, undoubtedly be able to stay where they are. I do think, though, that every effort should be made if there are 28,000 nurses running around loose, -- not hire the youngest nurses for our industrial installations but try to do the same as most of industry is doing today, to get a slightly older group.

There is one other point that I would like to mention, and that is this very complicated name that the supply service has given it, "Set, Industrial Hygiene Engineer, Field." This is a compilation of instruments which an industrial hygiene engineer -- and I stress that because no installation or headquarters will get one of the sets which has not got a qualified industrial hygiene engineer to handle it. The set contains sufficient equipment to permit an industrial hygiene engineer to do satisfactory field studies. It is like the doctor's bag to the M.D. It costs well over $2,000 and is packaged in two medical field chests. The reason this set was made up was so that if we got a call to send a man overseas, he would at least have something to work with when he got there. We also feel that anybody who is doing survey work in the field, such as the industrial hygiene engineer of a service command, should have one of these sets. We don't want you to write in and ask for three-quarters of it or one-fifth of it because that is like asking for three-quarters of the equipment for a 1,000 bed hospital. They don't come in that kind of package. If you already have some equipment and you would like to know what the rest of this equipment is, the St. Louis Medical Depot can tell. In requisitioning a complete set, add to the requisition, "We have on hand the following instruments which we will turn in upon receipt of this particular group of equipment."

Another thing that I want to make plain is this: most of these instruments apparently are slightly on the prima donna side and get out of whack fairly easily. We have set up at the St. Louis Medical Depot at the present time a department which is ready to repair these instruments for you, if you will send them.

That is about all I want to say. I will see if I can answer some of these questions that were sent to me.

The first question from the Ninth Service Command is "personnel and supply problems in industrial installations and remote hospitals". I don't know exactly what you want, Col. Norton, the question is: "Personnel and supply problems in industrial installations and remote hospitals."

COLONEL NORTON: The thing I had in mind in bringing that up is that apparently in supply and also in personnel organizations all around there is quite a turnover, just as there has been in everything else. A good many of those will usually have a sergeant who takes these requisitions and he will put "O.K." or not on it. Then we have to send those in several times because of that. They will look and see that the set-up has so many military personnel. They disregard all the civilian personnel that these people in these industrial set-ups have to look after. That is true in the remote hospital.

Also another problem in remote hospitals is that there they have the civilian patients and usually they are 75 to 100 per cent bed patients, whereas the people who are accustomed to consider personnel and supply are accustomed to dealing with 75 to 90 per cent ambulatory patients, where they can have some help, and it is quite a different problem in these hospitals that have to take care of these people.

They need more equipment and they need more personnel for the same group of patients and also the people that have to do with those things very frequently do not consider the remote, isolated areas, where they do have to take care of the civilian personnel in these isolated plants and also have to take care of their families, because some are 50 and 60 miles from a doctor and they have to do that, otherwise the workers in the plants will have to get out and take a child or the worker in the plant will have to take his wife 60 miles or so to see a doctor, back and forth and that means loss of work.

It is just one of those things. If anybody has any good way of getting that thing across and keeping it across, it is one of the problems that we have to deal with.

COLONEL COOK: This much can be said about it; when we set up these remote area hospitals, of which there are four in the Ninth Service Command, the Supply Service asked, "How large are they going to be?" I told them and they said: "If we give you the same amount of supply that we give an Army hospital of that size, will it be sufficient, aside from a few minor addtions such as obstetrical equipment?" I said, "Yes," We haven't had any official complaints sent in to us. I am sure that the Supply Service will go along with us on anything we need. I don't think that you should do allergy tests. I don't think that you should do definitive gynecology from the standpoint of what the Mayo Clinic would do, just because one of the officers at one of these installations happens to be a gynecologist, and I don't think that you should start doing special bridgework for somebody because there happens to be the dentist there. I don't think you should do definitive ophthalmology just because there happens to be an eye man there. Those are the things which we will turn down if they come in to us and we usually tell you why. If you have any reasonable request it will be approved.

The next thing is the feasibility of using preventive medicine personnel such as medical inspectors, V.D. officers and the like on an area basis similar to that already in use for industrial medicine in the three areas of the Ninth Service Command, San Francisco, Los Angeles, and Seattle. I will be very glad to have Col. Norton tell you about this but there is one thing I would like to mention.

When Col. Lanza first came to Washington and was confronted with a number of plants which needed industrial medical service, he decided the best thing to do would be to commission a few fellows who knew a little bit about such work, send them out where the trouble was and let them go to work.

Now that we have gotten down to the bottom of the barrel on industrial medical officers the situation that I see in the Ninth Service Command is an excellent one. I grant you that every service command does not have three main locations for its industry, such as Seattle, Los Angeles and San Francisco. However, the way they work it out there I think is very good. They have one man who really knows industrial medicine, who is the head of a service unit of the service command located in that area. He is in charge of the medical service for Ordnance, Signal Corps, Quartermaster, Chemical Warfare or anything else that

happens to be in that area and he has assistants working for him who don't particularly have to be trained in industrial medicine. I think that that is a splendid idea. He gets around to see each of his installations once or twice a week and spends as much time as he has to there.

I would like you to tell them anything more that you would like to say about it. I do feel that the situation is very well controlled in the Ninth Service Command. These fellows get to know everybody in the town. They pick up a few odd doctors every once in a while who say they have a few hours extra to work, by going to the medical meetings. They don't have the actual physical examination and treatment of cases to do as much as others. They are sort of junior service command industrial medical officers, if you want to call them that, but I do think that for the service command that has been cut to the bone on people who really know what the business is about -- and I do think that it is a definite business and has to be looked at as a specialty, that it is a good idea to let somebody be assigned, such as Major Parkinson who has his headquarters at the California Quartermaster Depot, but who also takes care of about seven other installations, one as far as 50 miles away. Am I correct in that?

COLONEL NORTON: Yes.

COLONEL COOK: He has a command car at his disposal. General Boone of California QM says, "He is my station surgeon but still he gets around to all the rest of the places" and General Boone understands that he is working, not only for General Boone but for other installations of the service command. Have you any other comments that you would like to make about that, Col. Norton?

LT. COL. NORTON? I have no further comments on that. The thing that I wanted to bring up I think can be more appropriately brought up tomorrow afternoon and that was the discussion of working out some of these problems on the general area basis for the whole preventive medicine service but I will say that the way that this is working in those three particular areas, for the industrial medical program, is working out very nicely.

Major Parkinson has altogether under his supervision 17 different local set-ups and by having a good man looking after that is much better than having two or three at two or three of the places and the rest of the places being without and it is working out very nicely.

COLONEL COOK: The next question is: Is the new Army Safety Program, the Surgeon's part of it, a preventive medicine function? Simplification of the reporting system seems badly needed.

I agree with the last part of that statement 100 per cent. As a matter of fact, I happen to be on the Under Secretary of War's Accident Prevention Committee as The Surgeon General's representative and I have taken two trips around on this accident-prevention business and one of the first and most obvious criticisms you come across in the field is that the circular describing the reports that should be kept and forwarded from service command headquarters to The Surgeon General on accidents is, well, from my standpoint, pretty terrible.

I think it was a question of the fact that somebody sitting in Washington wrote something without having been out in the field to know how the field works.

I will also tell you that as a result of these two trips, the reporting is going to be changed and you can all sit there and say, "That is not the only thing that has been changed in the accident-prevention program." I know, I have had to learn that recently, too. However, I do feel that there are two comments to make one of which is this: Naturally the safety people don't think the doctor can be of any assistance to them in a safety program. The reason the doctor was brought into this business was because they felt that the safety man can not be on the spot and investigate every accident which occurs, whereas, if an accident amounts to anything, the soldier will be taken to a medical dispensary. At that time the safety man may be busy and can't come out and interview the man and it was the idea that the medical officer in taking his history would also ask a couple of other questions and be able, therefore, to spot for the accident prevention man or the safety officer, the areas and the individuals to be investigated. Whether that is going to be done or not, I don't know. As I say, it is not working well, as we know.

II don't know whether I answered the other question which is the coordination of the industrial medical program between the service command and the Office of the Chief of Ordnance. I tried to tell you pretty much about the way it is supposed to work. I would be glad to hear of any criticisms concerning it from you people because I expect to see Col. McConnell shortly and I would like to be able to straighten out the service commands. It seems to me that the way it is written there should be no argument. However, it may not be clearly enough written and we have tried to rewrite it so that it will be more specific in our proposed Army Regulation.

The next question is emergency medical care, the prevention of occupational exposure for civilians employed at combined maintenance shops at posts, camps and stations. That comes down again to the problem that I mentioned earlier, of what individuals we cover in the industrial medical program. We admit that we are not covering individuals who work at industrial jobs. We are covering all individuals who work at industrial plants, arsenals, depots and ports, and we feel that we have covered the most essential, perhaps 75 per cent. We know that we are not taking care of all the people. I talk to the Civilian Personnel Division of the office of the Secretary of War at least once a week and they ask me, "Don't you think now is the time that we can get out a War Department Circular saying that the service command will take care of all civilian employees of the War Department, and include them in your program?" I keep telling them "no, that is the straw that will break the camel's back, it is awfully loaded at the present time", so I think we do understand your problem.

We get the same thing from the Air Corps all the time. I feel that I have been perhaps to fifteen meetings in the Office of the Secretary of War, Civilian Personnel and also Industrial Personnel, ASF and we have so far been able to hold them off. Somebody some time is liable to ring in on us a sentence which says, "From now on you will," and at that time, fellows, I hope I am some place else. Are there any questions that you would like to ask me?

Before we go on, Captain Postman, would you spend a couple of minutes and just tell them about the work that you have done at Frankford Arsenal of the Ordnance Department and how it works out?

CAPTAIN POSTMAN: The laboratory contribution in the preventive medicine program at Frankford may be best demonstrated by the number of activities with which we were connected during the

past year. Thirty-four active projects were worked on at one time during 1944. These projects resulted from industrial hygiene surveys, made by our survey team who made field and laboratory determinations, after which the Arsenal requested, through proper channels, either Engineering aid of out Engineering, Design and Development Section or developed controls of their own through their own Engineering Department.

Up to the present time we have been doing most of the engineering work for Frankford through personal contact. We developed engineering factors which took the skill of a designing engineer, He develops drawings and specifications, sends them to the laboratory for review and approval, after which the material is ordered, purchased and installed. After the installation, one of our officers goes to the installation, adjusts the system and makes a complete check.

About six months ago, Col. Ross, Commanding Officer of Frankford, issued a directive after consulting the Post Surgeon, Major Linder, to the extent that no new toxic materials were to be used in any operation at Frankford Arsenal, no new engineering project was to be started or no changes were to be instituted in an existing installation unless Major Linder was so advised. In many instances Major Linder was able to give his yes or no as to the change and the rest of the time we were asked to come up and consult with him and Col. Ross. This has been the most outstanding contribution of our efforts to an arsenal. We have had the most cordial relations with the arsenal and also through Col. McConnell of the Safety and Security Branch at Chicago.

We are available through channels for such engineering services as Col. Cook mentioned to you recently and also engineering aid in the development of any problems which may arise at any of your installations.

COLONEL COOK: Thanks very much. I think that that is a pretty nice compliment to the laboratory, that Col. Ross issued such an order. I do know that prior to my coming in the Army, we had such a set-up at Westinghouse and Col. Schrader of the Third Service Command, who also was there, knows how valuable it was to Westinghouse to have the Medical Department get in on the ground floor of new developments in any of their industrial installations. We don't, after an installation has been set up, have to go in and rip it out and put in new ventilating ducts and tell the production men that they are going to have absenteeism due to illness, if they don't improve their working conditions. Are there any questions that anybody would like to ask about the program?

CAPTAIN COOPER: We have a particular problem in the port. I suppose they have them at all ports and it pertains to the civilians, usually the employees of the government coming back from overseas. Not infrequently we have to go to the Judge Advocate and interpret their contracts which call for medical care, whether they go to a medical hospital in this country or whether we send them to the marine hospital.

There are no problems overseas; there are very few civilian hospitals and they are always taken care of in an Army or Navy installation but once they arrive in this country we really have a problem. It has been settled in San Francisco mainly because of our relations with the marine hospital there, which is very excellent and also the employees who come back as patients are sent there.

Occasionally someone will call our attention to a clause in the contract that says he should get there via the Army and insists on going to the hospital we have available, which is the Letterman, and then

he is in turn sent to the marine hospital. He is sometimes disgruntled. Perhaps he has had unpleasant care at some other hospital. He does not feel that marine hospital available isn't as good as the Army hospital.

I think there should be and can be some simplification for at least a consolidation of the various contracts that these civilian employees get and possibly there should be some explanation to them before they go overseas as to just what they are entitled to.

COLONEL COOK: That is an important problem. Fortunately for me it is not one that I have to decide. I might say we have had numerous comments such as that from various individuals and particularly technical services and it seems that many of them stem from the exuberance with which personnel officers promise the civilians who are going overseas almost anything in order to get them to sign on the dotted line and go. I will take that up, however, with Civilian Personnel and OSW and will see what we can get out on it. It is really their problem and not ours. Any other questions?

MAJOR CANNON: I would like clarification on the point of just how much access we should give personnel officers to the medical records of newly employed people. At our port they seem to think they should have free access to our medical records and we contend that only should they be told whether a man is suited or able to do a job physically or not.

COLONEL COOK: You are absolutely right in your reaction. I might say that our office, according to War Department Circular 105, has stated that all medical information will be kept confidential by the Medical Department. There are many reasons for that, one of which, I think, can be mentioned here and that is a new bill which is up before Congress on which we had to testify not so long ago concerning an overall Federal Industrial Medical Program. At that time a representative of the CIO stated that he would go along with such a program only if the medical records were kept by the Medical Department and not given to other parts of the set-up.

Col. Lanza has been and still is a member of the Industrial Health Committee of the AMA. They have had numerous meetings with labor groups and labor groups are now perfectly willing to go along with pre-placement physical examinations on a nation-wide basis provided that the medical information is kept confidential by the Medical Department and also that no employee will be told that on the basis of the physical examination given him he can not be employed. A prospective employee should not be recommended for employment on the basis of his examination at that time. In other words, they don't want these people to feel that they can't ever get employment as a result of one physical examination or maybe one or two done within a very short period of time. I think that that is easily understood, but if you have any trouble send your trouble to us, I think we can straighten that out through Col. Fitzpatrick and Major Newman. I think if there are no other questions, that is all.

COLONEL HARDENBERGH: Fortunately, there is not much time left before lunch. However, the Nutrition Division tells me if we have any real gripes, it is best to get them off before dinner so if you have anything to complain about we would be glad to hear from you.

I would like to add just one word about the meeting this morning. I was talking about the organization of preventive medicine service and I didn't want at all to overlook the magnificent accomplishments for

the last four years, covering only those factors for which I have been measurably responsible but which have been performed by the service commands.

We must not forget the fine quality of water that the Army is getting nor the excellent results in sewage disposal nor the really outstanding accomplishments in malaria control in this country which are now being duplicated overseas by men you have trained, nor the good luck that we had in addition to fine work of the service commands on the hazards that arose through Army occupancy at hotels and colleges, something that might readily have reacted very seriously, nor our modern methods of refuse disposal which are being established in many of our camps and doing away with the nuisance of the old open dump and the broken down incinerator.

You heard just now, also, the work of Occupational Health, and you have had an opportunity to see how it has worked out in your own service command. So while we are looking forward to a better organization from now on and building up a sound organization for the long term peacetime, after-the-war problems of the Army, I think we have much to be pleased with over the work done by the preventive medicine organization of the Army during the past four years. The program says lunch at 12:30 and I hope it is true. Thank you, gentlemen. (At 12:30 o'clock p.m., a recess was taken to 1:30 o'clock p.m.)

AFTERNOON SESSION - 15 FEBRUARY 1945

The conference was resumed at 1:30 o'clock p.m., pursuant to noon recess, Lt. Colonel E. S. A. Robinson, M. C., Chairman.

P R O C E E D I N G S.

LT. COLONEL ROBINSON: The first speaker this afternoon will be Lt. Col. O.R. McCoy, Director of the Division of Tropical Disease Control who will speak on the various public health aspects of the introduction of tropical diseases by troops returning to this country.

PUBLIC HEALTH ASPECTS OF INTRODUCTION OF TROPICAL DISEASES BY RETURNING TROOPS -- TB MED 2 EXAMINATION -- POLICY IN DISCONTINUING MALARIA SUPPRESSIVE TREATMENT IN RETURNING TROOPS.

LT. COLONEL O. P. McCOY, MC, DIRECTOR, TROPICAL DISEASE CONTROL DIVISION.

COLONEL McCOY: Col. Robinson, gentlemen: The subject of the introduction of tropical diseases by troops returning from overseas has seized the imagination of the public and has attracted a great deal of attention, not only at medical meetings, but also in magazine articles and in the public press.

At the beginning of the war, American physicians, in general, had had very little experience with tropical diseases. Many of the doctors going into the services needed additional training, as well as the medical students who were coming up through the schools to be commissioned in the Medical Departments of the Army and Navy. It was important that they receive training to acquaint them with tropical diseases. To promote this educational activity it was necessary to point out the importance of these diseases in the areas in which we would probably have to fight. Consequently tropical diseases may have been somewhat over-publi-

cized and the danger of introduction of these diseases into this country after the war, I think, in general, was grossly over-exaggerated.

It is true that we have had an unprecedented exposure of American people to tropical diseases during this war. Millions of men are overseas in tropical countries ranging from the Caribbean to Africa and India, Burma and the Pacific theaters. We have had almost three years now, in which to evaluate just how great this hazard has been for the troops and what the probable importance of various tropical diseases will be in the troops as they return home.

Of course, it has been impossible to carry abroad the high standard of American sanitation and conditions of living to which we are accustomed in this country, but nevertheless our troops overseas have lived on a vastly better sanitary plane than have the native populations that surround them. Many of the tropical diseases that are scourges among the native populations have been little or no problem to the military forces. For example, there have been no cases at all reported among military personnel of such a disease as trypanosomiasis in Africa, (African sleeping sickness). On the other hand, there are certain diseases, particularly malaria, the dysenteries and dengue fever, which have had widespread occurrence and have been of considerable military importance.

There are other diseases which have been important in certain local situations, for example, scrub typhus, filariasis, in certain islands in the South Pacific, but these diseases have affected a comparatively small number of troops considering the Army as a whole. They can not be regarded as very important from the public health standpoint when the men overseas come back to this country.

Next we will discuss certain of these diseases specifically and begin with malaria, because it is by far the most important of the diseases which our men have encountered overseas. In many of the overseas areas suppressive treatment has been a routine procedure for all troops exposed to malaria. This has been true, particularly in the Pacific theaters and partially true in China, Burma and India. These men have taken the drug for periods or long as a year or more. From experience that has been accumulated to date we know that the amount of atabrine they receive as suppressive treatment and also as clinical treatment, when they gettsick, has been sufficient to prevent and cure most cases of falciparum malaria. On the other hand it does not prevent the benign tertian, or vivax type of malaria and it is with this parasite that most of the men returning to this country are infected.

During 1944 upwards of 40,000 cases of relapsing malaria occurred in the United States, presumably acquired overseas. Practically all of this, more than 98 per cent, was of the vivax type. There is no drug available which will cure vivax malaria with certainty. It is known that a certain percentage, usually about 50 to 60 per cent of cases, will suffer a relapse, no matter what type of treatment is employed. Consequently, when men return from overseas with the history of having had malaria we can not be certain which ones of them will subsequently suffer another attack. From a practical standpoint the problem has arisen as to whether these men should be segregated in this country. People in the Northern States have objected very strenuously to having soldiers with malaria sent to camps in the North, because they say, "We have gotten rid of malaria and don't want it reintroduced," whereas the people down South say, "We don't want the men sent down here because this is the climate that is most favorable for the spread of malaria; they should be sent up North where they don't have any." It is hard to reconcile these two points of view, except by denying both of them.

As a matter of fact, there is no good reason to take such an attitude in this country. We have never taken it before in regard to other groups that have come to the United States infected with malaria. We have allowed hundreds of thousands of immigrants from Southern Europe, many of them carriers of malaria parasites, to come into the country and settle at will without taking any precautions to see that they were free from malarial parasites.

Also we have encouraged the migration of agricultural workers from the Southern States to the Northern States, particularly fruit pickers during the harvest season, and we have allowed and encouraged importation of labor from Mexico and from the Bahamas and Jamaica, many of whom are infected with malaria. This policy has produced no untoward results.

Malaria control in this country depends primarily on mosquito control. Attempts to regulate the location or movement of human carriers of the parasite not only have many practical difficulties but moreover do not offer the hope of a real solution that is offered by a sound program of mosquito control. This, of course, is easier to enforce at military posts and hospitals where good sanitation prevails and where personnel is available to conduct adequate mosquito control.

When the men return to civil life another aspect of the problem is presented which has been of some concern to public health authorities. At one time last summer there was a concerted move on the part of the Directors of the State Departments of Health to require the Army to report the names of individuals being discharged who had had malaria. As already mentioned, it is impossible, if the man has a history of having had malaria, to predict whether or not he will be in the group that will subsequently suffer another attack. This question was discussed by some of the foremost authorities on malaria control in this country and the policy was formally adopted at a meeting of the National Research Council in which it was decided that no useful public health purpose could be accomplished by reporting the names of these individuals to civil health authorities.

That policy does not mean to discourage preparation for other methods of controlling the disease. All States should be prepared to conduct mosquito control operations in any area where an outbreak of malaria might appear. The U. S. Public Health Service has established special units which are equipped for just this job.

Before I go on, are there any questions concerning malaria? I know that in some places questions have arisen in regard to segregation of prisoners of war.

COLONEL MINOR: I would like to ask you one question. Are they still following the policy of screening beds of hospital patients in areas where malaria is not prevalent?

COLONEL McCOY: I should think from the common sense point of view, that it would be necessary to protect them only when there is a possibility that anopheline mosquitoes might bite them. Army regulations prescribe that patients being treated should be protected against insects which transmit disease. If the insects are not there, I should not think that it would be necessary to provide protection with bed nets. That is a common sense interpretation.

COLONEL MINOR: I was wondering if the hospital got a directive to do it.

COLONEL McCOY: Is the hospital screened?

COLONEL MINOR: Oh, yes.

COLONEL McCOY: I think when the hospital is adequately screened, and there is effective mosquito control, that it is not necessary to enforce use of bed nets inside a screened ward.

Another aspect to the malaria problem which I want to discuss is the policy in regard to the use of supressive treatment in troops coming back to this country. I mentioned earlier that in many of the theaters, it is a blanket rule for the men to take suppressive drugs, However, the policy has not been uniform as to when they should discontinue taking the drug.

We have been attempting to have the theaters establish a consistent policy of continuing suppressive treatment until these men have reached the United States. A few months ago War Department Circular 449 was published which prescribed that men still taking suppressive drugs at the time of arrival in the United States would continue to take suppressive treatment for a period of 28 days in addition. The purpose of this policy is to protect the men from possibly having relapses of malaria during the period of travel and furlough immediately after their return to this country.

Also, some people who return by air get back here within a few days from an area of possible exposure to falciparum malaria. In order to make certain that such persons receive at least four weeks medication, which experience has shown is usually sufficient to cure the disease, it is important that four weeks of drug be taken for this purpose also.

Have any of you had any experiences as to how well this policy is being enforced? The station at which the medical processing is done is the place where the drug should be given and instructions offered. The men must be instructed as to just how to take it.

CAPTAIN COOPER: I can explain how we did it there. First of all, troops are inspected and at that time they are questioned as to whether they had been taking atabrine on arrival. If so, they are given a packet of atabrine sufficient to carry them through for 28 days. On the packet very definite, brief instructions are given as to administration of the drug. They have a little bit of a problem among the casuals that return in that they go through the staging area. When they sign in at Fort Mason they are instructed to go to the dispensary, provided they have not taken atabrine on arrival, where they are given their atabrine to take with them on the train trip.

COLONEL McCOY: Have you any impression as to about what percentage of the men coming through your port are still taking suppressive drugs when they arrive?

CAPTAIN COOPER: I can only say that our transport surgeons have been instructed to continue the atabrine on board the ship, so that all the troops returning on Army ships have been given atabrine. We have made an effort to get the Naval medical officers on the Navy boats to do the same thing. I would say that the majority are getting atabrine on arrival and, therefore, will probably continue it.

COLONEL McCOY: Are most of those men from the South and Southwest Pacific?

CAPTAIN COOPER: Yes, sir. Another problem which is just the opposite of the present subject but is, I think, quite pertinent, is just what areas to which troops are now going, should the troops be atabrinized. For a period of time this included all areas, other than the mainland of Australia. I am sure now that with effective malaria control campaigns in certain of the Solomon groups and the Marianas, atabrine should not necessarily be given, although we don't have recent information on which areas still have malaria.

COLONEL McCOY: Those areas are usually delineated by the overseas theater surgeons. They set the policy in the overseas theaters as to which places shall be on suppressive atabrine.

CAPTAIN COOPER: We attempt to give the troops atabrine six or seven days before they arrive at the port. We don't know just what areas are still getting atabrine.

COLONEL McCOY: Are there other questions along this line? Is there any representative from a port on the East Coast? (No response.)

COLONEL McCOY: Have you had any experience at all with this policy?

MAJOR BUZZERD: We have not had much malaria. I recall hardly any.

COLONEL McCOY: Have you had troops returning from India and Burma, for instance, coming through there?

MAJOR BUZZERD: Not many, a few.

COLONEL McCOY: At this season they would be the only ones who would likely be on suppressive treatment. North Africa discontinued suppressive treatment early in November and of course they have not had it in the European theater area.

MAJOR BUZZERD: For the ones who ask for suppressive treatment, we continue it but otherwise we just disregard it.

COLONEL McCOY: Is there anyone from the Air Transport Command who might comment on this?

COLONEL LEE: I was with the ATC. They were on suppressive atabrine. They just went on last September after they operated in India but they don't have a policy of continuing it after they come back. As soon as they are out of the theater, they stop it after eight days.

COLONEL McCOY: Are those people, going to stay in this country, or do they go back?

COLONEL LEE: People who go back and forth take it all the time. It is those returnees, and rotation men.

COLONEL McCOY: Of course War Department Circular 449 should apply to them, and they should continue to take it for 28 days now.

COLONEL LEE: I made this observation before that 28 day feature came out.

COLONEL McCOY: Filariasis is another mosquito-borne disease that has attracted considerable attention and even some alarm on the part of the public. This is quite unjustified under present circumstances. The Army has had comparatively few cases of filariasis. By "comparatively few" I mean several thousand. These have all been acquired in certain islands of the South Pacific. Most of the men were brought back early in the course of their disease, so that they received minimal infection. Very few of them have shown microfilariae in the blood.

The life cycle of the parasite is such that the disease can only spread from an individual who is carrying microfilariae in the blood. When infected persons are bitten by a suitable mosquito vectors, the larvae undergo a period of development in the mosquito to an infective stage. Then they may be transferred to another individual when the mosquito bites again. There are in this country mosquitoes which are known to be efficient vectors of filariasis, particularly Culex quinquefasciatus and certain of species of Psorophora and Aedes. As long as soldiers do not harbor microfilariae in their blood there is no possibility whatsoever that they could spread the disease even though suitable mosquitoes are present in the area where they are hospitalized or where they are living.

In any event, filariasis is not a disease which spreads readily; even in the tropics where conditions are apparently favorable, the distribution is spotty. One village may be heavily infected whereas a nearby village will be comparatively free from it.

In Panama suitable culicine vectors are present, and over a period of years there have been many people come in from West Indian islands where filariasis is endemic and yet the parasite has never become established on the Isthmus of Panama.

In this country a small focus of filariasis existed at Charleston, South Carolina, which apparently smoldered for a good many years but never did spread to surrounding territory. Recently it has apparently died out, even though no special mosquito control measures were taken to eliminate it. This evidence is cited to indicate that filariasis is a disease which does not spread easily from one individual to another. Moreover, military personnel that have acquired filariasis have such minimal infections that very few of them apparently are ever going to show larval forms in the blood.

Since all textbooks of tropical medicine usually include spectacular pictures of filariasis, the disease is apt to seize upon the imagination. There have been many uninformed people among the services, particularly enlisted personnel, who have spread rumors about filariasis. Some are afraid that they might transmit the disease through bodily contact, not realizing, of course, the life cycle of the parasite.

We are anxious to keep a follow-up on patients with filariasis that have been returned to this country. During the coming year it is going to be required that a special report be made of any of these patients with a previous diagnosis of filariasis who are admitted to the hospital for any cause.

The physical findings of Army patients in the hospital at the time of their acute conditions were minimal, slight enlargements of the lymph glands and epididymis, and transient attacks of lymphangitis. Most of these conditions cleared up completely. Still we would like to have a follow-up of a certain number of cases in order to see what their ultimate prognosis actually is. We are convinced that almost without exception it will be very good. Does anyone have any comment to offer about filariasis?

COLONEL COUNCIL: We watched for this particularly in New Guinea in the laboratories and during that time we found only four cases in which we were willing to substantiate the diagnosis, one in which we found microfilariae in the blood, one in which microfiloriae was found in the posterior chamber of the eye and two in which worms were found in gland biopsies. I know that the laboratory officer who was on duty at Milne Bay made a survey on the natives in that area and found a high percentage of them infected but at the time I left they had no cases in our troops.

COLONEL McCOY: Were these cases which you did find positive among men who had had previous service in the South Pacific?

COLONEL COUNCIL: Yes.

COLONEL McCOY: Did you feel that they had acquired the infection elsewhere or that they had acquired it in New Guinea?

COLONEL COUNCIL: We felt that they had acquired it elsewhere in the South Pacific area.

MAJOR DAMMIN: This matter came up in Puerto Rico. We had a goodly number of troops down there some time ago and we surveyed over 1500 men who had been on duty in Puerto Rico over 24 months. They were selected because they were men who had been on duty near Aguadilla and San Juan which are the two cities in Puerto Rico having the highest rate of filariasis. We did two thick films on all the men and found not a single positive. If that were done in the Southwest Pacific you would say a lot of these men don't have circulating microfilariae but it is a characteristic of filariasis in the Carribbean. There have been no cases admitted to the hospital among continental troops diagnosed as filariasis.

LT. COLONEL BROOKS: (Camp Shelby.) On Guadalcanal we made a survey among the troops there and found a relatively high rate of infection. However, there was not a single case of filariasis admitted to the hospital on Guadalcanal which we could say was actually picked up there. There were a number of them there but they came from islands further east.

COLONEL McCOY: Public feeling about filariasis runs rather high. The Public Health Service wanted to conduct some experiments to test the susceptibility of local species of mosquitoes to filariae and they wanted to bring into this country a Puerto Rican who carried just the right number of microfiloriae in his blood, enough to infect the mosquito and yet not so many that the mosquito would die. They had difficulty bringing him into this country, mainly because they asked some one's permission to do so. In fact, their own marine hospitals in several localities did not want a patient with filariasis brought in, and yet we admit Puerto Ricans into New York City without question.

There are perhaps a quarter of a million there, a good many of whom are carrying microfiloriae. But as soon as you make a public issue of filariasis, and it comes to the attention of a public health official, he regards it almost in the same light as leprosy is regarded in many places. There is no reason for such an attitude whatsoever.

Schistosomiasis is another tropical disease which is causing some trouble overseas. Early in the war a good many troops were serving in Puerto Rico and the northern part of South America where schistosomiasis is endemic. According to the records in the SGO only one case was

acquired by a continental soldier. North Africa and Egypt, of course, are noted as endemic centers of Schistosoma mansoni and S. haematobium. In spite of the fact that many men were in these areas there were only a few cases of schistosomiasis acquired by our troops in the Middle East or North Africa.

Our first real experience with the disease has occurred since the invasion of the Philippine Islands. It happens that Schistosoma japonicum is endemic on the island of Leyte. A good many of our troops had to fight across the island of Leyte, wade through the streams and canals and build bridges across them. Through such exposure apparently quite a few men have become affected with this type of schistosomiasis. So far they are being treated in the overseas but it is probable that many will be returned to this country for further treatment. The question will come up as to whether they may be a source of danger in the spread of this disease in the community.

The intermediate host of the schistosome parasite is a fresh water snail. There are no representatives of the species of snail which act as the vectors in the Far East in this country. Tests have been made in the laboratory as to the susceptibility of other species of snails in this country to Schistosoma mansoni and S. haematobium. So far none has been found which is a suitable vector for the schistosome parasite. Similar tests are now being made with Schistosoma japonicum -- the Oriental species. From what we know of the other two species a fairly safe guess can be made that a suitable snail to spread this parasite does not exist in this country. If this is true, even though infected men are brought back there will be no chance whatsoever for them to spread the infection to others. Is there any question about schistosomiasis that anyone wants to raise?

MAJOR WYLIE: (Ninth Service Command) I can report a case of death from schistosomiasis in a Puerto Rican soldier who was admitted to the Pasadena Regional Hospital. He was critically ill. I don't know all the details of the clinical findings except that the X-Ray picture resembled an area of tuberculosis. The patient died of shock and the case was so puzzling that it had everyone fooled. Following the autopsy the parasite was found in the liver and diagnosis made. That case was a Puerto Rican soldier.

COLONEL McCOY: Of course there have been many thousands of cases of schistosomiasis among Puerto Rican soldiers. Recently it has been a cause for disqualifying them for Army service. This policy was not adopted for a year after Selective Service was in effect down there and even after it was in effect many light cases of the disease were not detected by a single examination. Consequently there are many thousands of Puerto Ricans in the Army who harbor the parasite. Most of these infections, of course, probably were acquired before they came into the service. Continental troops who have served along with them have not picked up the disease.

COLONEL KOGEL: I would like to know on what basis the diagnosis of schistosomiasis was made? A man can really have miliary tuberculosis and also parasites in his liver and still die of miliary tuberculosis.

MAJOR WYLIE: I can only say there was no military evidence found to establish a diagnosis that he died of TB. I am not sure what tests were carried out and I don't know whether TB was completely ruled out.

COLONEL McCOY: Amebiasis is another parasitic infection which has attracted some attention, particularly in the India-Burma theater where a fairly high rate from the disease has occurred. As you all know, amebiasis is endemic in all countries, including our own. It is reliably estimated that from 5 to 10 per cent of the people in this country are carriers of Endamoeba histolytica. That is a general average. The rate varies greatly in different sections of the country; in big cities in the north it is probably less than one-tenth of one per cent and in some rural communities in the south it may run as high as 30 per cent or more. Consequently, we have not been able to get excited about the Army contributing very much to the problem of amebiasis from a public health standpoint in this country. It is realized that when soldiers come back, a higher percentage will probably be infected than when they went out. Still, from the standpoint of the overall number of carriers in this country there will not be an appreciable increase. However, from the standpoint of certain units it may be an important problem to be reckoned with, particularly in relation to food handlers. I think that among units which are returned from the China and Burma-India theaters, this problem should be kept in mind particularly in relation to members of the unit who have to do with the handling of food.

The same is true in regard to bacillary dysentery, although widespread use of sulfonamides for the treatment of dysentery has greatly reduced the number of carriers. Even though the incidence of the disease has been quite high in some units, sulfonamide treatment has meant that very few of them have remained as carriers.

Hookworm is another parasite that might be mentioned. Many of the troops serving in tropical countries, particularly the combat troops in the South Pacific, Southwest Pacific and in Burma, have acquired hookworm infection. In the majority of cases, the number of worms acquired has not been sufficient to affect appreciably the health of the men. However, there may be some individual cases in which the blood loss caused by these parasites has been sufficient to produce anemia and other signs of infection.

Hookworm is already endemic in this country and the public health danger of these men coming back carrying a few more worms probably is not very great. But wherever patients are hospitalized I think a routine stool examination is indicated so that if Endamoeba histolytica or hookworm parasites are present, the patient may be given proper treatment. An interesting phase of this problem is that Ancylostoma duodenale, the so-called old world hookworm, has been the predominant species acquired by the men in the Southwest Pacific. The ordinary hookworm found in this country is Necator americanus, the so-called New World hookworm. There is a possibility that individuals infected overseas might bring back and introduce a type of the hookworm parasite which has never been established in this country and which is somewhat more severe in its effects.

There are certain other acute diseases such as scrub typhus and dengue fever which do not have a carrier stage, as far as we know, and consequently do not present the public health problems that many of the other diseases do. Dengue has occurred from time to time in epidemic form in the Southern states and there is always a possibility that someone in the incubation period of the disease might return to this country and serve as a focus to start up an epidemic. This is all the more reason for enforcement of adequate mosquito control programs around airports and at all Army posts, camps and stations.

To summarize what I have had to say, I hope I have emphasized that although there are certain problems connected with the presence of tropical diseases in troops returning to this country, on the whole the danger

of their spread in the United States has been exaggerated. We believe, if proper precautions are taken, the prevailing sanitary safeguards in this country in regard to water supply and sewage disposal, our general scale of living and our environmental situation will minimize the spread of exotic diseases. The danger of extensive epidemics or outbreaks of these diseases is not considered very great. There may be occasional small outbreaks which ought to be controlled properly if proper measures are taken without delay. I will be glad to answer any questions that have come up in your work, specifically in regard to these diseases.

MAJOR TUCKER: I would like to ask since we are going to have patients coming back from overseas, what you would consider to be adequate tests of whether or not they are infected with parasites? Our experience with patients in a hospital for a few days, prior to evacuation to a general hospital has been that one or two negative stool cultures or stool examinations in which no parasites are found are not adequate -- because sometimes, in many of the cases, when we have been able to keep them for a longer period of time for other reasons, we have found that maybe the fifth, sixth or tenth stool would show positive.

Is it a safe procedure when a patient arrives with a diagnosis of amebic dysentery to get a stool that is negative and then to send him right on? The conditions on the trains which carry these men from the port areas inland is such that unless rigid isolation technique is carried out with regard to segregated dishes and food, it is easy to see how one carrier can contaminate the food of other men because they do swap food and change utensils and so on.

COLONEL McCOY: It is usually estimated that where well-trained laboratory personnel are making the examination, a single stool examination will detect not more than 50 per cent of the carriers. Additional stool examinations will, of course, disclose the rest. Usually five stool examinations on different days will be sufficient to disclose say 95 per cent of those that ultimately could be proved to carry the parasite.

From a practical standpoint three negative stool examinations on different days are usually considered sufficient to be fairly safe in ruling out the disease; that would probably take care of nearly 90 per cent of the cases.

As far as rigid precautions to be observed are concerned, we have to remember that these people are traveling on trains on which probably 5 per cent to 10 per cent of the other travelers are carriers of amebiasis and are just as dangerous as far as the spread of the disease is concerned. The important thing is to have good sanitation in the washing of dishes and handling of food. Known carriers ought to be given special instructions as to the necessity for observing strict precautions in personal hygiene, particularly in keeping the hands clean.

MAJOR TUCKER: I would like to ask, also, what your opinion is with respect to finding the active trophozoite in the stool and whether such a patient is infectious and why there are no cysts? It has been my experience that as soon as a case of amebiac dysentary comes in and we find the active trophozoite, everyone becomes very excited and wants that patient isolated right away, although the reports I have read indicate that there has been no experimental evidence to show that they are infectious during that stage.

COLONEL McCOY: It has been found that the trophozoite stages will not withstand the normal acidity of the gastric juice.

Consequently, it is generally accepted that there is no danger of the spread of the disease by the trophozoite stage. It is only the cyst stage that can withstand passage through the stomach and thus it is the cyst which serves to spread the infection.

COLONEL NORTON: I would like a comment on the possible introduction of Japanese B type of encephalitis.

COLONEL McCOY: Presumably we have mosquitoes in this country which could serve to transmit the disease. The problem is how the disease might be introduced. If someone were brought back to this country while still in the incubation stage, it might happen. There is also the possibility that certain people might harbor the virus after recovery. It would have to be present in the blood stream so that it would be accessible to mosquitoes. I don't think anyone can give a good answer on this possibility.

From a practical standpoint, our attitude is that all types of mosquitoes should be controlled around airports, not only anophelines but also all species of culicines. The culicines mosquitoes may serve to transmit dengue as well as certain of the encephalitides.

COLONEL BANTON: The diagnosis of filariasis seems to be one of the big problems at Moore General Hospital where they are getting these men back. It is a question whether or not we can call it filariasis when we have no laboratory support. Whether it should be called filariasis on a clinical basis, I don't know. The idea is being set forth that the men don't show evidence of microfilariae in the blood, certainly none in the peripheral circulation for a year or maybe a longer period after infection. I think that the question of just what constitutes the diagnosis of filariasis enters into our public health problem. Are these men going to become a problem in future years?

COLONEL McCOY: The diagnosis has actually been proven in only a minority of cases. Microfilariae have been found in the blood in a few instances. A somewhat greater number have had the diagnosis proved by gland biopsies in which adult worms have been found. It is believed that there has been sufficient evidence to establish this syndrome as actually being caused by filariasis. We have been willing to accept the diagnosis of filiariasis in those individuals who have characteristic changes in the lymph glands, characteristic lymphangitis and the history of exposure in those particular areas where we know other proved cases have been acquired. I think all of these factors must be taken into account, particularly the history of exposure in one of the islands where we know soldiers have acquired the disease. We have got to accept the diagnosis of filariasis in these individuals, even though it is not proved by actually demonstrating the parasite in all of them.

As to follow up on patients, that is exactly what is hoped to be obtained from the special report which is now required on these individuals whenever they are hospitalized at a later date from any cause whatsoever.

COLONEL ROBINSON: Any more questions for Col. McCoy? (No response.) You might save your questions and spring them on Colonel Dieuaide when he is here.

I think we can go on now to the second speaker of the afternoon, Major Dammin, Director of the Laboratories Division of The Surgeon General's Office, who will talk about laboratory service in the Service Commands. Major Dammin.

LABORATORY SERVICE IN THE SERVICE COMMANDS--
EPIDEMIOLOGICAL FUNCTIONS OF THE LABORATORY
LABORATORY EXAMINATIONS SUGGESTED BY TB MED 2--
THE ASSIGNMENT OF LABORATORY OFFICERS

MAJOR G. J. DAMMIN, MC., DIRECTOR, LABORATORIES DIVISION.

MAJOR DAMMIN: Col. Robinson and gentlemen: There were no questions submitted for consideration by the Laboratory Division and this discussion will be rather general. I believe the informal atmosphere that has been created in the early meetings should be continued because I think it will help to accomplish the purpose of this meeting.

We depend very much in the Preventive Medicine Service on information which we got from Preventive Medicine officers, from service command laboratories and other installations which submit reports to the Preventive Medicine Service. I hope everyone will feel when this meeting is over that we have among us a good number of representatives from really the Preventive Medicine Service of The Surgeon General's office.

It is not possible for Laboratories Division or any other Division to maintain intimate contact outside. For us to understand your problems and for these Divisions to carry on their own work in conjunction with other services in The Surgeon General's Office, we depend very much on information which you send us. The Laboratories Division wants to act as a coordinating agency for the Service Command laboratories.

It will become evident, when I describe the integrated laboratory system which we are striving for in the Service Commands, that the Preventive Medicine Officer will play a very important part in that arrangement and will also derive a lot of helpful information from the laboratory arrangement as we plan to see it set up.

The only information which the Laboratories Division in the Surgeon General's office gets from the Service Command laboratories is that contained in monthly reports. We find these of variable value. I shall not mention any specific Service Commands. Some tell us exactly what the laboratory is doing and give us the information that we like to have, so that we can carry on our work with other agencies.

We are especially interested in knowing how well the things we recommend are working out in the Service Command laboratories and in the hospital laboratories. It is true that personal visits could accomplish that for us. As I mentioned, it is almost impossible to maintain contacts with Service Command laboratories and hospital laboratories in Service Commands by this method. We want to know about the evaluation of technical methods which have been authorized and approved by the Laboratories Division. There are no set channels except through the monthly reports to tell us about those things and as a coordinating agency, if we can get this information from the Service Command laboratories we can make the profitable experiences of one Service Command laboratory available to the other Service Command laboratories.

There are very few critical evaluations of apparatus, reagents, tests or technical methods included in the reports we get just now and we are considering a standardization of that monthly report to help our Division and to help other Service Command laboratories.

The Service Command laboratory really is the Army counterpart of a public health laboratory or a State health laboratory. It is our aim not to have such a laboratory intimately connected with any hospital. It has a function to fulfill in the whole Service Command.

I realize that this discussion borders on the ideal many times because there are few Service Commands who have their laboratories operating as they are expected to operate under AR 40-305. These regulations are worthy of periodic consideration because they provide an excellent description of exactly how a Service Command Laboratory should perform in the service command and exactly how it should function in helping the Service Command Surgeon and this new officer arrangement whereby each service command has a preventive medicine officer.

It is the indirect responsibility of the Laboratory Division to see that Service Command Laboratories do function that way. This responsibility was simpler to fulfill when Service Command Laboratories were what we now call Class 4 installations. We knew more about the personnel in the laboratories and we could make changes from The Surgeon General' office according to the needs in each Service Command Laboratory. It is more difficult now but we try by recommendation of special officers for assignments to service in service Commands to see that Service Command Laboratories and the service commands do have properly qualified officers. Actually the Service Command Laboratory should be regarded by the Service Command Surgeon and preventive medicine officer as a special staff of assistants. There should be an intimate relationship between the Service Command Surgeon, preventive medicine officer and the Commanding Officer of the Service Command Laboratory.

Before the appointment of a preventive medicine officer, the Commanding Officer of the Service Command Laboratory had very much the same position that the preventive medicine officer has now. It was stipulated that the Commanding Officer of that laboratory have a broad training in epidemiology and very much the same background that the present preventive medicine officer has.

We hope that this ideal can be obtained, that the Service Command Laboratory and its staff will act as a consulting staff to the Service Command Surgeon and the preventive medicine officer. We gather from monthly reports that the Service Command Laboratories are not making themselves felt widely enough in the service commands. There are laboratory officers in general hospitals and smaller hospitals outside who feel that they have no superior to whom they can bring their problems. We hope that in the near future we will see this integrated laboratory arrangement set up so that in the smaller service commands, the Service Command Laboratory can act as the consulting agency for all hospital laboratories.

In the larger service commands, the Service Command Laboratory should be allowed to set the policy whereby certain general hospitals will have definite functions to fulfill in smaller hospital laboratories in a certain area. These laboratories can act as coordinating agencies for smaller hospital laboratories.

In one short visit to hospital laboratories, in one of the service commands, it was found that the laboratory officers were very competent, that they all, according to their own interests, had found modifications and developed new techniques which with some coordination could have been made known to more hospital laboratory officers. As I say, in the small service command, the Service Command Laboratory might act to bring these hospital laboratory officers together and to pool whatever modifications and whatever experience they have derived from their work in the hospital laboratories.

I might cite a few special instances in the use of the spectrophotometer. Some laboratories have found a very wide use for this instrument. Others have used it for one or perhaps two tests. There are special modifications, special attachments, which make it more versa-

tile. These things should be made known to all laboratory officers, and we hope that through the broader functioning of the Service Command Laboratories throughout the service command that that can come about.

The other report which occasionally comes to the Laboratory Division is the medical consultant's report. It is helpful to have the medical consultant's opinion of the Laboratory Service. The laboratory may be doing its job particularly well and to what extent the laboratory cooperates with the clinical services we get from the medical consultant's report. We realize that he can not critically evaluate the officer or officers in the laboratory. He can not always evaluate methods; but his opinions about Laboratory Service are welcome. We hope that the Service Command Laboratory staff will send us evaluations of hospital laboratory officers; otherwise we have no information about their performance. I have been going into this in some detail because anywhere in this integrated system of laboratory service the preventive medicine officer must be able to step in and expect the help of a general hospital laboratory or the Service Command Laboratory.

There is just a word to be said about the TB Med 2 examinations. These have been variously interpreted at the reception stations. Some stations that had laboratory facilities were very enthusiastic about the amount of information they were going to get from them and they started off on surveys but soon found that the volume was too great and most of these projects were abandoned. The routine of the reception station, itself, is not conducive to survey studies and, again, the value of survey studies done by personnel who have perhaps had only moderate training in the diagnosis of these diseases would be of questionable value.

About the assignment of laboratory officers, the Laboratory Division since July, 1944 has recommended for commissions about 250 Sanitary Corps officer candidates. That procurement objective is now full and there will not be any more commissioned until further notice.

These men are commissioned, then are sent out for training and later to laboratories. We have no direct way of knowing about their performance except by an arrangement we hope we can make through the service command laboratories. We hope that the preventive medicine officer in his use of the laboratory service will help evaluate that service for us.

We hope in the assignment and reassignment of medical and Sanitary Corps laboratory officers, both officers returning from overseas and newly-commissioned officers, that we can arrange training periods for them in service command laboratories, in general hospital laboratories and in general hospitals which are histopathological centers. Some training these men do obtain in the pools but we hope to make better use of the time the laboratory officer often spends in the pool. If this can be arranged, the training will more certainly be in the form of a refresher period for these returning officers and the newly commissioned Sanitary Corps officers.

Although there was no question submitted for consideration by the Laboratory Division, the three of us in the Laboratory Division do hope that we can establish some contacts with whatever laboratory officers are here and with all preventive medicine officers. We must depend on you for information which we can use to help you in your work and for information which will aid us to carry on our work with other services of The Surgeon General's Office. Perhaps some questions have occurred during this discussion of the work of the Laboratories Division.

COLONEL ROBINSON: Are there any comments?

COLONEL BANTON: Is there a T.O. for the Service Command Laboratory? That is one trouble now. An organization having no T.O. is in a way helpless. It has to function alone and it can't even feed its men. I am wondering if there is a plan for such things?

COLONEL ROBINSON: I think I can answer that. That is a question that came up before Major Dammin came to the Laboratories Division. There is no T.O. and it is essentially impossible to set one up simply because the size of a Service Command Laboratory will vary so much from one service command to another. There was a manning table drawn up. I should say it was the better part of a year ago, or possibly more than that. At that time each Service Command Laboratory was considered separately in terms of troop strength in the service command, particular needs and so forth and so on and the manning table was drawn up showing not only how many officers but what particular specialty should be represented.

As I remember now it varied all the way down from a minimum of about four or five officers up to a maximum of somewhere, I think, around ten officers. We can look that up and see just where it stands now, if you would like us to.

COLONEL MINOR: I would just like to say a word for the medical consultants, being the only one here. I think that if the Laboratory Division would stimulate the reporting by the medical consultants in the laboratory evaluation that they make, they will probably get a great deal more help than they have already. Actually many of the medical consultants have had suitable laboratory experience. Some of them may have gone into internal medicine from laboratories, which is a good thing to do, and they have been evaluating laboratory methods and while they differ quite a bit I think it can be found that they will be of greater help than in the past. I just want to put in that word for the consultants.

MAJOR DAMMIN: We appreciate your remarks on including the laboratory in the medical consultant reports. As I say, just now, or very often, it is the only comment we have on the laboratory performance.

COLONEL ROBINSON: If there are no other comments, I think we might have a recess for let us say, ten minutes. (Recess.)

COLONEL ROBINSON: The next discussion is by Col. Dieuaide on questions in internal medicine of interest to preventive medicine officers.

QUESTIONS IN INTERNAL MEDICINE OF INTEREST TO PREVENTIVE MEDICINE OFFICERS - LT. COL. FRANCIS R. DIEUAIDE, MC, MEDICAL CONSULTANTS DIVISION.

COLONEL DIEUAIDE: Col. Robinson and fellow officers. The questions appearing in the title of this discussion are supposed to arise from the audience. There are very few. I have picked up some disjointed subjects which I thought might be of interest to you and I shall do my best to answer such questions as you may have now.

I thought I might refer to the existence in The Surgeon General's office of the Professional Divisions in case some of you are not acquaint-

ed with the organization of the office. There at one time was a Professional Service, as many of you know but at the present time, the professional subjects or professional aspects of problems dealt with by The Surgeon General's office are divided among the Preventive Medicine Service with which you are concerned, the Proffessional Aministrative Service, and several independent divisions, which are not part of any "service." These indenendent divisions are devoted to Medicine, Surgery, and Neuropsych

The Professional Administrative Service is concerned with rules about physical qualifications for entering the service, about medical discharges and retirements from the Army and similar questions. There has been reference made today to the group of professional consultants who in spirit are associated with these professional divisions of The Surgeon General's office. I say in spirit, of course, because in the command sense they have no direct connection with The Surgeon General's office. These consultants, however, have been practically all selected by the related divisions of The Surgeon General's office.

The service commands have found them helpful, I believe. Consultants have been left almost entirely with professional duties, dealing with administrative problems only in the way of making suggestions or recommendations occasionally. I think everyone who has watched the development of this system has felt very strongly that they should not acquire important administrative duties.

In regard to the history of consultants, of course, there were such officers in the last war, both in this country and overseas and I suppose in some sense or other there were physicians and possibly scientists associated with the Army for this purpose long before that. It is true, nevertheless, that the assignment of selected officers for specific professional purposes has gone very much further in this war than it ever did before. Obviously, in many ways the functions of consultants is parallel to that of preventive medicine officers. Professional consultants are also assigned to most of the oversea theaters, but not to the smaller base commands. In the cases of the largest theaters there are several consultants in each field.

Major Dammin referred to the desirability of association between laboratories and medical services or professional services in hospitals up to a certain point. I think perhaps we might be willing to go farther. Most of us would like to see the closest possible association between preventive medicine activities, laboratories, and the so-called clinical services. These different services cannot function satisfactorily as independent units. So much for generalities.

I understand that yesterday you had a discussion of diphtheria. I am not going to go into the general problems of diphtheria, but it may interest you to hear a little more about cutaneous diphtheria, with which I happen to have had some experience. This is a subject of considerable epidemiological interest. When the subject of infection of skin lesions with diphtheria organisms comes up, it has a tendency to cause the raising of eyebrows and shrugging of shoulders. Many officers jump to the conclusion that non-pathogenic diphtheroids are being interpreted as virulent organisms. Scepticism is healthy, but in this case, the attitude in question is unjustified and may cause serious trouble.

In the early part of 1943 an epidemic of cutaneous diphtheria occurred in the South Pacific Area as it existed at that time. In the cases of a large number of the patients in this epidemic the diagnosis was proved by virulence determination of the organisms that were isolated from their lesions.

Since then, diphtheria outbreaks of varying size, none of them very large, have occurred, centering around cutaneous diphtheria in practically every warm weather theater. I have heard of no outbreak in the Caribbean Defense Command, but they have occurred everywhere else, including the Southwest Pacific, the South Pacific, the Central Pacific, India, and the Mediterranean. Similar epidemics occurred among British troops earlier in the war, particularly in the Middle East, and more recently in India.

As some of you know, we were struck early last year with the occurrence of an undue number of cases of faucial diphtheria among prisoners of war. It is very interesting that these cases were diagnosed originally by the observation of a number of instances in the same camp of partial paralysis at a time when diphtheria itself had disappeared in the individuals concerned.

The type of skin lesion which is most often found infected with virulent diphtheria bacilli is that commonly known as the "tropical ulcer," "jungle sore," or "desert sore." I do not mean to imply that all ulcers that bear those names carry virulent diphtheria bacilli by any means, but merely that this is the morphological type of lesion which has most frequently been found so infected. Such ulcers conform fairly closely to a characteristic appearance. They are often moderately deep, are frequently well rounded, have rather clean-cut edges which are not often undermined, though occasionally they are. The edges are often rolled up and are surrounded by a small area of swelling, edema, and redness. The base of the ulcer may be surprisingly clean.

The base of the ulcer is occasionally covered by an eschar, if we may use that old-fashioned term which has come back into use largely through scrub typhus, a crust which is dark in color and which has underneath it a grayish or somewhat greenish pus instead of the yellowish pus which is more commonly seen with other infections.

These ulcers may be single, but they are frequently multiple. They are especially common on the legs, but may occur on the trunk and on the arms. While many of these ulcers are infected with other organisms, this is not always the case. In some instances, pure cultures of diphtheria bacilli are obtained.

The feeling that we have at present about these ulcers in connection with diphtheria is so strong that we believe that when it is known that an epidemic of diphtheria exists, patients with such ulcers should be regarded as having diphtheritic infection until it is proved otherwise.

Many other kinds of skin lesion have been found to be infected with diphtheria bacilli as well as these ulcers. Among them are eczematoid dermatitis, exfoliative dermatitis, epidermophytosis, and paronychia.

At the Letterman General Hospital, virulent diphtheria bacilli were recovered from skin scales off the floors under the bed of a patient with exfoliative dermatitis. In the skin ward where this took place, an epidemic of faucial diphtheria broke out. In addition to the proof supplied by the virulence test, it is an impressive fact that among these patients there have been a rather large number of cases of peripheral neuritis and a few cases of myocarditis, as shown by definitely abnormal electrocardiograms. In the Mediterranean area, the death of one patient was attributed to diphtheritic myocarditis.

In several theaters, a rather large number of cases of peripheral neuritis have occurred, with no adequate explanation. Various diagnoses are made which are not convincing, including malarial neuritis. It seems likely that many of these cases are post-diphtheritic. It must be remembered that the organisms may have disappeared from the skin lesions by the time the patient is seen. Indeed, the lesions may have healed entirely. We know that diphtheria bacilli disappear quickly from skin lesions when the patient is put to bed, cleaned, and local care given to the skin. It has been shown, though perhaps not with conclusive finality, that penicillin hastens the disappearance of the organisms.

From the epidemiological point of view, diphtheritic skin lesions are very important. The epidemic in the skin ward of the Letterman General Hospital was traced to two or three patients with skin diphtheria who had been received from the Southwest Pacific. In two instances of epidemics in the Pacific, the infection was undoubtedly spread while the men were on transports. One well studied epidemic involved a large organization which returned from combat experience in the Western Pacific to a rest base. In this organization over 100 patients with diphtheria were found, when the troops were debarked. Most of these patients said that they had had only trivial sores which they thought were of no consequence when they embarked.

It should be remembered that surveys show that 40 to 50 per cent of our soldiers are susceptible to diphtheria. If any of you have any questions that you care to raise about skin diphtheria, I will do my best to answer them.

COLONEL MARSH: Are these cutaneous cases given anti-toxin?

COLONEL DIEUAIDE: Patients have usually been given anti-toxin when the diagnosis is made. The clinical diagnosis is difficult, but as a group of patients is studied and medical officers get more experience and are more sure of themselves, they come to feel that they can make a clinical diagnosis. Of course, laboratory proof of the diagnosis is always desirable, but it may be unwise to await such proof. The best course is to give a dose of 20,000 units of anti-toxin in any case in which it is believed diphtheria is present. Further treatment must depend upon the circumstances in the individual case. A great many patients do not need more anti-toxin.

The outstanding reason for giving anti-toxin, of course, is the prevention of complications due to diphtheria intoxication. The sooner anti-toxin is given, the more chance that it will be effective. Anti-toxin is useless after neuritis or other complications due to intoxication have occurred.

COLONEL MARSH: What I had in mind was the possible prevention of this neuritis.

COLONEL DIEUAIDE: That is the main reason for giving anti-toxin.

CAPTAIN COOPER: I have one question: When returned on ships these patients are scattered in troop compartments, sometimes containing as many as a hundred or two hundred men each. That same ship ten days later will load a unit going overseas. Thus far we have seen no difficulty in troops going overseas and apparently from what I understand it would hardly be necessary to disinfect these compartments.

COLONEL ROBINSON: You know you have had diphtheria in the group coming back.

CAPTAIN COOPER: Yes.

COLONEL ROBINSON: How long a time to return?

CAPTAIN COOPER: Not less than ten days, necessarily. It may be two or three weeks, depending on the amount of repairs necessary to the ship and so forth.

COLONEL ROBINSON: Certainly, theoretically you ought to clean up those compartments, that is, if you are taking active diphtheria cases out of a compartment, but just how thoroughly you can do that, I don't know, because I have not gone into the set-up. What you would be doing would be moving people into quarters that were occupied by diphtheria cases. It would certainly be highly desirable to clean up as thoroughly as possible. How great the actual danger is rather a gamble. If the people you put in are immune to diphtheria it won't matter.

CAPTAIN COOPER: These compartments of course house as many as 350 men and they are pretty well scattered throughout the ship. It might entail cleaning the whole ship which is not very practical every time it comes in. They have been on practically every ship that comes in and the patients are ambulatory patients and in most instances have the liberty of the entire ship.

COLONEL ROBINSON: It would be very easy to give an answer on a high academic plane but practically, I don't know.

MAJOR TUCKER: I might make a statement with regard to practical solutions but I don't know anything about how and when the ships are cleaned up after the patients have disembarked. We do know that the diphtheria bacillus, a great deal will live in the dust on the floor and maintain its virulence for about six weeks.

We also know that diphtherias bacillus is pretty susceptible to the common disinfecting agents. We tried two or three of these and we find that the general consensus of opinion is that diphen solution which is a cresol preparation will kill the diphtheria bacillus in a one to ten dilution in about 15 minutes so that it would not be any great job that would require too many personnel. The simple solution is to clean out the compartments, at least the floors and the lower parts of the walls of the compartments, which is done by taking one to ten diphen solution which has a phenol coefficient of about five and using a wet mop. That is the procedure that we use and are using in all the diphtheria wards and diphtheria rooms at Letterman General Hospital. Twice a day an enlisted man goes in with a one to ten diphen solution all the time the patient is there. No wax is used and floor polishing as seen in all the linoleum covered floors in hospitals, but the baseboard around the wall and we will say up to a man's shoulder, is mopped with this diphen solution. I think that that is a practical thing but I don't know how long it takes to clean a ship but if it is going to be in for ten days it does not seem like too big a problem. The susceptibility of the new soldier who is going to occupy that ship has acted in favor of not getting any new cases, I am sure.

COLONEL ROBINSON: Would that be a practical solution?

A VOICE: I think that is practically being done at present. I know in Boston ports it has to some extent been done in this way. All the ships have to be clean thoroughly because they are in port. You have to change the bunk bottoms and spray the compartment with a cresol solution so to a large extent that is already being accomplished. Any ports where it is not being done it can be very easily done.

COLONEL DIEUAIDE: To turn to another disease and make a single remark about it. It may be worthwhile to call to mind the importance of patients with meningococcus infection who do not have meningitis. I refer to cases of so-called meningococcemia, such as those which were fairly numerous in 1942-43. These cases have special clinical and epidemiologic significance. They may be overlooked for a time. It is important not to think of meningococcus infections only in connection with the physical sign of a stiff neck.

There have been a few indications that there may be an outbreak this winter and spring of severe streptococcus infections, including streptococcal pneumonia. There is an article in the last Army Medical Bulletin referring to the possibility. Streptococcus pneumonia is a disease with which many medical officers may not be very familiar. The clinical picture is quite different from that of pneumococcus pneumonia, so that the diagnosis is often missed, until it has been demonstrated post-mortem. There are some questions in connection with some of the so-called tropical diseases which Col. McCoy went over that I might refer to from the clinical point of view.

Amebic infections raise many practical problems. What individuals with amebiasis should be isolated. When does an epidemic of this disease exist? Should all individuals with amebic cysts in their stools receive treatment? In answering these questions one has to stay within the bounds of practicability. Cyst passers in general cannot be isolated. They should, however, be restricted so that they are unlikely to infect significant numbers of other persons. The number of cyst carriers known to exist depends entirely on the time and effort expended on stool examinations. Even though a survey shows a rather large number of carriers, one would not on that basis say that an epidemic exists. Such a statement must depend on the presence of an undue number of patients with symptomatic colitis, or amebic dysentery. The treatment of large numbers of cyst carriers in the Army raises many difficulties and is time-consuming. On the other hand, we know that it is individuals who pass cysts who are of epidemiological significance.

COLONEL ROBINSON: The question that was asked this morning was essentially, how many stool examinations do you have to make before you can say yes or no -- rather, before you say no?

COLONEL DIEUAIDE: It would appear that different routines have to be accepted in different circumstances. In a routine general examination, probably only one stool examination is practical. We know, however, that such an examination brings to light only a fraction of those infected with amebiasis. As the number of examinations is increased, the percentage of those infected, who are found, rises. But in any case, the results depend upon the training of laboratory technicians and the care they rise. In some hospitals in regions like the Far East where technicians are plentiful, as many as 10 stools are routinely examined for all patients. It was estimated that such a routine disclosed 90 to 95 per cent of those infected. The routine adopted for a given set of circumstances must represent a compromise to some extent.

Would Colonel McCoy care to add anything?

COLONEL McCOY: Three stools examinations usually expose about 80 per cent of the cases and five or six probably over 95 per cent. One stool examination is pretty reliably estimated to disclose only about half.

COLONEL DIEUAIDE: Col. McCoy spoke of schistosomiasis japonica, a problem that we are facing in a moderate number of troops. The early symptoms are important, since it is only by knowledge of them, together with epidemiological information, that the problem can be attacked in time to do some good.

If you put the history of exposure and a certain combination of symptoms and findings together, you get an impression that means something. In connection with Japanese schistosomiasis, the history of exposure is extremely important, because of the fact that the distribution of the disease is fairly well known and relatively limited. The most important or most suggestive events that occur following infection are fever, which is often slight, and itching with urticaria which may consist of small or of giant lesions. In one recent case, the whole of one side of the face was involved by urticaria. Cough, without sputum, is a common complaint. There are in even the early stages of the disease transient bouts of simple diarrhea which is not dysentery-like. Patients complain of pain in the back and in the legs, and of malaise and anorexia. A most important finding is rapidly increasing eosinophilia which reaches 40, 50, or 60 per cent of the total white blood cell count.

It is most important to know that all of these symptoms and signs are transient. Sometimes they are only present for a day or two. They occur at variable times from the end of the first week after infection through the eighth week of infection. During the fourth week and thereafter for four or five weeks patients begin to have dysenteric symptoms and the so-called second stage of the disease begins. From this time on eggs may be found in the stools. The earliest symptoms are apparently reactions of an allergic nature to the presence of the worms. The later developments are due to physical and chemical effects of the worms and their eggs.

Most of the eggs are deposited in the intestinal wall and in the liver. But a few eggs are deposited in various other parts of the body, even relatively early in the disease. We have already had two patients with central nervous system symptoms due to schistosomiasis.

In this connection we would like to have it known that it is really important for patients with schistosomiasis when they come back to this country, to be sent to the Moore General Hospital which has been designated for specialized treatment of tropical diseases. The chemotherapy of schistosomiasis is not altogether satisfactory. Hence, it is necessary studies be carried on to be sure that the best methods are used. For many reasons, the management of patients with schistosomiasis should be concentrated in the hands of a group of officers with special qualifications. It has already been decided that patients with schistosomiasis will be evacuated to this country. Beyond question that is the right thing to be done. Patients will be given, however, one complete course of treatment in the theater before they are evacuated.

One aspect of malaria deserves emphasis. We have published recently a technical bulletin in which we have done everything we can to encourage medical officers to give suppressive medication to individuals known to have vivax malaria, who have not passed through at least three months without an attack of malaria. In other words, we are recommending that

following treatment for an attack of vivax malaria, suppressive medication be instituted and carried on for two or three months. There is no doubt of the desirability of this plan. It is realized that there is no guarantee that administrative arrangements will be made which will ensure that medication is taken. There are no units in this country that are taking suppressive medication and we are not going to have any such units. Nevertheless there must be a good many men with enough intelligence to realize that it is to their own advantage to avoid the disturbance of going through repeated attacks of malaria. Such men will take sufficient suppressive medication to avoid attacks.

I would like to emphasize that in making this recommendation we have no idea that the use of atabrine or quinine for a period of say three months is going to cure patients. In other words, we are merely supressing the disease. Nevertheless, the advantages of a period of three months free of attacks are great.

Individuals who receive suppressive treatment under these circumstances are not to be kept in the status of patients.

It is interesting to note that about 80 per cent of the relapses of malaria which are seen in the course of nine or ten months occur in the first three months.

A small point that I thought might entertain you, was recently called to my attention. In 1942 and 1943 we were all doing everything we could to convince medical officers that the yellowness associated with atabrine is not jaundice. Apparently we have gotten now to the point where anybody who has been overseas and is yellow, is considered to be stained with atabrine. This premature conclusion has resulted in overlooking cases of jaundice, some of which are associated with serious disease with no connection whatever with atabrine or malaria.

In regard to filariasis, studies have been made and are in progress, in the effort to clarify the early clinical picture and to gather information about the course of the disease in infected soldiers. We must acquire a basis for predicting what will happen to these men. An A.S.F. directive has recently been issued which requires that certain information be added to reports of patients with this disease. There, information will be subjected to statistical analysis.

At Moore General Hospital in the last few months they have handled about 800 patients with diagnoses of filariasis. The process has been to observe patients for three months, following them very closely. A graduated program of exercises is used. When patients go through a period of three months without symptoms, they are returned to duty.

For various reasons, the policy has been to retain in the service men who have, or are supposed to have filariasis. These men are protected against further infection with filariasis and excused from combat duty by restriction to service in this country. It is believed that they are better off in the service from a medical and a psychological point of view than they would be in civil life.

It will interest you to know that there is no report of any Army patient developing a permanent pathologic change that could be called elephantiasis. There have been in the Army a number of cases of generalized leishmaniasis or kala-azar. The majority of these cases so far have originated in the Mediterranean area. A minority has arisen in India. It may be expected that there will be many more from the Far Eastern area.

Kala-azar mimics a great many diseases, including typhoid fever and malaria. In the early stages, it is often very acute. The diagnosis may be very difficult for those unfamiliar with the disease. The history of exposure is very important. The outstanding characteristics, in addition to the fever chart, are rapid and progressive enlargement of the spleen and leukopenia. Anemia may develop quickly. The globulin fraction of the plasma proteins increases at an early stage; all of these changes are often very severe.

One of the questions which was turned in related to the immunization of patients against hay fever. This is an individual problem. It cannot be handled from an epidemiological point of view. Whether or not a given patient should be immunized against hay fever at the beginning of the season, should be decided in terms of the history and condition of the individual patient and of the region in which he is.

There was also a question about the management of mycotic infections, especially epidermophytosis. This is not a field in which I am at all expert. I have been greatly impressed by the divergence of opinion among doctors who specialize in the subject. If there are any other questions, I will be glad to do the best I can to answer them.

MAJOR TUCKER: I would like to ask a question about the so-called atypical pneumonias. About two years ago we had several cases at Letterman Hospital which were thought to be cases of pneumonia. We expected more this past winter but they did not show up. I just wondered if there was anything new in the way of treatment other than putting the patient in an oxygen tent. The reason I asked that is that I heard there was some work being done on the use of immune globulin.

COLONEL DIEUAIDE: I have no information that I can give you about that.

COLONEL KOGEL: Is any work going on on para-aminobenzoic acid in the treatment of atypical pneumonia?

COLONEL DIEUAIDE: Yes, work with it is going on. I am not in a position to tell you about it. Perhaps somebody else who knows more of the details might.

COLONEL KOGEL: In the matter of pneumonia, that you were asked about, in the Air Force Hospitals, between 65 and 100 cases were treated with convalescent serum in the midst of that large epidemic we had. The reports on that were rather favorable. Fifty per cent of them had a subsidence of fever within 24 hours after the convalescent serum was given.

COLONEL ROBINSON: Does anyone have any comments they would like to make on those last couple questions?

GENERAL BAYNE-JONES: The treatment of atypical pneumonia with globulin injections is being tried out by the Respiratory Disease Commission at Fort Bragg. They have not had anything to report definitely on the subject. The use of paramino-benzoic acid looks rather hopeful. A paper has been published with members of the Commission working at Cairo and perhaps the A.M.A. will give us some information on that. I can get you a reprint and send it to you. You may have seen that paper of Dr. Pinkerton in the Journal of Experimental Medicine on the use of para-aminobenzoic acid and its effect on egg culture. Col. Plotz did some work on that before that. It looks as if enough is given early enough it has a beneficial effect, so much so that we have sent a group of naval officers from the Naval Research Institute

to a hospital in Burma to try it out on scrub typhus.

They are also taking with them methylene blue. Both the para-amino-benzoic acid and methylene blue used on mice with scrub typhus or epidemic typhus has given enough evidence to warrant the trial in human beings. It is a new kind of a chemo-therapy, in a way. We are trying to get at the parasites that are intra-cellular and perhaps affect their metabolism.

ARMY VETERINARY CORPS MEAT, MEAT-FOOD AND DAIRY PRODUCTS INSPECTION SERVICE - BRIG. GENERAL RAYMOND A. KELSER, USA, DIRECTOR, VETERINARY DIVISION

COLONEL ROBINSON: The next speaker will be General Kelser, who will talk about the inspection service for meat, meat foods and dairy products. General Kelser.

BRIG. GENERAL KELSER: (USA, Director, Veterinary Division): Colonel Robinson and gentlemen, as most of you undoubtedly know, the functions of the Veterinary Corps fall into two distinct categories, one, those having to do with the professional care, treatment and hospitalization of sick and wounded animals and everything that goes with that and, two, those pertaining to the inspection of meat, meat-food and dairy products procured for the subsistence of the troops.

The first has some definitely preventive medicine aspects insofar as those diseases of the lower species which are communicable to man are concerned, but this afternoon we will discuss briefly the food side of the Veterinary Corps' functions, because that is a large part of the duties of the Corps at the present time and it has a wider preventive medicine aspect than perhaps the animal service function, especially within the United States.

Of the soldier's ration, about 38 per cent consists of meat, meat-food and dairy products. That represents about 60 per cent of the total cost of the ration. It is apparent, I am sure, to all of you that while these products are very important items of food, at the same time they are, because of their nature, the type of food stuff that lends itself to spoilage and contamination with the ability to produce disease in men consuming it. After all, it is animal tissue, subject to all of the changes that such tissue can undergo if not handled properly.

I will later take up a few subjects that will probably be more interesting to you, but I will, first, try to outline the mechanism by which the Veterinary Corps performs its function with regard to the inspection of meat and food and dairy products. Prior to the present emergency most of the inspectional work was done upon receipt of the foodstuffs at a post, camp or station. The contract was let by the local Quartermaster and upon delivery of the item or items to the post they were inspected and if found either spoiled or not complying with contract specification requirements as to quality, that is type and grade, they could be rejected and replaced locally by the contractor or purchases made against his contract if he failed to promptly supply replacement. That worked all right under conditions of a normal army in peacetime.

It will be readily apparent to you that with the enormous quantities of food stuffs procured for the subsistence of the troops that if inspection was delayed until the items reached the post or station and

then they were found not to comply, it would be impossible, because of the amount, to replace them locally and in addition there would have been utilized critical transportation in getting the shipment to the post and replacement back. To overcome these difficulties the Quartermaster General's Office, early in the emergency, organized throughout the country, in desirable places from a standpoint of availability of certain types of food items, so-called markets or market centers. They are located in areas where, for example, packing centers are located or where large quantities of food stuffs of the type that the army buys are prepared or are available.

These market centers, some 35 or 37 in number, are all closely hooked up with a Field Headquarters of the Quartermaster General's Office in Chicago and they procure all perishable subsistence supplies for the Army, the Navy and the Marine Corps.

While inspection has always been important to insure that a dealer does not deliver, on a contract, foodstuffs that are deteriorated or actually harmful, it is important, that the inspection also include the type, grade and quality of the item. This latter is particularly important at the present time because, as you will at once recognize, with ceiling prices essentially setting a uniform price for certain items, the element of competition is largely removed and the range of profit may frequently be considered by the contractor as rather narrow. Consequently the unscrupulous individual will try to increase his profit by supplying items which are inferior in quality. It, therefore, is very important that inspection be made to determine that the Government gets not only a safe, wholesome food, but precisely what it contracted for as regards quality.

These plants, as you will readily recognize are in many cases overworked. Their facilities are over-taxed and the type and training of much of the personnel, in many instances is not comparable to what they had under normal conditions. As a result, it would be possible, in the absence of adequate inspection, for a foodstuff, especially canned meat products, to be prepared and shipped out, later to find that it had been improperly processed and had spoiled. Under such circumstances not only would there be a risk of detrimental results in the individual consuming it, if consumed, but a false sense of adequacy with regard to what is on hand and, also utilization of critical shipping in transporting a worthless item.

The Veterinary Corps conducts largely what we term "point-of-origin inspections". Those inspections are made at the point of origin or at the location of the plant or market. Inspections at these points make it possible to conserve transportation, and assures that the product, when it reaches the post, camp or station, will be acceptable if good condition is maintained, thus giving assurance to the contractor that when he makes shipment, it will be accepted at the point of receipt provided good condition has been maintained. The greater part of our inspections are these so-called point-of-origin inspections.

In addition to inspection at the time of procurement or at delivery, food-stuffs are inspected in a series of subsequent inspectional activities, while in storage, when shipped, and when issued. Those inspections are of particular importance, especially in some of our overseas stations where climatic and other conditions are such as to make it difficult to maintain food supplies over protracted periods without spoilage or damage to cans and containers which later make for spoilage. It is important, therefore, that these in-storage and other inspections be made and they have resulted in considerable savings to the Army. Very frequently changes which have started and which will later manifest them-

selves as spoilage are often detected and the foodstuff salvaged through early issue or reconditioning. The Quartermaster market centers purchase all of the perishable subsistence and the Quartermaster Depots all of the canned and cured products.

I will mention several of the items which are of importance from the standpoint of our inspection and comment as I go along on some of the things which have come up in connection with the inspection and the handling of these products.

One of the largest subsistence items of animal origin is, of course, beef. Prior to the emergency, most of the beef procured by the armed forces was in the form of quarters or sides. At the present time, with very few exceptions, that procured is so-called boneless beef. That method of putting up fresh beef was developed some few years ago and has proved of inestimable value in conserving transportation and in facilitating handling in messes. Certainly under the circumstances incident to the present war it has been a very excellent thing especially because of the critical shortage of shipping space.

Boned beef is prepared by removing all the bones and cutting it up in commercial cuts. It is then frozen and in that condition is very compact, stores well and can be shipped and handled with facility. It has proved a very popular way of handling beef.

The boning of beef, it you are not going to mutilate it beyond recognition, requires expert butchers. While most of the packing plants, prior to and in the early days of the war, had qualified personnel to do this, the demand has become so huge that it has not been always easy to obtain the necessary expert, competent personnel to carry out the boning of beef. The Quartermaster Corps, within the last ten days, initiated action to bone beef, which they will procure as carcass beef, at a number of military posts, utilizing military personnel and prisoners of war labor.

Smoked products have always been important from the standpoint of the military establishment. These items, as prepared for the Army, are often processed in a manner different from some of the usual commercial practices. Smoked hams and bacon as ordinarily prepared won't stand up under high temperature conditions, and handling, such as the old long-cured ham. You will all recall the old long-cured ham that you could hang in your basement or in a commissary and it would stay there for weeks without deterioration. You can't do that with the hams prepared under present commercial practice. These so-called artery pumped or tenderized hams contain more fluid and are given a shorter cure than the old hams. They are much more susceptible to deterioration.

The army, in the case of a number of process-cured meat items, has prepared its own specifications to produce foodstuffs that will have better keeping qualities than some of that made according to usual commercial practices.

Aside from cured products and smoked products, we have, of course, all of the various canned meat products, especially things like canned corned beef. We have had considerable trouble with canned corned beef from certain places. It is put up in rather large cans and contrary to ordinary belief, these products are not bacteriologically sterile. The processing does destroy most bacteria but often they do contain viable organisms. Ordinarily in the medium they are in, usually with a high salt content, propagation of the organisms does not take place. In some cases, especially under adverse conditions, swellers develop indicating spoilage. I have seen in a lot of stuff, especially some of the

foreign meats, that was not thoroughly processed, that when stored in places like India and Burma, there were rather high losses.

The army, of course, utilizes large quantities of cheese which we inspect. You will be interested, as most of you undoubtedly know, that within the last year or 10 months, there were several outbreaks of typhoid traced to cheese, largely cheddar cheese. Ordinarily cheese is aged for several months before it is consumed, but the demand has been so great that much of it on the market is not aged as long as usual. If it is only several weeks old, there is considerable danger of spread of infection such as typhoid, as in the breaks that I mentioned, and likewise Brucella infections.

Fortunately, back prior to these outbreaks we had issued instructions that no cheese would be issued for military use unless it had been stored for at least 60 days. We upped that to 90 days after these outbreaks started and that has proved sufficient to insure against the outbreak of anything like typhoid and Brucella infections. The changes incident to ripening over that period of time will destroy E. typhosus and species of Brucella. The outbreak in California, due to short-ripened cheese, became so serious that the legislature in a special session passed an ordinance that requires that cheese be made from pasteurized milk or that it be aged at least 60 days.

It is almost impossible to get cheese prepared from pasteurized milk, because, as many of you perhaps know, it is a common practice with cheese companies to collect cheese from a large number of small producers, sometimes actually from housewives' homes. It would be impossible to have all of that milk pasteurized, so the safest procedure is to be sure that it is aged. We think that 60 days is perhaps sufficient, but to give a little wider margin of safety, the army policy is 90 days.

We have had considerable trouble with canned milk prepared for overseas shipment. There, again, contrary to common belief, canned milk as commercially produced is not invariably a sterile product. It is not bacteriologically sterile. The number of viable organisms is small, but if you culture enough of it in a sufficient number of cases, you can almost invariably isolate some of the large spore-bearing organisms. Sometimes these are very proteolytic and will split the casein and you will have a decomposed milk. That doesn't usually happen under good conditions of storage and reasonably prompt use. However, it should be remembered that canned milk is not invariably sterile and that if we buy large quantities of it and store it over a period of several years the losses will be relatively high. Canned milk ought to be used within a year.

Powdered milk has been an item of great importance in this war, both from the standpoint of its keeping qualities and the lessening of bulk for shipment. Huge quantities have been procured and shipped overseas. It is usually put up not in the form of a whole milk powder in the presence of an inert gas, nitrogen, and it will keep for a considerable period of time before oxidation and rancidity occur. Usually it can be reconstituted with very little difficulty and makes a palatable type of fluid milk for beverage purposes.

As you all know, we have had considerable experience with dessicated eggs in the present war. Prior to this emergency, dried eggs were used almost exclusively by the baking industry and not to any large extent, so that when we got into the present war and developed the need or desirability of shipping eggs overseas, the dried variety became important. It was found very difficult to get shell eggs overseas and

have them in edible condition for any period of time under storage conditions that would exist in places like North Africa, for example. The powdered egg industry, therefore, has developed markedly in this country as a result of the present emergency.

It has developed with it several problems of importance. Of course, there is no egg powder made that is sterile. It all contains a variety of organisms, most of them saprophytic, but in some instances, perhaps somewhere between 5 to 10 per cent of all egg powder produced in the United States, organisms of the Salmonella group are found. Fortunately, powdered eggs put up under army specification and contract requirements are not and have not caused any known extensive outbreaks of food poisoning.

There has been a British Medical Research Council studying of several outbreaks of food poisoning in England in which powdered eggs supplied on lend-lease were incriminated. They were considerably concerned because apparently there had been introduced in England several species of Salmonella which heretofore had not existed there.

The presence of Salmonella organisms in dried eggs is one of those things we don't like and work is being done in an effort to produce an egg powder that will be free of pathogens. If we could pasteurize the fluid egg before it is spray-dried, it would probably accomplish the purpose. However, there are some practical difficulties with regard to putting an egg through a sprayer after it has been heated and that will have to be overcome. We have every reason to believe that within the next few months, that at least a good portion of the dried eggs will be produced from fluid eggs that have been heated at 140 or 142 for seven minutes. That is sufficient to destroy Salmonella organisms.

We have had, as you might well appreciate, considerable trouble with butter. We have to reject considerable quantities of butter under various circumstances, particularly in certain localities, because of high mould counts resulting from the use of stale, old cream, heavily contaminated with mold. The enormous demands for butter are such that some dealers will try to obtain supplies from sources that they wouldn't ordinarily think of using under peacetime conditions. If you have tried to get chickens lately, you will realize that this is a very critical item from the standpoint of food supply. All chickens in plants in certain sections of the country have been frozen for the Armed Forces.

Perhaps the thing that will be of most interest to you in conjunction with dairy products is fresh fluid milk. It often has been a headache with us. Early in the war, the War Department decided that as a matter of morale it would be desirable to retain fresh fluid milk as an item of ration and that has been done and in the United States today we are averaging a little better than a half a pint of milk per soldier per day. That runs into very, very large figures.

We have had considerable difficulty with the local supplies as received by pasteurizing plants. Very frequently a milk company will contract to supply a so-called grade A milk, produced in accordance with the specifications and requirements of the U.S. Public Health Service Milk Ordinance and Code and yet if you check the raw milk, you will find that there is often a breakdown. Very often it will be found that the character of milk going to the pasteurizing plant is not what it should be.

We disapprove many plants. There are several reasons for it. First off, the dairyman or the dairy farmer producing milk for beverage purposes has a ceiling price just a trifle better than that of the indivi-

dual producing milk for manufacturing purposes, that is for dried milk or for canned milk. The fellow that is producing fresh fluid milk must have at least a minimal amount of acceptable equipment and he has to meet certain standards in handling, cooling, delivery and all of that in order to get his milk to the pasteurizing plant in satisfactory condition.

The differential in price is certainly not such as to offer much inducement to the dairy farmer producing fluid milk for beverage purposes, especially in view of the serious manpower shortage and the question of critical items of dairy equipment. As you know, we buy milk under an Army specification. In connection therewith is a point worth stressing because it has gotten us into trouble through ignorance on the part of some of the people having to do with the control of milk supplies in towns and municipalities. We buy, where it is available, a so-called Type II grade A pasteurized milk. "Type II" is an unforunate classification because naturally it carries with it the inference that this is a grade B milk. However, the federal specification, starting back some 15 or 20 years or more ago, classified certified milk as Type I and the top grade of pasteurized milk, which was the so-called grade A quality, Type II.

With the emergency it has been necessary for us to go to Type III milk. Now Type III milk is, really, a good "B grade milk. Bacteriologically it meets all the requirements of a grade of milk which is comparable to the grade B milk produced under the Public Health Service Standard Milk Ordinance and Code. However, when contracts are let by the army for Type III milk, we find a lot of health departments saying the army is buying a grade C milk, which is cooking milk. It is well to bear this in mind because it will come up and some of our own people have not been clear on that particular point. We do not buy any grade C milk.

Another thing with regard to milk which is of importance is the phosphate test to indicate whether or not proper pasteurization has been accomplished. We make considerable use of this test. In general, we place great emphasis on proper pasteurization. We have had to go to a lower grade of milk, an acceptable grade but lower from the standpoint of the raw products, simply because of a lack of availability of the higher grade milk, but there has been no let up in requirements with regard to pasteurizing plants and methods of operation, equipment and so forth. We are sure that if we relax with regard to pasteurizing plants, we would be headed for trouble.

You may find that the methyl blue reductase test is utilized by some of the dealers to determine the quality of raw milk prior to pasteurization. That test has been considerably abused. As you, of course, know, the test depends upon the utilization of oxygen by the bacteria present in the raw milk and if it is not set up and done under proper conditions, there is likely to be considerable variation between the results with the methyl blue test, the standard plate count, or the direct microscopic count, so that a milk that would ordinarily pass on the basis of methyl blue reductase test might not necessarily pass on the basis of the standard plate or direct microscopic count.

Another point that has come up in connection with milk is the question of bottles and capping. For a long time The Surgeon General has consistently adhered to the policy of requiring, wherever possible, that milk be put up in bottles, which are capped with a cap covering the bottle lip at least to its greatest pouring diameter. That has a very definite public health value. You have all seen milk coming out of an ice box cold and if it has a plug cap, the well formed by the lip of the

bottle and the cap, when the milk expands results in the milk exuding into that well. This small amount of milk is subject to contamination and will often enter the bottle when the cap is removed.

If milk bottled this way is delivered to one family and somebody sneezes in it and is a streptococci carrier or has any of the other throat organisms, you may have as a result of that one bottle of milk, one or several cases of disease in that one family. If the same thing happens in the mess hall, that one can, of course, be the source of infecting the entire group. So we are rather insistent that these bottles have a lip covering. The cap doesn't have to come all the way down and it doesn't have to be wired. This type that is crinkled and protects the lip through its greatest pouring diameter is entirely satisfactory.

Overseas we are operating not only from an inspectional standpoint, we are operating a number of slaughtering establishments to provide fresh meats. Especially is this true in India and it has been true over in the North African or Mediterranean theater.

To give you an idea of the extent of this inspectional service performed by the Veteranary Corps I might state that we are daily inspecting about 23 million pounds, of meat, meat food and dairy products. Rejections run about 4.5 per cent. Aside from the protection afforded the health of troops it should be apparent that the potential monetary saving to the Army, as represented by the difference in value between what is offered for delivery and what is accepted following inspection, runs into tremendous figures.

I have rambled along to try to give you in a relatively short period of time the overall picture and touched on a few things that might be of interest. I will be glad to answer any questions.

GENERAL BAYNE-JONES: Someone is of the impression that fresh meat in the Pacific area is very rare--I don't mean rare but hard to get, in the New Guinea region and in through there.

GENERAL KELSER: Lend-lease in reverse is the order of the day and in the early days of our troops over there it is true that they were getting very small quantities of fresh meats. This has been improved considerably and we are getting out of New Zealand large quantities on a reverse lend-lease basis. We are also getting large quantities from Australia.

In the India-Burma theater, when I was over there several months ago, there was essentially no fresh meat supply issued, except that produced at those establishments that we were operating. However, they are now shipping frozen boned beef over there. It would have gone over earlier except for the fact that they didn't have the refrigeration facilities to take care of it. Any other questions?

MAJOR BUZZERD: What is your opinion of dispensing milk by the modern type milk dispenser?

GENERAL KELSER: We have consistently discouraged that. There is a lot of pressure being exerted right now on the Secretary's office to get in some of these dispensers. First off, the milk is put up in 5-gallon cans and they are inverted. That is one type of dispenser. We felt that if operated properly you might get by with it, but that it certainly does not afford the safety of the individual container. The Navy uses it and also buys bulk milk. The Army does not buy bulk milk.

MAJOR BUZZERD: I have another question, also. With regard to the disposal of ocean-going ships' garbage, they are in many cases apt to separate it and it contains meat scraps. How should that be disposed of?

GENERAL KELSER: The only safe way is to incinerate it. It is not always done, however and, as you probably know, Australia was one of the countries very much disturbed about having trichinosis introduced as a result of pork going in there and pork scraps being fed to native pigs.

We possibly produced an outbreak of hog cholera in Iceland as a result of pork products that went to local pigs from soldier messes in Iceland. They had never had cholera there, so far as we know, but after we got our base up there, and they obtained garbage from the messes hog cholera made its appearance. We may or may not have introduced it.

The virus of hog cholera is carried in some of the tissues and it is a very common mode of spreading the disease. As a matter of fact, it has been well known that hogs that have been continually fed on garbage are immune to cholera because of the constant exposure.

There, of course, are a number of methods for handling garbage but it isn't always an easy thing to do, but that is a long story. We have had foot-and-mouth disease introduced in the United States as a result of it and improper disposal is responsible for swine erysipelas, hog cholera and trichinosis. It is certainly best, if it is going to be used as feed, to cook it and if that can't be done and there isn't too much of it, and it isn't much of an economic problem, why they incinerate it. In some places they bury it rather than incinerate it if they don't have the proper facilities for incineration.

COLONEL ROBINSON: Any other questions? (No response)

COLONEL ROBINSON: Thank you very much, General. (Applause) We will recess at this time.

MORNING SESSION - 16 February 1945

The conference convened at 9:00 o'clock a.m., Colonel T.B. Turner, Chairman.

COLONEL TURNER: Gentlemen, we'd better get going on the last day's session. The first topic this morning will be presented by Colonel Sternberg, a study on venereal diseases.

COLONEL STERNBERG: Mr. Chairman, gentlemen, I do not have a paper, but there are a few points that I would like to cover of general interest and a few points that we are particularly anxious to try and put over in the field. After that I hope that you will feel free to ask any and all questions which you may think of in connection with venereal disease.

I suppose it is hardly worthwhile to mention that our trend in rates of venereal disease has been upward quite sharply for the past year. Starting January 1, 1944 the total venereal disease rate for the continental army has been steadily upwards, rising from a rate of 26.3 in 1943 to an average rate of 34 in 1944.

The rate beginning at this period of time, January 1, 1944 was at the same level as the previous year, 26.3. The year ended with a rate of 40 for for December 1944. The rate for January now appears to be in the neighborhood of 48.

The breakdown by disease, however, presents a far more encouraging picture. The increase was entirely in gonorrhea. As a matter of fact, we have a very definite decrease in the incidence of syphilis and the minor venereal diseases. The total overall rate for syphilis during 1943 was 4.8. In 1944 the overall syphilis rate was 4.

The minor venereal diseases had a rate of 1.9 in 1943 and in 1944 they had decreased to 1, so that the total for syphilis and minor venereat disease had decreased to 5 in 1944. We feel that that is quite encouraging.

We do continue to have a decrease in syphilis despite a markedly rising rate in gonorrhea and we feel that it indicates that we should continue to drive at syphilis as hard as we can. We feel it is much more important to obtain adequate contact histories, follow-up and so forth on your cases of syphilis and that progress is being made in this disease.

The incidence of gonorrhea has almost doubled at the present time and we feel that there are a number of factors that are responsible for this rise in rate, some of which are out of our control. Certainly we are getting better reporting with the repeal of the loss of pay, removal of punitive measures. The rapid and excellent treatment we now have which encourages men to report rather than to go to a private physician, so that we feel that the gonorrhea rate represents a much truer incidence of the disease in the Army today than it did a year ago.

Further, the character of troops in this country has changed markedly in the last year and a half. The well-trained, highly disciplined units have, most of them, at least, gone overseas, and we are left in this country with a higher and higher percentage of troops which for many reasons were removed from ground force and air force units, disciplinary cases, low I.Q.'s and so forth, troops which invariably do have a higher venereal disease rate.

There are a number of other factors involved. One, of course, is that there appears to be an increase in gonorrhea in the civilian population. I say "appears", because this is certainly not proven on the basis of any statistics which have been presented by the U. S. Public Health Service or any other civilian agencies and yet there are some--during 1944 at least, some 30,000 or 40,000 more cases of gonorrhea reported in civilians than in the previous year.

This increased Army rate has been accompanied by a very important thing, that is a decrease in the number of days lost per thousand men per year from venereal diseases. In 1940 this figure was 1,280 days lost per thousand men per year from venereal disease. There has been a marked drop ever since, to 800 in 1941; in 1942 there were around 600 and at the present time the lowest days lost per thousand men per year in the army that has ever been experienced, under 300 per thousand men per year. That has been a steady decrease and, of course, it has been brought about by better and improved treatment methods. Further, the days lost per case of venereal disease has shown a similar decline and is almost unbelievable; in 1939 it was some 42 average lost days per case of venereal disease. At the present time it is around 4.9 lost days per case of venereal disease.

This decline in days lost is actually a better measure of the importance of venereal disease to the army than incidence rates, so that the rising rate, while we are concerned about it and anxious that it should be checked, nevertheless, is not as significant as it might have been if our treatment methods had not improved.

This leads into the whole question of treatment. TB Med #96 does away with sulfonamides and institutes penicillin initially in gonorrhea. The course recommended includes five injections of penicillin, a total of 100,000 units covering 8-hour period. We recommend where possible that gonorrhea be treated on an out-patient status. We are quite anxious that as many of these individuals as possible be treated on an out-patient status. We feel that with the high cure rate which we get with penicillin, which incidentally is being maintained pretty well, that the disease does not justify hospitalization at the present time except under circumstances where dispensary or out-patient treatment is impractical.

We feel that that is one thing that can be accomplished in the field to the great advantage of the Army and to the hospitals which are now greatly overcrowded, namely, the treatment of gonorrhea on an out-patient status. We recognize that the present treatment schedule is purely arbitrary. It is almost impossible to misuse pencillin provided at least 6 hours is covered by the treatment schedule and 3 or 4 injections comprising a total of 100,000 units are given. Under these circumstances acure rate above 90 per cent is obtained.

The new developments in the treatment of gonorrhea which I think you are all aware of are the methods of prolonging penicillin blood levels by delaying absorption. The most important is Romansky's beeswax-peanut oil preparation. He has treated some 200 cases with a single injection of 150,000 units of penicillin with beeswax-peanut oil and has had remarkable results. His last series of 100 patients have all been cured with a single injection using this dose. This material is now being made up by several commercial laboratories but it is still in insufficient quantity to put it into the field for general use. In other words, it is still in the research stage, but it does offer a very promising one-shot treatment which we hope can be made available sometime this year.

The treatment of syphilis was completely revolutionized last November when we put out TB Med # 106. We hope that this can be improved further. At the present time, with the 7-1/2 days of treatment with penicillin, plus the initial diagnostic day or so during the hospital stay and a day or two after, the average hospital stay is around 10 days and should not be longer.

The treatment schedule, itself, appears to be very satisfactory. The percentage of failures will probably be in the neighborhood of 5 to 10 per cent. This is not serious provided these failures are recognized and are treated satisfactorily as early as possible.

There are a number of new developments in the chemistry of penicillin in which I think you would be considerably interested. In the first place, it is now apparent that the crude penicillin that we got a year ago had a certain effectiveness which does not seem to be present to the same extent in the more highly refined pure penicillin that we are getting today.

A year ago the penicillin potency averaged from 300 to 400 units per milligram. Today it averages between 900 and 1,200 per milligram. There are developing very definite indications that the impurities contain substances which are at least effective against the Treponema pallidum and perhaps against the gonococcus.

The work that has been done along this line indicates that we have in crude penicillin, first, the pure penicillin products-and there are a number of them which I will discuss in a minute--and secondly the impurities which are also metabolic products of the mold and have a definite therapeutic effect. Work is now underway to try to isolate these impurities and determine what they are and which ones are effective against the Treponema pallidum.

The penicillin products, themselves, consist of a number of chemical compounds which have been given various names. The most common are G, F&X. Also, they have now isolated F' and F". These are all differentiated under chemical names by the addition or subtraction of certain side molecules. It is very interesting and complex.

"G" comprises a very large per cent of our present penicillin, around 80 per cent, and pure synthetic "G" has very little effect against Treponema pallidum. In vitro it has no effect. The solutions of penicillin "G" can be put with spirochetes under the microscope with no spirochetocidal or spirochetostatic effect. In vivo "G" still does have some effect in rabbit syphilis, but not as good an effect as crude penicillin.

"X", as you know, has a very marked effect against gonorrhea, much more so than the crude penicillin or penicillin "G". Studies are now being undertaken to determine which of the various organisms F' and F" are most effective against.

There are also two other penicillin products or penicillin extracts which are being isolated or have been isolated. One of them has been given the name of "Q" and very little is known about it now. The indications are that there will be five to ten more types of penicillin found in crude penicillin, so that it is perfectly obvious at this point that we are just beginning to find out something about penicillin and we don't know too much yet and in the next year or two we will see a lot of revolutionary changes in our thought on this whole business. In the meanwhile we must make every effort to see that the patients with syphilis who have been treated with penicillin get their monthly exami-

nation and follow-up and the failures are identified and properly re-treated.

The question of prophylaxis is one which always creates quite a discussion at any meeting of this type. The value of the various prophylactic procedures has been questioned by many. One of the most questioned is the fixed prophylactic station upon which the army has always placed the greatest dependence.

We feel that only about 30 per cent of the existing prophylaxis stations today are justified. The justification of any fixed prophylaxis station depends entirely on its utilization. It is quite difficult, of course, to arrive at any definite minimum number of prophylactics which should be given in any period or time to justify the existence of a station.

It is possible to determine the cost of the individual prophylactic given by averaging the number who go to the station monthly, figuring the upkeep of your station, plus the time, the commutation, quarters and so forth of the personnel running it. It is found that in many stations it costs as high as $50.00 per prophylactic, ranging all the way down to a few cents in some of the larger, border stations where many prophylactics are given.

It is our feeling at any prophylactic station where costs run over $1.00 to $1.50 per prophylactic that it is hardly justified unless it is a "leave"-town where it is essential that a prophylaxis station be located from the standpoint of public opinion or the satisfaction of the commanding officer. We feel that many of them should be closed after careful surveys and evaluation.

WD Circular 410 has set up an entirely new system of distribution and utilization of individual prophylactic materials in this country. First, of course, the most important change is free issue through medical supply channels. This has been slow getting into effect, but I believe that now it is becoming pretty well adopted throughout the zone of the interior. There are still some areas where many are apparently unacquainted with this circular published the 19 of October, 1944.

That is one of the jobs that has to be done on visits to posts, camps and stations. That is to check into the method of distribution of individual prophylactic items and see that they follow the provisions in WD Circular 410. The unit commander must see that the items are made available in the barracks rooms, company quarters or any other convenient places to the soldier.

We are quite anxious that the new "pro" kit be publicized as much as possible and we have gotten out a lot of educational material covering the new "pro" kit which Captain Larimore will say a few words about. We believe that this kit can be a very valuable aid to venereal disease control program, but that it is necessary, of course, that the men be made acquainted with it and its proper use.

That leads to the next question and that is the type of prophylaxis now given in the standard prophylaxis stations. In this circular we have made it possible for surgeons to requisition the individual, chemical prophylaxis to place in prophylactic stations either for use in regular prophylactic stations or for distribution therein.

These items can be requistioned on service command level or any lower echelon where it is desired to use it. It is good advertising of the "pro" kit if they are used in prophylaxis stations. After the men have been given a prophylactic with the "pro" kit by a trained

attendant they are then acquainted with the kit and with its use and will be more apt to use that kit in other circumstances where they can not or don t care to come into a regular prophylaxis station.

The further recommendation that this circular makes is the setting up of distribution points for prophylactics be established. Many of these have been set up in various service commands, through arrangements with fire stations, U.S.O. and other places where service men come and congregate.

I have a number of questions and I think I will ask Captain Larimore to say a word about venereal disease in Negro troops.

CAPTAIN LARIMORE: I don't think it is necessary to point out to you what a problem control of venereal disease is among colored troops. The Negro venereal disease rate runs consistently from 6 to 8 times the white rate. It has done that since practically the onset of the war. In fact, the trend recently has been such that the proportion is even higher. You might ask why. I will attempt to give you some of the reasons for this difference in rates.

All of the studies that we have made, including the confidential surveys and other studies indicate that the sex exposure rate of Negro troops is many times higher what it is in white troops. In other words, all available evidence seems to indicate that sex exposures per thousand troops over any given period are greater.

The second reason is that the risk of infection is greater. The population to which the Negro troops are exposed has a higher incidence of venereal disease, so the risk of disease per exposure is greater.

The final factor is that there is evidence to indicate that Negro troops are less likely to provide protection for the sex exposures that do occur. In short, Negro troops are much more prone to avoid prophylaxis than are white troops. One of the chief reasons for this breakdown of our educational and prophylaxis program is that 71 per cent of all Negro troops are in class 4 and 5, or semi-illiterate as far as education is concerned.

Many of them don't understand the educational program which has been designed primarily for white troops. They don't understand about prophylaxis and many have long-standing superstitions about VD and the use of prophylaxis, which include inherent objections to certain types of prophylaxis. All of these things add up to the fact that the Negro venereal disease in the army rate runs between 6 and 8 times the white rate.

Next is the question of what can be done about it. Well, a great deal can be done. The Negro venereal disease rate at certain posts in this country is comparable to that among white troops. For example, Tuskegee Army Air Field has maintained a Negro VD rate for the past three years which is comparable to the white rate of any post in that area. Another post, Fort Huachuca, Arizona also has maintained a comparatively among its Negro personnel low rate. Similarly at Indiantown Gap Military Reservation, Pa. there is a low rate among the Negro troops. Thus, it can be done, and when you begin to investigate to find out why some of these posts have low Negro rates as compared to the overall Negro army rate, a number of things become apparent.

First is extent of the suppression of Negro prostitution activities. At the start of the war there was very little commercialized Negro prostitution in the communities ajacent to army posts. That has changed

in the past few years until now in some of these cities there is a great deal of commercialized Negro prostitution activity, particularly in the south. All too frequently the local police are reluctant to do anything about Negro prostitution conditions. In posts with low Negro VD rates we usually find that an effective attack has been made on the local prostitution situation with a resultant reduction in the sex exposure rate.

The second factor is the community recreation facilities for these troops. All too often they are frankly not on a par with those for white troops. When Negro troops go off the post they gravitate into the Negro section of the towns and practically the only thing for them to do is to go to some juke-joint where within two or three minutes they are likely to be approached by some prostitute or charity-girl. Hence in such an environment they are almost continually bombarded on every side with opportunities for sexual exposure, both free and for pay.

The third factor is that on these posts where a successful Negro VD control program is carried on, one does not find commanding officers with the attitude that there is nothing you can do about high venereal disease rate among the Negro troops. You don't hear the defeatist dog ma that the Negro VD rate has been high and is always going to be high, and that there is nothing that can be done about it. In the posts with low VD rates the command has not just washed its hands of the problem but has given complete support to the venereal disease control program among Negro troops. This command support is the keystone on which any successful control program must be based.

The final thing is education. Since our VD educational program for the army is as I pointed out to you, directed primarily to white troops, it has been less effective when applied to Negro troops partly because of the fact referred to above that 71 per cent of the Negroes have an AGCT classification of 4 or 5. Further, one of the basic factors in the effectiveness of any training aid or health education material is that the individual for whom it is intended must be able to put himself in the place of the subject depicted in the material. Hence, in general VD educational utilizing white characters, elicits a poorer response from Negroes. Health educational material for Negroes, such as posters, etc. should employ Negro characters for maximum effectiveness. We have been unable to obtain permission to produce graphic material with Negro characters, although we do have a film on VD control, with a Negro cast, in production at the present time.

One of the reasons for the success of VD control programs at all Negro posts such as Tuskegee is that the educational procedures are carried out by Negroes for Negroes with a full consciousness of the proper educational level, the proper language and the proper appeal that will effectively reach the group. These programs placed a major emphasis on the use of specially trained non-commissioned officers to get the program down to the level of the men and to carry the VD control campaign into the barracks and the orderly rooms.

These and other principles of VD control among Negro troops that are embodied in WD Circular 88, 1944 which was a restricted War Department Circular. Apparently it was very much restricted because, frankly, from our observation it doesn't seem that anyone so far has paid too much attention to it, other than during the first few weeks after it came out.

I think it would be fair to tell you that we have been informed that the Inspector General's teams who visit posts for the purpose of routine inspections will check into the strict application of this circular to all Negro outfits. You might pass this word along to your posts.

This circular, if you are not familiar with it, provides essentially for a venereal disease control program for Negro troops based largely on the experience of those installations which have been successful in maintaining Negro VD rates approximating those for white troops. It provides for an officer to be designated as venereal disease control officer for each Negro company or unit of similar size and it also directs that this VD control officer will employ the company non-commissioned officers as his assistants in carrying out a VD control program for that unit. Circular 88 also outlines other general principles concern- VD education, suppression of prostitution, and provision of adequate prophylaxis facilities.

We feel sure if these principles that have been successful in lowering the Negro venereal disease rate at some posts were intensively applied to the army as a whole a drop in the venereal disease rate would result just as it has at these isolated posts where they have been applied, so it is our hope that you will familiarize yourselves, if you have not already done so, with this circular and see if we can bring about a better application of its principles, and thus bring down the Negro venereal disease rate from the peak it now presents.

Now, as to venereal disease education, the Army in 1944 had the most intensive venereal disease education program in its history. About 15,000,000 pieces of graphic educational material were issued and our training film audiences totaled approximately 10,000,000.

Among the materials we prepared were two pamphlets, 21-15 and 21-16 both of which were for general distribution to all troops. Pamphlet No. 21-15, "You Don't Think" is a new departure in Army pamphleteering, employing the child's book technique of make-up and typography. The other Pamphlet, 21-16, "So You've Got A Furlough?", is intended to meet the furlough problem. This pamphlet is also unique in that while it was put out by The Surgeon General's Office and paid for out of venereal disease educational funds, there are only four pages on venereal disease out of the 20 pages in the pamphlet. This was done because we felt that a pamphlet, containing general information of value to the soldier with the material on venereal disease sandwiched in between, would be more valuable as VD educational material than would a pamphlet devoted entirely to venereal disease.

Experience with the pamphlet thus far bears out the advantage of this type of material. We also put out other VD educational pamphlets for special purposes or to meet particular needs, for example, there is as you all know, a pamphlet for WACs. There is also a pamphlet, "No Tiene Cuenta", for Spanish speaking troops in Puerto Rica. Another, "Even SNAFU Knows", was put out for the Burma-India theater. The latest of these special pamphlets is one called "Venereal Disease Overseas" to be given to all troops going through ports of embarkation.

With respect to posters, The Surgeon General's Office, under WD Circular 28, 1944 which designated it as the War Department agency concerned with the selection, procurement, and distribution of venereal disease materials, undertook in 1944 a VD poster program with a monthly poster to be distributed directly to all posts by The Surgeon General's Office on the basis of one poster for each 100 men. In some instances we have made distribution on a higher ratio than that where such was justified because of local need. At the present time we are purchasing around 50,000 posters a month which are shipped directly from the printer to each installation of more than 500 strength in this country. If any posts are not receiving their allotment of posters, or if the allotment is not satisfactory, it can be corrected promptly by a communication to the Preventive Medicine Service, Office of The Surgeon General.

A somewhat different situation exists with respect to pamphlet material. While we select and procure VD educational pamphlets the distribution of them has been accomplished by the AGO since that distribution gets into the millions--(we distributed 5,000,000 copies of 21-15 alone). It runs into bigger quantities than we are equipped to handle. In fact, 5,000,000 copies of 21-15 occupies about 10 freight carloads, so you can see it is a tremendous job. The Surgeon General's Office is not equipped for such distribution and we requested the Adjutant General's Office to get these pamphlets into the field.

Reports reaching us indicate that, by and large, the pamphlets and other material have been well-received and the distribution system has been generally satisfactory. However, if there are any suggestions for improvement of content or method of dissemination of any of the VD educational materials we would be glad to have them.

In regard to future VD education plans we expect to continue the poster program, on the same basis in 1945. With respect to pamphlets we plan to revise the War Department Sex Hygiene and Venereal Disease pamphlet which is given to men in reception centers and possibly to provide another pamphlet, probably about the middle of the year, for generalized distribution to all troops.

In all of this material you will note that there is a consistent "plugging," to use the radio term, for the PRO-KIT. Not neglecting, of course the value of continence as a VD preventive. All of our material contains a reference to or a picture of the PRO-KIT and instructions for its use. This theme of individual chemical prophylaxis runs through all of our educational material and stresses the use of the PRO-KIT. If you will look at the PRO-KIT package you will see that the name is registered in the U.S. Patent Office as a trade-mark by the Army, or rather to be more accurate, it is registered as a collective mark, which covers not only the name but also the method of distribution and use. This collective mark was obtained by the SGO in order to prevent any drug firm from taking undue advantage of the amount of effort and money which we put into VD education material, containg reference to the PRO-KIT, and similarly to prevent the exploitation of an inferior article under the same name, by some unscrupulous commercial establishment.

As General Bayne-Jones told you, last evening, there has been set up in the Preventive Medicine Service a new Health Education Unit, which has been formed by combining the health education branches of the Tropical Disease Control Division, the Sanitation and Hygiene Division and the Venereal Disease Control Division. No changes, however, are contemplated in the venereal disease education program and it will be carried out in the same manner in the future just as it has been done in the past.

I will be very happy after Colonel Sternberg is through to answer any questions about the venereal disease education program or about the venereal disease education program or about the control of venereal disease among Negro troops. Thank you.

COLONEL TURNER: I would like an awful lot to discuss this subject and to get discussion from the floor on these questions.

COLONEL STERNBERG: I have some questions that have been asked. Some of these have already been answered. One of them is, has penicillin ever been used as a prophylaxis agent against gonorrhea. It has been on a local level. There are some posts that have used it, purely experimentally, and it has been used in animals. Unfortunately, as you know, it is difficult to infect animals with gonorrhea. Dr. Miller at the University of Chicago has been able to

infect the anterior chamber of the eye in rabbits. It is very difficult to evaluate any local prophylactic programs using pencillin because of lack of controls. There seems, however, to be every indication that it is effective in the prevention of gonorrhea.

Question two, "Has it ever been used as a local application in the treatment of gonorrhea?" Here we have more information and the answer is, "Yes, it has". It is not too good a treatment, it does tend to reduce the discharge while the local injections are being given, but unless they are given over a prolonged period of time,-by that I mean days,- the discharge returns when the penicillin injections are discontinued.

"Can the dosage be increased, thereby decreasing the number of injections." I covered that partially. We treated a number of patients with single injections of 100,000 in saline with 74 per cent cures. In using 2 injections of 50,000 units each at 4 to 6 hour-intervals we got cures between 85 and 90 per cent, which is pretty good. The biggest thing now, of course, is the single injection using the beeswax mixture. The results are very promising and it is hoped that this work will result in something practicable.

"When the patient becomes asymptomatic and bacteriologically negative following penicillin treatment, what is the percentage of relapse and what is the percentage of the positive cultures?" It is extremely low, less than 1 per cent. Therefore, we feel that a bacteriologic follow-up in an asymptomatic patient, that is weekly for three weeks, is not justified on the basis of what you are going to find. You are going to do a tremendous number of bacteriological studies, either smears or cultures, to pick up perhaps 1 case in 1 to 300 who will be asymptomatic and yet have a positive smear or culture.

In the asymptomatic case, of course, it is necessary to get the smear and culture material by means of prostatic massage or urinary sediment. Prostatic massage is not justified under these circumstances and we have recommended against it. We feel that a clinical follow-up in the asymptomatic cases is entirely satisfactory.

"Are the results satisfactory when used locally in the treatment of ulcers?" Penicillin has no effect in chancroid but does in phagedenic ulcers. So the local use of penicillin may be indicated in ulcers that are not responding properly to sulphonomides and are not or have been shown not to be syphilitic. That is a rather important point, however, and careful examination should be done over a prolonged period of time before penicillin is applied to these ulcers, because penicillin could very well mask the presence of spirochetes.

Now we come to the question that seems to bother everybody.. "How can the responsibility for high venereal disease rates be fixed on line officers now that venereal disease is not in their line of duty?' 'Many line officers now insist that they should not be held accountable and that venereal disease has become entirely a medical problem."

So is scarlet fever, diphtheria or pneumonia or anything else a medical problem. I fail to see that there is any essential difference between those diseases and VD. In other words, we have strived--Colonel Turner is the charter member in the Strive Club--for years to take venereal disease away from the punitive, crime and punishment class. We have felt that one of the biggest deterents to effective control or treatment or anything else has been the fact that you drive these diseases under cover by punishment.

We feel that this is one of the greatest advances that has been made in venereal disease control, not only in the Medical Department in the Army, but in the country, to publicly and openly remove all penalties, except one, and that is for concealment of infection. That is the only punishment left.

We feel that commanding officers are responsible, primarily, for the health of their unit. Venereal diseases are diseases and they represent poor health and it is the same for any other communicable diseases. The responsibility, therefore, lies with the commanding officer. Perhaps that is an unsatisfactory answer and perhaps Colonel Turner would like to say a word on this subject. I feel it is quite important. Wouldn't you like to say something about this?

COLONEL TURNER: We will get back to it. You go ahead.

COLONEL STERNBERG: All right. The next question is what value should be placed on rates, in view of penicillin therapy, change in status and no loss of time or pay?

It follows along the same line. Actually the rates, we feel, should be continue to be reported. They are of value. We have reduced our days lost in 1944 from around 500 per thousand men per year to current levels of around 300. The rate during the same period of time has gone from 26 to 34. If the rate should, of course, go up to 100 and 150, the days lost would go back to 500, 600 or 700. In other words, a tripling of the rate would obviously wipe out these remarkable steps we have made through present therapeutic improvements.

That is the first and obvious value of the rate, that we stand to lose considerable or all of our gains, as a matter of fact, if we do not maintain the rate within reasonable limits. As far as I am concerned, I feel that that is enough of an answer, since the primary purpose of the VD program is to save days lost.

"Have prophylaxis stations, located in civilian communities, frequented by military personnel outlived their usefullness. That has been discussed."

"Does the numerical figure for days lost per thousand per annum for venereal disease or number of admissions per thousand per annum serve as a better indication of the status of venereal disease control in an organization?" I have discussed that a little bit on previous questions along the same lines. The days lost per thousand per annum presently represents both control and treatment. The rates on admissions represent, of course, the incidence of new disease and do not reflect any therapeutic improvements. That is all the questions I have, Colonel Turner.

COLONEL TURNER: Gentlemen, there must be some questions that you would like to ask Colonel Sternberg. What about it?

CAPTAIN COOPER: How long can you safely delay the penicillin treatment in the primary lesion and still get the effects?

COLONEL STERNBERG: The results following penicillin therapy for syphilis are being tabulated here in Baltimore under the penicillin panel of the Sub-committee on Venereal Disease of the National Research Council, whereby all the cooperating civilian, Army and Navy clinics are sending in their case histories. These are tabulated by stage of disease; and the results in secondary syphilis are not as satisfactory as in primary syphilis. In other words, the

relapse rate is higher as would be expected, therefore, the sooner treatment is started the better.

CAPTAIN COOPER: That doesn't quite answer my question, because the question is of a specific nature. Not infrequently on board transports we get a group of troops among whom we will find primary lesions. While our facilities for bacteriological procedures on ships do include dark-field apparatus, it is not always the simplest procedure, particularly on a ship that is rolling, finding the treponema. The transport surgeon is somewhat reluctant to start this treatment until he gets through the diagnosis, therefore, he is in a quandary whether he should start penicillin with a possibility of the program of treatment being interfered with during the debarkation process or when the patient is not going directly to a hospital.

Would you, in a questionable case, where the seven and a half days continuous treatment is not feasible, start arsenic?

COLONEL STERNBERG: I wouldn't start anything on any patient until the diagnosis of syphilis is established. That is extremely important. Unless you are able on the transport to establish that a man definitely has syphilis, either by a dark-field or serological test, which is practically out of the question--and the surveys that we made out of the New York port through Major Schwartz up there indicated that on many of the smaller vessels dark-field can't be done because of the vibration of the ship--those patients should not be treated by anything more than sulphonomide until they reach their port of debarkation.

The sulphonomide will not affect the syphilis and if it is chancroid they will heal up and they then can be examined serologically for syphilis on arrival at the port of debarkation and thereafter, but they should never be started on any type of syphilis until the diagnosis is definitely established.

COLONEL TURNER: Colonel Marsh, you know, we would like to learn something, too. We wish you would tell us something.

COLONEL MARSH: After more years of venereal disease education and attempts to control it than I want to confess to, I do want to compliment whoever wrote that furlough pamphlet. It is the best thing that was ever published that I have ever seen, Captain Larimore.

I haven't got the compliments off my chest. I would like to ask Colonel Sternberg where he gets the authority in WD Circular 410 to distribute prophylaxis materials to fire houses, USO's, etc.

COLONEL STERNBERG: Paragraph 23 b (2) (a), "Prophylactic stations, including those maintained solely for the distribution of prophylaxis supplies, will be established in locations which will permit of their maximum availability."

COLONEL MARSH: "will be located". That is an Army prophylaxis station?

COLONEL STERNBERG: No, prophylaxis materials. Those that are maintained solely for the distribution of prophylaxis supplies. That is the way it reads.

COLONEL MARSH: That one has to be maintained by the Army?

COLONEL STERNBERG: No, just send them in supplies when they get low--yes, to the fire station and post exchange.

COLONEL MARSH: Our headquarters states--

COLONEL STERNBERG: It reads, "including those maintained solely for the distribution of prophylaxis supplies".

COLONEL MARSH: My headquarters at the top disagrees with that interpretation, so as far as distributing it to civilians, except to health departments, which is provided for in the next paragraph, I think. With regard to this command responsibility, I think the answer there is the same as to water supply and malaria, which is definitely the command responsibility.

COLONEL STERNBERG: Yes, I think so. They are all health problems.

COLONEL MARSH: There is another thing that I would like to comment on and that is the weekly health report of The Surgeon General where until quite recently the Second Service Command had the doubtful distinction of having the highest venereal disease rate in the continental United States and I don't believe it is justified to publish those comparisons. There are too many variables concerned.

Take, for instance, the separation centers. In four months in the separation center at Fort Dix, the actual venereal diseases were .7 of 1 per cent and yet the rate charged against the average strength, it made 2 points difference in the rate of the service command. We had the same with the task forces going through ports of embarkation and other service commands have the same and similar conditions.

I do believe that comparisons are not justified. I think you could only take overall--I don't mean to say that you should not publish it in the text but to say that the First, Third or Sixth or Second had the highest venereal disease rate during that week is statistically unsound.

COLONEL STERNBERG: As you are probably aware, the health report is put out by the Statistical Division. It is based on the number of new admissions entirely. The only thing that we put out are the monthly letters that we send to service commands, in which we explain below that the unusually high rate of incidence in the Second Service Command is credited to the New York port of embarkation and we point that out. I think that is a satisfactory arrangement, because after all there is a certain amount of interest on the part of commanding officers in what the incidence of venereal disease is.

COLONEL MARSH: Surely. Your letter was all right.

COLONEL TURNER: We had somewhat the same problem in the early days in induction stations. It depended on how many people went through the induction station. We got that out. Now it is beginning to work in the reverse direction, isn't it?

COLONEL STERNBERG: It is more so, because during the start, during the induction period most of the men were classified EPTS and were not counted anyway in figuring the overall

rate, but these men in the staging areas would come in, develop their venereal disease after they got to the staging area camp and have to be credited against the Second Service Command and they are not EPTS, so they couldn't be credited elsewhere and they count against their rate. That is definitely a factor in the rate in any command embarking troops. It is quite a factor in the Second.

COLONEL MARSH: It is a statistical fallacy.

COLONEL STERNBERG: Yes, it is, but on the other hand, the Statistical Division says that all they are interested in is compiling the number of venereal disease cases, new admissions and that they, to do that, are going to have to have it for the records and the post-war record and so forth.

COLONEL TURNER: Figures are good only as a guide to action and if they don't reflect the true situation they really aren't of very much use, are they?

COLONEL LONG: Colonel Turner, I would like to speak once again of the point that Captain Sartwell brought up on the first day of the meeting, with respect to some of these posts that have rather fallacious figures. That was sent in with respect to separate reporting from the personnel centers.

The Weekly Health Report, put out by the Medical Statistical Division, will in the future indicate in those statistics which are personnel centers and will thereby give a certain amount of explanation why the rates at those centers are high. That either has already been started or will be started within the next week or two, I am sure. I think that that will answer, in part, your question, Colonel Turner.

COLONEL TURNER: There is one question that hasn't been mentioned that I know concerns Colonel Sternberg and that is wastage of prophylaxis material overseas particularly and may become a factor here. I wonder if we couldn't have some comments from the floor on that. Major Carpenter, what about it in your area?

MAJOR CARPENTER: You mean since we have free issue?

COLONEL TURNER: Yes.

MAJOR CARPENTER: There is not a tendency to waste. At our post we issue prophylaxis material to the supply officers twice a month, on the 10th and 25th. We issue prophylaxis material on the same quantity basis that the Circular allowed for overseas distribution, that is the maximum. They have to give us the on-hand amount.

So far we have not used anything like the amount that we set up to issue. I don't think that we have been wasting any at our place, but we have been thinking of that all along, the possibility of men giving away a lot of these materials.

COLONEL TURNER: It is a serious point from the standpoint of the psychology and public relations and, secondly it bumps directly up against very important problems. Mechanical prophylaxis bumps into and conflicts with making automobile tires and tubes of tooth paste for civilians. There is a tremendous amount of wastage overseas.

COLONEL STERNBERG: Of course, the wastage overseas is through some causes that are not present in this country. A lot of men use the mechanical prophylaxis to keep a cover over their guns and machine guns on airplanes to prevent moisture or rain from getting in and sometimes freezing in the barrel. It is a very nice item for this use, because they don't have to remove it when they want to start shooting.

Another sport that they have had overseas is to blow the things up and tie a knot around the end and throw them up in the air and take bets on who can blow it up by throwing a lighted cigarette up on it. They use them also for putting on their watches to keep them waterproof. On beachlandings they were issued at one time routinely for that purpose in connection with flash lights. They are used for barter in some areas and almost every conceivable thing.

COLONEL TURNER: Poker chips, too.

COLONEL STERNBERG: Yes. I forgot poker chips. There has been a tremendous wastage overseas. I don't think that that is going on in this country to any great extent, that sort of a wastage, and I think our main wastage in this country is a man taking too many and not needing them or using them, and throwing them away. I would like to have any comment from any of you that know anything about that and who have seen anything that ought to be corrected or any type of wastage that perhaps should be called to our attention.

COLONEL TURNER: It requires a nice line to separate what is not real wastage and to make the article readily available, so that they can get them when they need them, on the one hand, and actual wastage, on the other.

I feel that wastage, while amusing and understandable, is a fairly easily correctible situation by education of the commanding officers and the individuals, by pointing out that after all these things are a critical material. Colonel Banton, would you care to comment on the prophylaxis situation in your service command?

COLONEL BANTON: We study that about each six months and close the ones that are not being used. The matter of closing a station is no hard and fast rule. As Colonel Sternberg brought out, there are some places to keep because of strategic importance. Our difficulty is that we oftentimes conduct a white and colored station together. We are combining some, but we still have a tendency to get protests.

The use of stations we still think is fairly great. Our service command surgeon, however, I think will go as far as any of you on saying that all of those useless stations should be closed. We have not closed a great many.

COLONEL TURNER: I think it is an awfully useful mechanism to figure out the cost per treatment. That is very impressive--

COLONEL BANTON: I might say along that line that there is a check of the usage of property made by the engineer procurement branches. If we don't check up on these, we will find that some civilian has gone in and he represents the engineer procurement branch and he is telling you to do such and such at your station. We had better be ahead of him.

COLONEL TURNER: Very good. Does anybody else have any comments on this point?

MAJOR QUINBY: (Personnel Distribution Command): I think the service command can help us out quite a good deal. As you know, we have to deal with returning personnel. These people come back, then go to a reception station, have a 20-day or 21-day furlough, come to a redistribution station. It is during that 21-day furlough that we have a very high incidence of new venereal disease infection and in the Second Service Command, at the reception stations, they give a brief but very helpful indoctrination course on venereal disease to the returnees before they go on a 21-day leave or furlough. I think if that could be done at each of the reception stations and the Army Service Force stations that it would be very helpful.

COLONEL STERNBERG: We have looked into this thing quite seriously in the last three months. The VD problem in the returnee is serious. Their venereal rate of infection acquired after they return to this country and during the furlough period is quite high, ranging all the way from 80 up to as high as 200 - 300 for white troops.

We have some plans already in operation and others contemplated and it will just take a second for Captain Larimore to explain those to you and I think it would be advisable if he did, because it is going to be an increasingly important problem as time goes on. Will you just explain that?

CAPTAIN LARIMORE: The first thing that occurred to us when we began to explore the various possibilities was to get the boys, before they actually get back to this country. After discussions with Col. Schumann, Surgeon at the New York Port, who is very much interested in the problem, it was decided to provide 50 copies of the Venereal Disease film "Pick-up" (TF8-2060) for showing on troop transports on the way back from overseas. This film has not been shown overseas, so it is a new film to all of these men. It is planned to show it the day before they get off the ship.

The second point in the proposed program is that we plan to distribute the furlough pamphlet (21-16) to each man passing through a port of debarkation as a returnee. The third thing we plan, if the situation and the number of returnees warrants it, and that depends not only on venereal disease situation but on the General Staff's redeployment program--is the preparation of a short orientation film of about 8 or 10 minutes on VD directed specifically to the returnee. This film would be shown the men at the reception stations just before they go on their furlough.

This whole problem of VD in returnees presents many unusual aspects. For example, I think we are experiencing the result of our overseas VD education in reverse. I have talked to a number of these men and some of them are quite bitter about the fact that they have gotten a venereal disease in this country. They say that when they are overseas their medical officers and commanding officers all told them, "When you were back in the states the girls were clean, and you could take a chance but, soldier, while you are over here don't take any chances. If you do you will all get burned because these girls over here are all infected." The result is that they come back home with the feeling that the girls back here are clean and they don't need to worry about exposing themselves with impunity, and without regard to prophylaxis.

Hence, when they turn up with a venereal disease, many of them are very resentful about it and feel that the Army is in some way to

blame for their apparent belief that sex exposure in this country carries no risk of venereal disease infection. It is primarily a problem in re-education. In any event we would welcome any suggestions on dealing with the problem.

CAPTAIN LEIBY: I want to comment on the first aid station. We all recognize the cost of prophylaxis as unjustified to keep the station running, so, therefore, we have changed the name to "Armed Forces Aid Station" and it sort of carried over the idea that they are first aid stations.

About two-thirds of the people who come to these stations actually come for other medical care. These stations are usually located in the traffic-flow areas or in the cities.

Colonel Marsh made a statement concerning this monthly critical report that comes from your division. I thought this one more point might be at least mentioned.

The Venereal disease rates in the Third Service Command I believe in November jumped about 30 per cent. In looking into that we decided that that jump, and I think after discussing it with your office, was primarily due to changing your conception of how they calculate the rates.

We are now being charged with the new cases that develop in our area, most of these people being transients, coming in here on furlough. Therefore, the service command that happens to have the largest and most dense civil population and the boys coming in from furlough,-instead of charging the case back against the other organization, it is charged against the Third Service Command. I wonder if that occurred all over the United States or whether that was just the Third Service Command.

COLONEL STERNBERG: We will reduce your rate 7-1/2 per cent. Will you settle on that?

COLONEL TURNER: These rates are a perennial argument. I think they are important, but, of course, the day is gone when we punish or anyone punishes a unit commander for having a high rate.

That just gives me a chance to comment on something that I have been very much interested in and that is this conception of whether venereal disease is a disease or a crime. I think for the first time we can treat it in the Army as a disease and as other infectious diseases and I think it is a tremendous step forward because you can't punish people into not acquiring a venereal disease. We tried that and it doesn't work. You can bring proper morale and discipline and education and leadership and lead them into the better life, so to speak, but at last we can talk about these diseases just as we talk about measles and mumps and scarlet fever and rheumatic fever and I think it is a tremendous step forward.

COLONEL PRIMER: I am entirely in sympathy with that viewpoint, Colonel, but we spent a number of years educating line officers, commanders into this business of command responsibility and when you had a high venereal rate it represented poor discipline. Now we are completely reversing ourselves on this thing, as I see it, and it is very difficult to explain these rises that are occurring as other than poor discipline. It causes a lot of trouble.

The thing that I wanted to ask about is this: I wondered if now that they are using this chemical Pro-kit, why not just use that instead of the regular prophylaxis, entirely?

COLONEL STERNBERG: There are some stations that are not only highly justified but do a lot of good and are essential and these are stations that are doing big business, from 2,000 or 3,000 up to 6,000 or 7,000 prophylaxes per month. In a station of that type it is difficult to imagine that all of those men, if that prophylaxis were not available, would be able to find the proper place and time to take their own prophylaxis.

This particularly applies to border stations and certain stations in the big cities. There is, in Colonel Dewey's command, one that has given as high as 6,000 or 7,000 a month. Isn't that right?

COLONEL DEWEY: Yes.

COLONEL STERNBERG: Certainly we couldn't consider abandoning a station of that type and there are also others, a lesser number, that are so valuable that it would be harmful to do away with them.

COLONEL TURNER: I don't think changing this provision has really relieved the commanding officer to any extent. He is responsible for the health of his troops. Any commanding officer that permitted a constantly high dysentery rate or any other rate would be called to account for it and I think he can still be called to account for this. This is a long argument. We have to wind it up here. Colonel Dewey, have you any comment to make?

COLONEL DEWEY: On Colonel Marsh's comments about the distribution of individual prophylactics in cities and regarding it as an army station, I might say that we took the same interpretation on that and while we didn't think that that authorized us to turn loose pro-kits over to a civilian agency, we have set up some distribution plants like that where we have put an army person or enlisted man there to pass around. Is there anyway that we can get that point across?

COLONEL STERNBERG: We will and already have, as a matter of fact, interpreted this Circular for the Seventh Service Command who asked this question. We would be glad to do that for anyone else who is in doubt as to its meaning. I think that Captain Leiby has had a lot of experience on that. They have been using that system for quite a while. Isn't that right, George?

CAPTAIN LEIBY: Yes.

COLONEL STERNBERG: Would you say just a few words about that?

CAPTAIN LEIBY: Of about 700 or 800 distribution points in the Third Service Command, probably 20 per cent of them are actually distributing sufficient kits to justify that sort of a procedure, but this is an interesting problem that came up: We were trying to find out just how much we were really protecting. I don't know how much value there is to this paper figure.

We got a figure in the Third Service Command that there are over 300 extra-marital sex exposures per case in the white. My conception of the venereal disease reservoir in this area is that it certainly is not any lower than most places in the United States. I think that that is an exceedingly good operation figure, so somebody must be getting prophylactics out, whether through the stations or local distribution. We have been putting out to these fire stations about 10,000 every three months.

COLONEL DEWEY: Would there be any chance of the rest of us getting a copy of that interpretation?

COLONEL STERNBERG: Yes, we would be very happy to do that. As I say, the Seventh Service Command wrote in and asked whether that would include distribution points of fire stations, civilian stations of that type and we wrote back and said yes. We could send copies of that to you or address a letter to the commanding general and staff, if your headquarters would prefer. Either way we would be very glad to do it.

COLONEL DEWEY: I think a copy of that would be sufficient for our purposes.

COLONEL STERNBERG: We will do that.

COLONEL DEWEY: There is one thing that came to my mind that that was with regard to some procedures in the separation centers that we ran on to. I thought I would put it out for what it is worth, but we found when we first got it off that program, that these men are not being given to understand that the result of their serological test was not known when he left the separation centers and it caused a great deal of difficulty in that they would go out and tell a department representative, "I was all right when I left the separation center. There is a mistake in the report" and some of them came clear into our headquarters.

COLONEL TURNER: I am afraid we will have to go along here. Our time is running out. I am sorry to have to close the discussion. The next subject is "Functions of The Surgeon General in Nutrition Program", presented by Col. John B. Youmans.

FUNCTIONS OF THE SURGEON GENERAL IN THE NUTRITION PROGRAM AND MECHANISMS FOR ACCOMPLISHING THE PROGRAM - RELATIONSHIP OF THE SURGEON GENERAL'S PROGRAM TO THE "FOOD SERVICE PROGRAM" OF QUARTERMASTER GENERAL AND THE ARMY AIR FORCES.

COLONEL YOUMANS: With your permission I should like to broaden my paper this morning to include not only The Surgeon General but the entire Medical Department. At the onset I wish to emphasize that there is no new nutrition program in the sense of a duty or a responsibility that did not exist before. The Medical Department has always had a very definite responsibility for nutrition because nutrition affects the health and health is a concern of the Medical Department. The relation is clearly apparent in the case of beriberi or scurvy, diseases of military importance in the past and perhaps to be important again. Only recently, with the newer concepts of nutritional deficiencies, those without frank clinical signs yet affecting health, vigor and efficiency, has the connection become less obvious. It is nevertheless just as real and important.

Nutrition, like other medical subjects has both a preventive and a corrective aspect. It so happens that nutritional disease is almost an ideal disease from the point of view of prevention. It can be prevented in all instances as far as the scientific aspect goes that is as far as knowledge of what is necessary to prevent it is concerned.

From an administrative standpoint then the responsibility of the Medical Department for nutrition is rather clearly divided between the nutrition of patients, sick persons, and the prevention of nutritional deficiency in the well. The responsibility for the control of nutrition and the mechanisms for discharging that responsibility as it relates to sick personnel is very clear. If it is handled as in other diseases patients may be sick with nutritional disease alone or nutrition may be a problem complicating other illness or injury. The latter is assuming increasing importance as the influence of nutrition on wound healing, recovery from infectious disease and resistance to operations becomes increasingly more apparent.

At the present, however, we are concerned principally with the preventive aspect of nutrition. The responsibility of the Medical Department in this respect is clearly indicated in various rules and regulations. We might start with Statute of March 8, 1862, which provides that Surgeons will join with officers of the line in superintending the cooking of the men. However, WD Circular #98, Part VI, paragraph 3, more clearly defines the functions of The Surgeon General and Medical Department. They are:

1. To prescribe the basic standards of diet for the Army under the various conditions of its operation.
2. To supervise the determination of the nutritional state of military personnel.
3. To report nutritional deficiencies wherever they occur, recommending the necessary corrective measures.

These functions apply alike to ASF, AGF and AAF whether here or overseas. Please bear this in mind, because it will be important when we discuss our relationships with The Quartermaster General's Food Service Program.

The first function, "prescribe the basic standards of diet for the Army" is accomplished with the help of such facilities as those of the National Research Council. It is wrong to assume that the optimal diet for the soldier in one theater is necessarily as satisfactory for another. This is because climate, terrain, nature of duties, etc., all go into such a prescription. For that reason research is carried out by a large number of agencies both civilian and military determining as accurately as possible the requirements under as wide a variety of conditions as may be encountered. It is a job which can never be finished and the standards are always subject to change to meet changing situations.

What is meant by the nutritional state of military personnel? Nutrition is the sum of the processes by which food substances are taken in, absorbed and utilized. The state resulting therefrom is thus a function both of the food taken in and the men who eat it. For optimal performance of any military task this nutrition state must be the best which can be obtained. The food which is eaten must contain the proper amounts of all nutrients, calories, vitamins, minerals, water, etc., in a form which will assure proper absorption and utilization. The content of it must be at least equivalent to the energy expended daily in work plus a sufficient excess to permit the normal building and tearing down processes in the body. As with a car, if there is gas for but one mile and the car must go two miles, someone has got to push the second mile. In man temporary fuel can be acquired but only at the expense of his own tissues. The nutritional state becomes quickly sub-optimal if

such debts are allowed to continue and accumulate. The nutritional state affects work capacity and the manner in which work is done. It affects vigor and morale. It affects wound healing, susceptability to disease and recovery from it. In fact the whole of each soldiers activities is dependent in large part on his nutritional stat .

In measuring the nutritional state consideration must be given to the diet the soldier eats. In regard to the diet we are very specific and we mean "eats" - not a menu, not an issue chart - but what is actually consumed. Dietary surveys form the first aspect of a nutritional study. Physical examination for evidences of deficiency of any kind and laboratory analyses of body fluids and tissues for the same purpose constitute the second aspect. These examinations may or may not include performance tests of various sorts.

As in all other preventive medicine functions the conditions prevailing at any given time and place determine the methods used. We do not hunt daily for a possible typhoid carrier, we do so only when prevailing checking is desirable. Nor do we apply all the available methods all of the time. What may be adequate (a dietary survey for example) at one place and time may be wholly inadequate at another. Medical judgment determines the methodology, frequency, and extent to which the nutritional state is determined and is guided by our aim of preservation of optimal health and the prevention of disease.

The third function, reporting of deficiencies and making recommendations concerning them, is specifically the Surgeons function, and through him your function. Deficiencies may occur in many places or develop as a result of a wide variety of circumstances.

They may exist at the source. Food as purchased may be inadequate. In the processes of storage essential nutrients may be lost so that while satisfactory as procured, food is unsatisfactory as issued. Issue calculations may be defective or menus may be planned improperly. Of very great importance is food preparation. Poor food preparation can actually destroy essential nutrients or can render the food so inpalatable that it is not eaten. Actual consumption by men at the table may be inadequate for a wide variety of reasons. All of these are causes of deficiencies to be sought out and corrected. If a large part of the command has diarrhea and with it anorexia for any period of time a deficiency develops. If because of poor management men are too tired to eat or are required to eat at odd times getting only leftovers, there are deficiencies. Excessive use of the PX expulsion of the mess hall result in deficiencies, and improper training of troops in what they should eat commonly results in deficiencies. It is our job to keep a watchful eye on all of these and be sure they are corrected wherever and whenever they occur.

Besides the definition of duties and responsibilities contained in Circular #98, AR 40-205 defines our responsibility for such matters as the acceptability and adequacy of food and rations, the character and types, the ration and inspection of messes. AR 40-210 and AR 40-5 define the responsibility for civilian and military nutrition, for nutritional deficiencies, for education in nutrition. Unfortunately, AR 40-270 which dealt with the medical responsibility for such things as the issue, handling, preparation, storage, and serving of food was rescinded when the new AR 40-200 was published.

To discharge these responsibilities the following organization and mechanisms are available. There is established in the Office of The Surgeon General a Division of Nutrition. Because nutrition is so largely a preventive medicine function it is included in the Preventive Medicine

Service. In the Division there is a Military Nutrition Branch which deals with nutrition of the soldier. The Division develops plans, determines policy and exercises general supervision of nutritional problems throughout the Army as they affect the health of the soldier and civil populations under Army control.

The Branch advises the Director of the Division with regard to the activities of the nutrition officers, their training and duties. Makes recommendations for their procurement and assignment in this country and overseas. Maintains liaison with other agencies in this field, particularly the Quartermaster Corps, Army Medical School, and Service Commands. Reviews reports of the activities of nutrition officers. Supervises the analysis of dietaries and recommends changes based on such analyses.

In addition the Division directs the operation of the Medical Nutrition Laboratory recently established in Chicago to carry out research on various phases of nutrition of importance to the Army. In the Service Commands and elsewhere, nutrition as an administrative function has been placed in Preventive Medicine. AR 40-200 defines the function of preventive medicine and the Nutrition Officer is included as one of the functions.

You are undoubtedly familiar with the Food Service Program. In practice it is usually administered by The Quartermaster. His authority is ASF Circular #45, 1943. Its main stated functions are two:

1. Proper preparation and serving of food
2. Elimination of waste

These are important functions which contribute to optimal nutrition among the troops and the Food Service Program. In general they do their job well. However, ASF Circular #45 and the Food Service Program as practiced neither supersedes nor rescinds any of the responsibilities of the Medical Department. The Quartermaster has no authority to act in nutrition, health or sanitation. Those are your jobs. Where they overlap the same sort of cooperative activity should be worked out as exists between ourselves and the engineers in sanitation, or between ourselves and the Quartermaster in veterinary functions. Proper food, feeding and the health of troops are command responsibilities. In nutrition and all matters pertaining to it which may affect the health of troops, the Medical Department is the commander's advisor. In the matter of the mechanical and economic handling of food the Quartermaster Corps is the commander's advisor. No conflicts need to exist, and where they do exist they should be corrected post-haste for the benefit of the troops.

To assist Surgeons and their medical inspectors in carrying out their function, a group of officers have been carefully selected and trained. They are known as Nutrition Officers or Nutrition Specialists. They are Sanitary Corps men with special backgrounds in nutrition. They are competent to appraise and give advice on the nutritional aspects of food and feeding and to assist in the development of an adequate nutrition program in the various commands. They are thoroughly trained in menu analysis, dietary survey techniques and the nutritional requirements of an adequate diet. They have had instructions in proper preparation of food to retain its nutritional value and are constantly supplied with the newest factual information on such matters. They should be used in all service commands and in the larger camps. Frequently one may serve more than one station if stations are small. These officers will be of inestimable help to you Preventive Medicine Officers in properly discharging your responsibilities for the nutrition of troops in your commands.

There have been turned in three questions, two of which are essentially the same and to a large extent have been dealt with. They are the following: What is the relation of the service command nutrition to the nutrition program and to the AAF nutrition program? What is the status of the Medical Department in the nutrition program with special reference to the duty and responsibility of the nutrition officer in relation to those of the food supervisor? Both of those questions, of course, are about the same and they both deal with matters that I have already discussed.

The relation of the nutrition officer and the relation of the surgeon and the Medical Department, to the food service program is essentially what the surgeon makes it. As I have already said, by instituting a food service program you can not escape the responsibility for nutrition.

You may be able to employ the food service program and should, as an aid to the control of nutrition, but it is essentially, at least for the present, a command function. The surgeon has a definite responsibility and he can work with and through the food service program and the nutrition officer to the extent which he feels advisable and necessary.

The same thing applies essentially to the AAF food service program. They have set up their own, as you probably know. At the present time they have an organization in Washington to which we have contributed two or three nutrition officers to provide technical help and information and assist in organizing the program. They also maintain very close liaison with our office, with our laboratory and the Subsistance Laboratory in Chicago, with the Quartermaster, with the Air Force Quartermaster and with other agencies that concern nutrition.

They are planning to put Food Service Directors, using that term in a general sense, throughout the commands, similar to the Food Service Directors which are used in the Army Service Forces. To date they have not completed the program and there has been no full-scale employment of it, as far as I know, as in the Army Service Forces at present, but again, the relation of the Army Service Force surgeons and Class III installations is essentially up to the surgeon. He has a responsibility for nutrition. He can cooperate and work with them on that program to the extent that he deems wise.

There is a third question which is not primarily one of nutrition. It is the question of permitting German prisoners to eat uncooked meats such as ham and bacon. You can see that that is not a nutrition problem but one of disease prevention. I inquired from Col. Long about our relation to that and he says, with which I am in accord, that it is a fundamental matter of the protection of health. We are held to protect the health of the prisoners just as we protect the health of our own troops and if we think our own troops should not eat raw meat because of the possibility of trichinosis, we should take the same protection for prisoners of war. As a matter of interest, as you probably know, there has been reported, an infestation of trichina from this source.

COLONEL TURNER: I would like to have some questions from the floor, some discussion.

COLONEL ALLEN: Although the last question which you discussed, Colonel, did not come from the Seventh Service Command, we have had that very thing to contend with. In inspecting the Prisoner of War Camps we find that unless they are scrutinized very

closely, that most of their cured hams, meats and bacon are eaten without cooking. I recall one camp where I inspected four messes one afternoon, during the hour when they were putting the food out on the tables, and in three of those four they were serving the ham and bacon uncooked. It seems as though it is a custom of theirs and they prefer it that way, and they save it up throughout the week for a delicacy on Sunday.

COLONEL YOUMANS: I would just like to use that as an example of what may occur in relation to nutrition, although it is not primarily a nutritional problem. Nevertheless, variations in food habits, variations in the preparation of food, variations in the serving of food, may have a significant effect upon nutrition, as I indicated, and for that reason, that sort of thing -- not exactly that case, but that type of thing,-variations, substitutions, local variations in cooking, things of that sort-are significant as far as it affects nutrition and health.

I might make this point in regard to it. None of these things are drastic, especially in the Zone of the Interior. There is no dramatic change in nutrition by any ordinary occurrence. They are accumulative. It lasts over months but they are cumulative and in the end will have an effect.

In the Zone of Operations, of course, you get much more acute problems, the more dramatic aspects of nutrition appear, but if you look at it from the viewpoint of preventive medicine, the correction or prevention of these minor errors over long periods of time are important in the prevention of deficiencies in nutrition.

LT. COLONEL TILLMAN: (Fort Knox) As you probably know, in the Fifth Service Command the food service program was very energetic and at one time they got through a program that since 80 per cent of the patients in hospitals were fed the regular diet they should go on the master menu.

We carried that through to The Surgeon General and it came back that the Medical Department is responsible for feeding patients in hospitals; we got that far and it has straightened out and the Quartermaster backed down a little bit. Now we are in another phase of wastage.

We have a great program on wastage and they are getting down to a point where we have a new Commanding Officer who came in for Breckinridge and at Breckinridge on the monthly progress report the wastage of a whole Division for one day could be put in one garbage can. We feel that that wastage is getting down so low now that it would influence the nutrition of the troops.

They are starting the same program at Fort Knox. They have transferred the food supervisor who was in Camp Breckinridge up to Fort Knox to show us how to do it, just bring this figure down and make it look good on paper and we are up against a tough situation there. How can we convince these people that you can go down too low on your wastage figure where the nutrition is really going to be inferior?

COLONEL YOUMANS: I would like to comment on this and add a little more to it. That is not the only place it is happening. From the Seventh Service Command we had the same report.

We have the strong feeling, in fact we have some evidence to support us, that the over-zealous attempts to reduce waste have resulted in actually under-consumption of food among patients, which interferes

with their health and recovery from illness and disease. That becomes all the more important when you think of new developments, new knowledge of the influence of nutrition on recovery from disease; when you realize that you can put some four and five thousand calories in a patient following disease, 200 grams of protein, 30 to 35 grams of nitrogen and get beneficial results and when you realize that unless you make a positive effort to do that you can't accomplish it. When you over-zealously try to reduce food waste without discrimination, thus results an actual under-consumption, one below the ordinary level and you can see the bad influence of this type of program.

In the Third Service Command we have seen some efforts of civilian dieticians to influence unduly the type of nutritional care of the soldiers, particularly in the case of hospital patients, but not altogether confined to that. They should not take over responsibilities for nutrition.

That is exactly the point I was trying to make about our responsibility. We are still responsible for those things. As a matter of fact, one of the reasons why I said that the nutrition officer should not divide too much time or too much responsibility with the Quartermaster is that you should not have a person both as prosecuting attorney and jury. You must impose some control there.

CAPTAIN DYER: Before we get too far away on this point from the feeding of German prisoners, I would like to say a few words.

A recent survey conducted by a nutritional consultant of one of the service commands at a prisoner of war installation revealed this: First let me make this explanation, that the prisoner of war menu, as you well know, may have certain substitutions, based upon the desires of those prisoners of war. When this nutritional consultant got through making his survey of the PoW mess, he found the prisoners of war were actually getting more food than American troops at that same post.

I wonder how much investigation you people, you medical inspectors, have actually made in the feeding of prisoner of war troops? A recent directive from the War Department indicated and deals just exactly with this thing that I have talked about. If you have not seen it, you will see it in a very few days. The Medical Department, I think, needs to take some thought and study on this matter.

Getting back to this point, this question of supplying milk in a certain plant in the Fifth Service Command, there is one more thing that I would like to add to Col. Youman's discussion about it. Based on all the endorsements, it went to every place except the Service Command Surgeon in the Fifth Service Command. He never saw the communication.

We feel this: Commanding General of a service command should know that the Medical Department does have responsibility in the feeding of troops, and he should be made very much aware of this. We personally feel that somewhere along the line the communication from this plant should have gone to the surgeon for some consideration in the Fifth Service Command but he had never seen it.

Getting back to this wastage -- and I am glad he said "on paper"-- for the whole emphasis and the whole advertising program has been to show how many dollars worth of food or how many tons of food have been

saved. Well, if you feed 1,000 troops and still end up with only ten pounds of waste per 1,000 troops -- and that is what some service command figures show -- they have done an excellent job, almost super-excellent job of conserving foods. Perhaps to find out what is consumed, it is going to be necessary to run a few surveys. I think everybody is cognizant of that.

Getting back to the hospital wards, recently this directive came out and we saw it. It deals with food conservation of hospital wards and has that as its entire objective, to reduce waste in hospital wards, nothing else. There is nothing devised in the directive of one of the service commands to improve food service on the ward. It is primarily on cutting down waste.

I think there that the Medical Department has a definite responsibility to see whether or not the recovery of those patients is affected by such rations, and if they are and it does affect their recovery and nothing is done about it, then perhaps some responsibility is being shirked.

COLONEL TURNER: Colonel Lee, would you care to discuss a little bit as to how the Air Surgeon's office comes into the nutrition field?

COLONEL LEE: Sir, it is a matter I know very little about, I am sorry. We have not any very active nutrition department in the Air Surgeon's office.

COLONEL NORTON: I have nothing to say.

COLONEL TURNER: Colonel Youmans is extremely busy. He has a lot of problems coming up to the Surgeon General's Office, dealing with the Quartermaster, and I think we would all be interested to what extent that same relationship exists in the service command, in the service command headquarters.

COLONEL YOUMANS: I would put the shoe on the other foot and that is that in the past we have not been careful about our messing practices in hospitals. The food waste does tend to be high in hospitals.

I am quoting largely from my experience in civilian life and that is perhaps the basis for some of this attempt to improve on our functions and responsibilities because we have fallen down to some extent. At the present time there is in preparation in the Surgeon's office in a new hospital administrative manual, a section on messes, which when published should be a very useful guide to giving proper messing practices and at the same time not leading to a possible over-emphasis upon food waste and consequent reduction in food consumption.

( ) Colonel Marsh, won't you comment a little on the use of the nutrition officer, and work in your command?

COLONEL MARSH: We have had a very happy experience with our nutrition officer. I think he is a star on the subject. One of the things that we have been particularly interested in lately is the nutrition on hospital trains. We have had our nutrition officers riding hospital trains for some time. For the past few months, every once in a while, they take a trip on a hospital train and they

have made some very vast improvements in the nutrition of the feeding and messing of patients on hospital trains.

On this food wastage business, I agree with the gentleman from Fort Knox. We have one hospital which shows a remarkable record and on close examination we found that they were only counting the food that was taken from the plates; they were not counting any food wastage in the kitchen. Ofcourse, they had the best record in the Service Command.

COLONEL TURNER: Colonel Franklin, do you care to talk about nutrition from the standpoint of an Army?

COLONEL FRANKLIN: Well, sir, there is a lot of wasted food for reasons that have not been found here, overseas. They issue, say, ham or sausage five days in succesion. The men would get sick of it, they couldn't eat it. Then that was wastage.

I would like to say this: In the Army Ground Force, General Lear has been very insistent about conservation of food and not wasting it and every line officer or medical officer that inspected Army troops has been watching to see how much wastage there is.

COLONEL TURNER: Colonel Long.

COLONEL LONG: I would like to interject one thought about food wastage as far as it may be concerned with prevention of infections. I think there is a real danger that medical inspectors must be on their toes to catch with respect to certain over-zealous efforts to prevent food wastage.

Colonel Youmans, of course, is interested, as we all are, in the maintenance of adequate nutrition. Consequently, he does not want this over-zealous thought on food wastage, to be overdone. I have known of instances where the C.O. has been so careful not to throw away any good food that he has insisted upon the serving of food three or four times. In other words, the use of left-over foods. That certainly is an extremely important thing from the point of view of the medical inspector.

I won't say "it doesn't matter" but I know of a chart depicting food poisoning out-breaks, that is, bacterial food poisoning out-breaks that I dubbed by a certain name as being "so and so's peaks," and those peaks I thought were largely due to the fact that this over-zealous officer insisted on the re-use or re-serving of food. Many times you can not properly re-cook food, as you know, so that is one more factor with respect to the food wastage program that we must keep in mind at all times.

COLONEL BANTON: One question that bothers me a little bit: these reports go through a number of hands and in situations like this, the Fourth Service Command states; "we have just gone over the food as issued for January. It is very adequate, except short on riboflavin."

Then they say, "We have taken up the master menu for April. It is very good except it is short on reboflavin." And month after month that report of the shortage of riboflavin goes in. I wonder if it is actual or if we could not readjust and get this apparent failure of ours brought out?

COLONEL YOUMANS: I am glad you spoke about that because yesterday I signed an endorsement about the adequacy of a ration or a menu, with regard to riboflavin. Those requirements are set up on standards which have been established by the Food and Nutrition Board. You can see the reason for it, because the feeding of the soldier, like the feeding of anybody, is going to be under attack from the point of waste and also the point of adequacy.

More people outside the Army are concerned with the nutrition of the soldier than you can shake a stick at, so that the Quartermaster and The Surgeon General's Office in order to do the best thing possible, have tried to hold up the nutrients of the diet to the level established by the Food and Nutrition Board.

The Food and Nutrition Board like most other people can make mistakes. They are not all-knowing, and they have set the riboflavin requirement too high. It will be reduced in the course of the next few weeks at the next meeting of the Board, probably.

We have known that, so when the analysis has come through, we have not been disturbed by the fact that it is less than the required amount. However, we think that in those cases a statement should be made with regard to that analysis saying that this discrepancy is not significant because of new standards of requirements. That is what I did yesterday, made such a statement on a requested analysis.

I think from the viewpoint of the Surgeon when he runs across such statements from his nutritional officer or from other people, from the food service supervisor, or the Food Service Director, if he wishes reinforcement, with regard to his opinion about it, if he will let us know, we will be very glad to give you opinions supporting that point of view.

COLONEL TURNER: The Board will get you out of the red, I gather. Any further comments? Col. Lacock, what about the Fifth Service Command?

COLONEL LACOCK: We are having a Quartermaster meeting this week or next week, I forgot which, in which the nutrition officers are invited from the large posts, and one of those officers will then come in to the service command headquarters. We have none at the present time.

COLONEL TURNER: Colonel Carroll.

COLONEL CARROLL: I think that Colonel Allen mentioned the fact that German prisoners tended to eat uncooked meats. We found that in the First Service Command, also, I think that one of the reasons for that is this: It is pretty well known that in Germany that the hogs are pretty well free of trichina; about 95 per cent of them are free of them, whereas in this country the rate of trichina infection among hogs is very high, so it is extremely important that the pork products be cooked before ingestion.

The next thing is about the nutrition officer. The First Service Command at the present time does not have a nutrition officer. We had one and he was our loss and The Surgeon General's Office gain. Capt. Dyer formerly in the First Service Command. He did a splendid job while he was there and I learned a great deal about the nutrition program from Captain Dyer.

As far as the food wastage is concerned, one of the places where there is a good bit of wastage at any post is the officers' mess. In most instances in an officers' mess they tend to place a lot of food right on the table so that individuals can take what they want, whereas if you have them changed to cafeteria style where individual servings are placed on plates, and if they want more they can go back for seconds, that is one way of cutting down on the food wastage. It is a very good way.

I think that another thing that Capt. Dyer used to stress and that is that you go around into mess kitchens and many times we would go together -- he would find that immediately after the noon meal they would start cooking vegetables to be used at the evening meal. In other words, they cook all the life out of them and there would be a great loss in vitamin content in that way.

I found in going with Capt. Dyer -- I will just mention those few things -- I learned many practical things about nutrition. I think a lot of directives are perfectly all right, but most of us do not have time to read all of them but do have the opportunity to go around with a good nutrition officer, you can learn a great deal about it. It is my feeling that in each service command there should be at least one nutrition officer, at least at Service Command Headquarters.

We have none now, where we had to cut down the total number of officers in our office. They are looking around for a place to lop off an officer and they sometimes tend to drop a nutrition officer. I wonder if there is any way, even if we can't within the ordinary T.O. in the Service Command surgeon's office, is there any way that we can get the service of a nutrition officer?

VOICE: Assign him to a camp.

COLONEL CARROLL: Even if you assign him to a camp, still in some of the service commands they have a T.O. for the entire service command. That is no out. At least in our service command it is not. There is no way of getting around it.

COLONEL YOUMANS: I don't think there is any complete answer to that question. It is a difficult one, there is no doubt about that. There are certain things which are used. They do assign them to camps. In India they assign them to hospitals and then put them out on detached service from time to time at different places in order to cover the territory.

In the Ninth Service Command a system of areas is being worked out which I think is a very useful thing under many circumstances and in the Southwest Pacific, General Denit has recently insisted on and gotten an over-all theater allotment which he considers best so he can send the nutrition officer where he wants, for instance with task forces, where he thinks they serve a very useful function. I think you have to use different systems depending on the circumstances.

I would like in closing, perhaps to comment on that phase of it. The matter of nutrition is quite a complicated special affair. Unless one has made a special effort, he is not alert or has not full knowledge about all the different phases of nutrition. Nevertheless the medical service has a definite responsibility for these things which, to some extent, we have tended to neglect because of the press of other matters. Now, the nutrition officer has the knowledge, the ability and the training, the technical specialization, to take care of these matters. We think that they can be very useful and should be used whenever possible.

COLONEL TURNER: The next item on the program is entitled "Health Program in Occupied Countries."

HEALTH PROGRAM IN OCCUPIED COUNTRIES --
COLONEL T. B. TURNER, MC, DIRECTOR, CIVIL
PUBLIC HEALTH DIVISION.

COLONEL TURNER: I just wish to make a few informal remarks because this program is in operation only overseas and does not directly concern the group here. You may be interested in hearing a brief outline of problems in organization.

The military government program has gone by a number of names. The first was "AMGOT" which somehow got an unpopular connotation. There were many jokes made about it, the most common perhaps being that "AMGOT ain't got," because they didn't seem to have any supplies to do anything with. Gradually the whole program directed to the civilian population of occupied or enemy countries has come to be known as The Civil Affairs program. If you are dealing with an enemy country such as Germany or Japan it is called Military Government but in the occupied and liberated countries the relationship is not that of command. We function in an advisory capacity and that is generally spoken of as Civil Affairs. The function is not new but the organization is new to this extent: Early in the course of the war a Division was set up on the War Department Special Staff level, under General Hilldring, known as the Civil Affairs Division. That has its counterpart in most of the major headquarters, where it is ordinarily known as the G-5 Division.

There is one at General Eisenhower's headquarters; the North African theater or the Mediterranean Theater now, Admiral Nimitz' headquarters, and General MacArthur's headquarters. On the staff of this headquarters is a Chief Public Health Officer who is responsible for the public health aspects of the overall Civil Affairs program.

As you know, in the European Theater this is headed by General Draper, on leave as Deputy Surgeon General of the U. S. Public Health Service; in the Mediterranean Theater it is headed up by Brigadier General Parkinson of the British Army; in General MacArthur's headquarters by Col. Smith, also a former U.S. Public Health Service officer; and the chief medical officer in Admiral Nimitz' theater has not yet been designated.

The main purpose of this program, of course, is:

1. To aid the fighting forces by prevention of epidemics in the civilian population. You can easily see how such epidemic might disrupt military operation. We have had small pox outbreaks in various cities and of course the constant threat of explosive epidemics of plague, cholera and so forth might very easily disrupt an important theater.

2. When an occupying army assumes responsibility for the government of a chaotic country, one of the functions of that government is public health.

3. There is the common, humanitarian aspect of the problem. In Europe our problems have not been particularly numerous. Many things we wanted to do could not be done because of lack of transport. Out in the Pacific a very different type of operation is developing, particularly in these smaller islands. The fire power directed toward those islands has been devastating; the civilian casualties have been extremely high, and on one operation, particulary, that of Saipan, the invading forces were quite unprepared to deal with the

tremendous civilian casualties and the load that was placed thereby on the occupying forces. From that time on therefore there has been a tendency to build up the Civil Affairs group, so that the Army could be relieved of that responsibility.

The main functions of the Civil Public Health Section might be divided into:

1. Communicable disease control;

2. Problems of medical care - providing medical care and hospitalization for wounded and injured civilians;

3. Nutritional problems;

4. The problems of medical supply, which is extremely important and was largely neglected in the early stages;

5. Sanitary engineering problems - purification of water supply, sewage disposal, etc.

We have no procurement objective for civil public health officers, at the present time, although it is expected that more will be needed for operations in the Pacific. I will be glad to answer any questions. Are there any questions about this, before we go on to the next item?

COLONEL ALLEN: What is the need for personnel for this service?

COLONEL TURNER: At the moment we have about two hundred Medical Department officers in the various theaters. You understand that we can only hope to provide an administrative focus for the public health services in the civilian population. We can't hope to supply enough personnel, actually to run hospitals or treat patients. We expect that more officers will be needed in the future.

COLONEL ALLEN: The reason I ask that question directly, Colonel, is that a few of our officers, who are occupying key positions, have made application for this service and we hate very much to give them up, unless the need is sufficient.

COLONEL TURNER: It is anticipated that more will be needed in the Far East. It depends on the tactical plans. We do need people with administrative ability, preferably with public health experience, but not necessarily so. It is primarily an administrative job and, in addition, of course, we do need or we will need sanitary engineers and supply officers. Are there any other questions about this?

I might say that the need has grown as time has gone on. Tactical commanders, Army commanders, did not want these men in the beginning and now they are asking for more than can be supplied.

A VOICE: Do these men operate in the theater directly under your office.

COLONEL TURNER: No, they don't work directly under us at all. It is a straight military organization. They work directly under the Chief Civil Affairs Officer, who is on the staff of the Commanding General of the Army, Corps, or Division. That has been one of the difficult organizational problems but is the only organization possible. It won't function unless there is the closest possible

liaison between the two medical officers i.e., the Surgeon and the Civil Public Health Officer. Actually, the surgeon is not only surgeon of the Army or Corps, as the case may be, but as the chief advisor of the Commanding General, he is technically over the public health officer althoughtthe latter operates directly under his chief civil affairs officer.

Are there any questions? If not, I would like to ask Major Horack to discuss Medical Intelligence.

MEDICAL INTELLIGENCE -- ITS PURPOSE AND FUNCTION

MAJOR HAROLD M. HORACK, MC, ACTING DIRECTOR, MEDICAL INTELLIGENCE DIVISION.

MAJOR HORACK: Colonel Turner, gentlemen, the general subject of medical intelligence is of only limited concern to this group. On the other hand, it is very directly to be associated with the overall problems of preventive medicine. In that belief, I am going to attemp to outline for you a good bit of our background and the scope of our forces and activities.

The collection of information regarding medical health and sanitary conditions in foreign areas was begun in July, 1940 and comes under G-2. The program was initiated and supervised by Brigadier General James S. Simmons who was then the Chief of the Subdivision of Preventive Medicine of the Professional Services Division. The initial studies were prepared by members of General Simmons' staff, the first of which was entitled, "A Plan for the Military Administration of Public Health in Occupied Territories." Subsequently, General Fox, Colonel W. A. Hardenbergh, Colonel A. W. Sweet and Colonel V. H. Cornell participated in the preparation of medical and sanitary surveys of the Caribbean area and of North, Central and South America.

In April, 1941, the Preventive Medicine Division was created and in June of that year, a Subdivision of Medical Intelligence was organized. This Subdivision was organized in response to a growing demand for readily available information concerning health and sanitary conditions in foreign areas. The declararation of war in December, 1941, gave great impetus to this activity and in 1942, a committee appointed to investigate the Medical Department took special notice of medical intelligence with the comment that it should be developed with full appreciation of its importance and recommended an increase in personnel and activities. These recommendations were adopted and there followed a period of expansion and development of the field of technical medical intelligence. This expansion embraced not only the interests of the Preventive Medicine Service but also the interests of the entire Medical Department.

Interest in this newly developed field of intelligence was evidenced by the fact that some information concerning a few of the activities of the Medical Intelligence Division soon extended beyond the bound of the War Department, even to the gentlemen of the press. Early in the fall of 1942, a feature writer for one of the popular magazines was bucked up to our office by the Public Relations Division. The writer was a fascinating fellow who had all the self-assurance of Oscar Levant and a journalistic style that was something of a cross between that of Bill Lawrence of the New York Times and a reporter for the Police Gazette. He was not what could be called a bashful fellow for, after a summary introduction, he informed us that he had discovered

that the Medical Corps had an Intelligence Division and that he would like us to supply him with a few pertinent details with regard to our organization, our sources of information, and how this information was utilized.

In addition to this, he wanted a few gory stories and one or two specific examples of how the Army's Medical Intelligence Division had decisively altered the course of the war. This was all he needed to complete his story, the text of which was in draft form and the title selected.

In his effort to persuade us to give him the facts, he pointed out that the story would have a real news value not only because it was an entirely new angle on a popular subject, but because it was a new field of intelligence -- the like of which did not exist in any other army.

As the conversation progressed he demonstrated that he was in reality a man well informed in the various aspects of military history, even the medical side, and that he had at his command a rather amazing assortment of facts, figures, rates and ratios. He knew, for example, that up until the present war more soldiers had died from disease than were killed by the enemy or died of wounds.

But this was not the type of information he was after. What he wanted was a vivid, spectacular story which conformed with the popular concept of what medical intelligence was or should be, and one that was full of intrigue and accounts of the activities of medical spies.

Like all good reporters, he got his story but it was not quite the one he had expected; and after the Public Relations Division had finished with it there were parts of it that none of us recognized. Nevertheless, it was a good story, a story that set forth quite clearly the aim and functions of our particular types of intelligence.

I would like to read to you just a little bit from that, because it sets forth what I want to present to you, I believe, rather clearly. It is entitled "The Army's Health Spies," a good title:

> "Wherever our soldiers go, throughout the world, they are protected against disease, fever and parasites by the careful advance research work of the Army's Medical Intelligence Division. It is a splendid job."
>
> "Blindfold yourself and drop a pencil point on a map of the world. Maybe it will land on a country in the tsetse-fly belt of Africa or on one of the unwashed states of India. No matter where it lands, the chances are that the United States Army has more medical information about that place than local physicians practicing there.
>
> "Its Medical Intelligence Division - a part of the Preventive Medicine Service of The Surgeon General's Office - collects information about every country on earth. It spies out health facts the way other intelligence organizations gather information about enemy combat planes and deck armor. No matter where troops move, it must be ready with a complete file of facts.
>
> "The reason for this activity is apparent. We face a situation radically different from the one faced in 1917. At that time our Army was fighting in countries with problems parallel

to our own. In France, doctors found the same measles they had known at home in Iowa, the same pneumonia they had seen in Pennsylvania. This time we are headed for some of the backwoods regions of the earth and we are encountering some very special miseries.

"Medical Intelligence has a spectacular mass of facts. It knows about poison snakes along the Gold Coast and about lice, ticks, and disease-spreading insects of other countries. It has surveys of buildings all over the world which might serve as emergency hospitals and it has word about the type of electricity generated by utility plants; if the Army decides to go to a certain country it doesn't want to take 60-cycle X-rays when only 25-cycle current is available. Medical Intelligence has full information about breeding habits of mosquitoes that infest any country; it has charts that show disease rates.

"Reports have to be complete." * * *

It is only fair to admit that for the sake of journalistic style the author stretched a few points, but in general his account was a good sketch of what Medical Intelligence is and does. It did not, of course, include a number of activities which are strictly of an intelligence character nor did it adequately emphasize the relationship of this activity to the over-all program of the Preventive Medicine Service.

For the latter reason I would like to simply outline to you something of our organization and actually what we are now doing, particularly in so far as there is an interest in this.

Organization: Like most intelligence groups we are organized along conventional lines and our Division consists of a Collection Branch, an Analysis Branch, and a Dissemination Branch.

Collection: Although there is a special unit assigned to the collection of information, this responsibility is shared by all personnel assigned to the Division. During the past four years, sources of information have been developed extensively with a view to obtaining pertinent facts concerning the organization, administration, operation and experiences of the medical services in co-belligerent and enemy forces, the collection of captured enemy equipment and documents; and research and development in the fields of military medicine, public health and the medical sciences in all foreign countries.

It also includes the collection of epidemiological data as well as information on medical and research institutions, hospitalization facilities, medical practitioners, public health administration and regulations, water supplies, sewage disposal, nutrition and the fauna and flora of medical importance.

The sources of this information are manifold and it will suffice to say that it has been derived from a systematic exploitation of all official intelligence channels, a thoroughgoing review of the literature, contacts established with commercial concerns and innumerable interviews with personnel, both military and civilian, who are in possession of information of importance to medical intelligence. These sources are supplemented by information obtained from medical intelligence officers assigned to the various theaters. All of this information is catalogued and is cross-indexed according to subject and geographic location.

Analysis: The data collected is used by the Analysis Branch in the preparation of special medical surveys for incorporation in the Joint Army Navy Intelligence Studies. I might mention that these are classified documents, confidential, which contain a perfectly amazing amount of information. I think they are the best over-all studies of any area that are available today.

The material is also used in the preparation of the War Department technical bulletins, medical, and our particular series are all entitled, "Medical and Sanitary Data on "(blank)"-- whatever it might be. These reports are organized under the following headings:

Public health organization;
Water supplies and sewage disposal;
Food supplies;
Insects and flora of medical importance;
Medical institutions and personnel; and
Information concerning the prevalence of disease.

More than 200 surveys have been prepared and all of them are being kept up to date. In addition to these surveys special reports are prepared for use in connection with the planning for future military operations and for numerous other special purposes.

Dissemination: The Dissemination Branch is charged with the responsibility for the dissemination of medical intelligence to appropriate commands, agencies and individuals, both in the Zone of the Interior and in the Theaters of Operations. It is of interest to note that during 1944 approximately 370,000 copies of the medical and sanitary surveys were published and distributed throughout the Service Commands, to the POE's, AGF, ASF Training Center, the AAF and numerous special units, both in this country and abroad. In addition, this branch prepares and distributes to especially designated headquarters, a limited number of copies of carefully selected and timely abstracted reports of medical importance.

It is also charged with the responsibility for the exploitation of all captured enemy equipment and the dissemination of information concerning the same. To this end special enemy equipment intelligence teams were organized and dispatched to the various theaters for the specific purpose of obtaining information and equipment which would be of value to the Medical Department from the standpoint of intelligence, research and development and training.

This sketchy and admittedly incomplete outline of the development, organization and function of Medical Intelligence does little more than to indicate that within the Preventive Medicine Service there is a unit which is actively engaged in the compilation of data which is of interest and importance to those who are concerned with public health, preventive Medicine and related problems as they occur in foreign areas. The material which is available for informational as well as training purposes include those which I have just mentioned. I have some copies here if you are interested in reviewing them.

1. TB MEDs - Medical and Sanitary Surveys, which, as previously mentioned, contain information concerning public health organization and administration, water supplies, sewage disposal, nutrition, food supplies, veterinary problems, fauna, flora, medical care and practice and disease information.

2. Current foreign epidemiological data.

3. Information on the organization, administration, operation and experiences of the medical forces of co-belligerent and enemy forces.

4. Information concerning captured enemy equipment and supplies, including those items which are used in the prevention and control of disease, and

5. Several thousand intelligence documents and reports covering a wide variety of topics pertaining to preventive medicine and public health in foreign areas.

All of this information or parts of it can be made available.

In the case of intelligence documents, it is very difficult and hard for us to disseminate those, but in the case of technical bulletins which represent summaries of available information, they can be obtained. As we obtain more equipment, that, too, can be made available to certain selective training centers for instructional purposes.

I thought it might, perhaps, be of interest for me to show you just one or two things that we have picked up and which we consider to be of a very real interest. As you know, in some of our kits and chests we have a standard microscope that weighs about 35 pounds. It is cumbersome, it is bulky. It is not well suited for the purpose, simply because of its bulk and size. The teams which we have operating in the Pacific area were fortunate enough to pick up this particular microscope which is of very real interest to us at the present time and I believe is being pursued by the Laboratory Division who are promoting studies of it for incorporation, if possible, in one of the field chests or at least a modification of it. It is a Japanese 'scope and comes in one of these cases. It is much like a toy but it folds up very neatly and exactly. It has two objectives, and standard lenses.

This particular scope has been a matter of very considerable interest to men in the field and is also one of the hardest items to get back here for study. It seems that it is quite a collector's item among Medical Officer.

I should mention that the Germans also have some very fine items of equipment that we are interested in. These two things I brought up because they are of very current use at this time and are actually being considered from the standpoint of research and development.

This rather unattractive bottle contains a large number of pills, an anti-malarial of a new type. It is related to plasmochin. Preliminary studies indicate that it may be of some value. The National Research Council is at the present time is pursuing this possibility. I show these two things simply to point out the fact that something actually is being done with this captured enemy equipment. Thank you.

COLONEL TURNER: Are there any questions of Major Horack? It is extraordinary material that this Division turns out, of course. Any of you who have been abroad have certainly studied carefully the TB MEDS on the areas to which you are going. Are there any questions?

COLONEL TURNER: We are going to proceed to the last topic we are discussing this morning and that is the question of foreign quarantine. It, of course, has been of increasing importance to the country as a whole and to the Army, because the Army, with its vast transportation system in and out of this country, must assume a measure of responsibility in preventing entrance of any foreign

or exotic diseases into this country.

Lt. Col. Knies is in charge of the Quarantine Branch of the Epidemiology Division and served as a member of the Departmental Quarantine Commission, on which there was also a Navy and a Public Health Service representative. Captain Shaffer, whom you all know by this time, as the promoter of this conference, is his principal assistant and will speak on this subject today.

FOREIGN QUARANTINE IN MILITARY TRAFFIC -- RECENT DIRECTIVES -

CAPT. THOMAS E. SHAFFER, ACTING ARMY QUARANTINE LIAISON OFFICER.

CAPTAIN SHAFFER: Col. Turner and fellow officers and friends: This is a relatively new venture, this subject of foreign quarantine as related to the Army and I would like to say that before the plan that is being put into effect by The Surgeon General was formulated, we realized that some changes probably will be necessary, as in all new programs. We have presented a plan and it is hoped it will work. We realize that if changes are necessary, they must be made.

The entrance of the Army into foreign quarantine is relatively new. The Foreign Quarantine Branch in the Epidemiology Division of the Preventive Medicine Service was established in the fall of 1944. I will give you a little of the background as to how the Army became involved in enforcement of foreign quarantine.

Many of you may know that by law the matter of foreign quarantine has been delegated to the U. S. Public Health Service, which has responsibility for the enforcement of foreign quarantine as it relates to the diseases of man or diseases of animals that are communicable to man. The Department of Agriculture is responsible for foreign quarantine as it relates to domestic animals and certain wild animals.

There is a third service, the Fish and Wildlife Service, located in the Department of the Interior, which is interested in preventing the introduction of diseases of wild animals, except those of ruminants and swine, which are a responsibility of the Department of Agriculture.

A peculiar thing has happened in foreign quarantine, in that commercial traffic in the last few years has been reduced almost to the zero point, but traffic as a whole has been up, because military traffic has increased, so the problem of quarantine is a very real one, although it is different than before.

I might say a word or two as to what quarantine embraces. By foreign quarantine is meant those measures designed to keep out of one country the diseases that might be imported from another country. Not only diseases of man but those of plants and animals are implied and it has been further extended to include pests and vectors.

When I speak of foreign quarantine, I am not speaking of communicable diseases in the sense of those referred to in AR-40-210, which is concerned with all communicable diseases. Foreign quarantine includes only the diseases that have been internationally agreed upon as serious threats if transported across international boundaries.

There are five diseases of man upon which everyone agrees as of extreme importance in this regard: cholera, plague, yellow fever, epidemic typhus and smallpox. Countries have agreed that because of the historical role of these diseases in producing epidemics, those diseases should be internationally quarantinable, to prevent their dissemmation.

It is only logical that some countries would go further and set up their own rules on other diseases by saying, "We are not going to let you in if you have a particular disease." An example of that is in this country, where we have added to this list of five diseases, leprosy, a sixth, and we have added psitticosis and anthrax so we have really eight quarantinable diseases. We are not worried about rabies in this country but England is, so they add on rabies and so does Hawaii; but the five basic ones previously mentioned are internationally agreed upon.

We have to add on to that, then, diseases of plants and animals. These are too numerous to even mention because there is a long list of them. Then pests both plants and animal. Measures designed to prevent their importation may be the most important role that the Army has to play in the whole quarantine picture; that is, preventing entrance of insect plant pests that might be brought back from other countries.

As to whether we exaggerate or whether the question has been exaggerated is a matter for question. With all the measures that are put forth to prevent the entrance of the seven or eight quarantinable diseases into this country and the numerous stations that the Public Health Service has maintained and the very large hospital facilities for maintaing people with quarantinable diseases, in the past twenty years, there have been intercepted only 128 cases of quarantinable disease at the border. In the past ten years they have only intercepted 13. Of those 13, nine were smallpox, of which we already have plenty and there would be no real crime in bringing it across the border.

One case of bubonic plague was intercepted and one case of leprosy, which we already have, and two cases of epidemic typhus. In the last four years there has been one case of quarantinable disease intercepted, a case of leprosy.

As I say, it is a matter for question as to how much the danger may be exaggerated. Medically, I think everyone agrees it is not a great problem but the public views it as of the greatest importance and the Public Health Service has to maintain a defense if only because of that.

The civil authorities, the Department of Agriculture, the Department of the Interior and the U.S. Public Health Service have had the responsibility until the war came along. With the increased military traffic they gradually have had to make assignments of certain small duties to the Army. In 1943 the Public Health Service decided that something should be done in a formal fashion instead of these temporary measures, so that the Public Health Service wrote to the Secretary of War and Secretary of the Navy requesting that a Commission be set up, with representatives of the Army, Navy and Public Health Service, to study the whole problem of foreign quarantine, particularly as referred to military traffic and to aerial traffic.

Aerial traffic would have had to be studied anyway because most of our regulations are based on a marine traffic. The problem of aerial traffic has been growing gradually and the quarantine measures

that have been applied to it have been largely on the marine basis, without taking into account the differences in aerial travel. The whole problem needed to be studied, and the Interdepartmental Quarantine Commission was appointed in 1943. The members of this Commission may be known to some of you: Captain T. B. Magath of the Navy, who used to be at the Mayo Clinic; Lt. Col. Philip T. Knies, MC of the Army Air Forces and Dr. G. L. Dunnahoo of the Public Health Service.

They travelled together, and later separately, all over the world, to every place they could reach to study quarantine methods. They talked with Health Officers, studied methods in force and in the summer of 1944, made their recommendations.

I think one of the outstanding points in their report was the conclusion that the present methods of quarantine are antiquated. When the war is over, foreign quarantine has to be established on a modern basis.

Under the accepted system, in order to stop the entry of a disease at the country's border, you must know what diseases are present in other parts of the world. If a person comes from a part of the world where a disease is epidemic, he is subject to questioning, and perhaps observation, at the border.

One way in which information has been gathered was through the consular Bill of Health, which is extremely unreliable because very often those reports are filled out abroad and never reach the area for which they are intended until six weeks later. Originally intended for dissemination of information in the days before modern methods of communication were developed, the Bill of Health has outlived its usefulness.

Since system of quarantine enforcement was set up, immunizations have become so widespread and so reliable that it is felt that they can be taken as a basis of exclusion of disease, as safely as knowing what diseases are present where a man came from. You note that among our five quarantinable diseases there is reliable immunization against smallpox, yellow fever, and epidemic typhus. As for cholera there would be some question but for practical purposes it is reliable. As far as plague is concerned, the immunization is probably a reliable one. If a person is immunized against those five diseases, it really makes no difference where he comes from, as it is unlikely that he will come in suffering from a quarantinable disease and spread it in this country. I think it is safe to say that in the future a traveler can go from country to country as long as he is immunized against all of these diseases without being stopped at the border for examination.

That, however, is not a general policy as yet. It is most readily adaptable to the Army and Navy traffic since military personnel are well immunized against the quarantinable diseases. If everyone agrees that satisfactory evidence of immunization is as acceptable as proof that you once have had the disease, then immunization should allow free traffic. The U.S. Public Health Service has agreed to accept evidence of immunization against quarantinable diseases and the constant medical surveillance possible in the Army as equivalent to border inspection and detention or observation. A man who is immunized in accordance with War Department requirements does not have to be inspected providing he is free of lice and is under the surveillance of medical officers.

In order for the Army to cooperate in this program of foreign quarantine, it was necessary to set up some mechanism for supervising it.

The Secretary of War made The Surgeon General responsible for all matters of foreign quarantine. He is responsible for foreign quarantine as it applies to Army personnel, whether it be Ground Forces, Service Forces or Air Forces. The Surgeon General is assisted by The Army Quarantine Liaison Officer, Lt. Col. Philip Knies, who has his office in the Preventive Medical Service. The purpose of this office is to maintain liaison with all interested civil agencies and with all Army, Navy and Public Health Service representatives concerned in order to keep the enforcement of foreign quarantine correlated and as uniform as possible. A tremendous number of agencies are directly concerned in foreign quarantine.

The Army had very few directives on the subject of foreign quarantine so that one of the first steps necessarily, was to get out some regulations calling the attention of the Army to its obligations in foreign quarantine. There have been two recent directives that define the Army's part in foreign quarantine. One of them is AR 40-225, which outlines responsibilities in foreign quarantine enforcement and the other is a War Department Circular, No. 453, 1944, which implements and explains in detail the policies set forth in the A.R.

Briefly, I will very quickly summarize how we believe the Army can handle foreign quarantine. When a man returns to this country or leaves this country he is required by the provisions of AR 615-250 to have a physical inspection within 48 hours of his departure for the detection of communicable diseases. It is also required that his immunization records be checked to assure that he is properly immunized and it is further required that the physical inspection be particularly directed to see that the individual is free of vermin. It has been felt that this processing, which is required before embarkation, is perfectly reliable in lieu of a foreign quarantine procedure after debarkation. Any man who is returning to this country or leaving this country could embark and by virtue of that physical inspection performed within 48 hours before leaving he could fulfill the requirements for entry into another country.

If he has been preperly immunized for the area which he is leaving, if he is free of vermin and if he, at that time, has no quarantinable disease -- those five quarantinable diseases.

We feel that if a person, at the time of his exit from a country, meets the requirements of freedom from quarantinable disease and vermin and is immunized against the diseases present in the area he is leaving, he should be allowed free entry into another country providing he remains under jurisdiction of the Army. That is fundamentally the plan that has been sanctioned by the U.S. Public Health Service. There should be no inspection and no processing necessary at the port of arrival if proper procedure was followed abroad before embarkation. All the processing should be done at the point of departure. No new procedure is added, since the inspections are called for already in AR 615-250.

The only additional work will be the preparation of a certificate for the group to be given to the master of the vessel or the aircraft pilot, stating that everyone on that vessel or that airplane has met immunization requirements of the area he is leaving and that he is free of vermin and that he has no quarantinable disease. Exceptions have to be noted separately, and it is perfectly possible that there will be exceptions. A transport may bring back a man who has not been immunized properly, because at the last minute he could not get immunization. We might bring back a man who has leprosy.

We might bring back any of the other quarantinable diseases under unusual circumstances. They can be brought back but they must then be processed at the port of entry. They won't be allowed in the free flow of traffic through the port of entry that we foresee under this plan I have just outlined. Pneumonic plague will not be transported under any conditions.

There has been some objection from the Transportation Corps and the A.T.C. in that they think that a new procedure is being added on. Except for the additional clerical work, we don't foresee that any additional procedure being added. Physical inspection has to be made anyway; a man has to be immunized and have a certificate that he is free from vermin. It saves a lot of procedure at the time of debarkation.

There are two types of traffic in which the Army is involved: marine traffic and air traffic. By agreement the Public Health Service is going to take the responsibility for all marine traffic including that under Army jurisdiction. The Army has no responsibility except in assisting the Public Health Service for marine traffic. The Public Health Service will handle that, except for plants and plant products which will be the responsibility of the Department of Agriculture.

In the air-borne traffic, the Army is assuming the responsibility for personnel in air-borne traffic coming into this country at Army airports. Our personnel will have to do the processing and must satisfy the Public Health Service at all times that they are not allowing quarantinable diseases to come into the country. The Department of Agriculture will conduct its own inspections.

It comes down to the fact that A.T.C. is bearing the brunt. Their personnel is going to have to do the processing at the beginning of travel. Their personnel is going to be involved in it on this end. As we see it, the processing in the United States is not going to involve medical personnel at all. It is a clerical procedure and it has been recommended that it be handed over to Priorities and Traffic and that the Medical Department stay out except for special problems. Men arrive with a certificate from the other side; if all the men aboard meet the requirements, this is, they are free of vermin, they have been immunized and they have no quarantinable disease, they can by easily taken care of by a civilian. He looks at the list, sees that there are ten men on the plane, and that ten men are certified; they go through and no medical inspection is necessary.

In marine traffic, and I am not going to spend too much time on that, one factor that is problem of concern is rats aboard the vessel. We have to worry about rats on vessels, while on airplanes we have to worry, not about rats, but about insects. There have been set up regulations as to how airplanes should be disinsectized, and AAF Regulation 61-3 may be consulted for details.

Usually any plane that is coming to this country from warm climates, where mosquitoes might breed -- there are a few excepted places where there is no vegetation on the island -- has to be disinsectized two minutes before it takes off. Many of you may have been through that and many more may sometime be in a plane and find that just before the take-off they come in and close all the compartments, close all the doors after which the pilot goes through and uses an aerosol spray. The compartments are kept closed for two minutes and then he takes off. The purpose behind that is to prevent entrance of living stow-away insects into this country. The problem of insects coming in is a matter of some little concern to us and to Brazil, because of their Gambiae experience a a few years ago.

Might I mention just one more thing. Our present directives call for a notation concerning foreign quarantine in the monthly sanitary report from all stations, such as ports of embarkation where the Army personnel are engaged in foreign quarantine procedures. There was a recent War Department Memorandum sent out on that subject. Those monthly sanitary reports will be the basis of a monthly report that Col. Knies has to render to the U.S. Public Health Service, to keep them in touch with our work.

It must not be forgotten that if the Army violates foreign quarantine requirements in any respect, the Government is going to hold the Public Health Service responsible, not the Army. We have a working agreement with them but we have a tremendous responsibility to them.

I would like to mention several regulations that have a direct bearing on quarantine. One of the bibles is AAF Regulation 61-3, which deals with foreign quarantine as it is applied to air travel. It will interest the men from the ports to know that there is in the making in the Transportation Corps a circular that will deal with quarantine inspection of Army vessels, personnel and cargo arriving at ports of embarkation. That circular will describe when Army vessels should fly the "Q" flag and when they will be given exemption. It is a subject that needs to be broadcast. Many of the transport surgeons don't know when they have a right to come directly in to port or when they have to anchor and be inspected.

COLONEL TURNER: I think there will be some questions. Are there any questions about this? Major Riedel, what about the Air Transport Command?

MAJOR RIEDEL: Our policy as to quarantine has not been definitely formulated and unfortunately it has been handled by another officer. I think Capt. Shaffer knows about that. I am not prepared to make a statement.

COLONEL TURNER: What about the Transportation Corps?

MAJOR NEWMAN: There is nothing on my mind. I thought a brief explanation of how it is functioning in some ports would be interesting and if some ports have arrangements with Public Health officers we might be able to institute a plan. Capt. Shaffer has gone over the physical aspects of the troops. In returning personnel it becomes very important to have these troops inspected very thoroughly prior to coming into ports, so the surgeon can give them a certificate for their clearance, because they are not further inspected prior to furlough, providing they get out on a furlough within 72 hours. It becomes not only a problem of clearing quarantine but also a problem of the health of the community to which they may go on furlough shortly after arrival.

Among the things that we run into with regard to clearance of quarantine there are one or two instances that I might cite to show you what happens.

A transport surgeon will come in and give a certificate for free clearance. They come into port, the patients and personnel will be debarked and then the transport surgeon reports the voyage, at which tiem he will request fumigation of the ship for rats. It just does not add up because if there are enough rats aboard to require fumigation of the ship, then the quarantine service is at least slightly in question.

The second thing is that transport surgeons must keep themselves thoroughly informed at all times regarding contact in foreign countries with regards to conditions of that port, so that they can render a true statement on return to the United States. Otherwise, the Public Health officials will get wind of it, either through the Captain of the ship, who makes the report, or in some other way, and question the transport surgeon's veracity. That becomes very conflicting and a lot of explanation is necessary and a lot of things have to be cleared up when such a thing occurs so that the very important parts of it are that the transport surgeon -- I am dealing now only with Army responsibility -- must make his report of the voyage tie in with the clearing certificate. He must have in that clearing certificate a true statement of facts with regards to the ports he has been in and ascertain the diseases prevalent in those areas.

COLONEL TURNER: Anybody else from the Transportation Corps?

CAPTAIN WARD: I would like to ask a technical question. What channels must be followed in forwarding that certificate from the Transport Surgeon to the U.S. Public Health Service quarantine officer? Must they be delivered by mail or by person? There was some discussion on that.

CAPTAIN SHAFFER: I don't think that the channels are indicated. It must reach the Public Health Service official within 24 hours after docking. I think that that is a matter of local arrangment but it is important that he get it within 24 hours. They have given us quite a concession and we must cooperate to maintain this relationship.

MAJOR BUZZERD: This Circular 453, Section 3, paragraph 6, we would like an interpretation of it. It says: "When a vessel under the jurisdiction of the Army departs from any port for oversea travel, the transport commander will furnish a statement to the Master certifying that all military and civilian personnel aboard (1) satisfy current War Department immunization requirements, (2) are free from vermin and (3) are free from quarantinable disease. Exceptions should be noted specifically so that if necessary they may be brought to the attention of the quarantine authority at the port of entry."

Now this is our interpretation, and if I am wrong, I would like to be corrected. This is an additional report. Obviously the Transport Commander can not certify to this unless he gets it from the Transport Surgeon. As soon as the ship departs from the ports the Transport Service must sit down and write out this report and transmit it to the transport commander so that he can pass it on to the master.

We require all personnel on board ship to be examined 24 hours prior to debarkation, whether it is a foreign port or an American port, at which time the transport surgeon makes out a medical clearance certificate which has been prepared by our office. It sets forth the same statement, practically, with some additions, that are contained in the Quarantine Certificate.

We wonder why one copy of this clearance certificate can't be passed on to the Master for quarantine purposes, for the use of civil quarantine officials, whether it is England, France, Italy or the United States. The clearance certificate that we have is used purely for Army purposes. The certificate is passed on to the staging area. However, it contains all the necessary information that any quarantine official needs. It is made out 24 hours prior to debarkation which eliminates the necessity

for us making extra reports.

COLONEL TURNER: Can you answer that, Captain Shaffer?

CAPTAIN SHAFFER: Briefly, the physical inspection has to be made on the other side before these men can get on the vessel. Is that not correct? Within 48 hours of embarkation a physical examination must be performed.

MAJOR BUZZERD: And 24 hours before they get off.

CAPTAIN SHAFFER: First of all they have to have an examination before they get on the vessel, not because of quarantine regulations but by the provisions of AR 615 250, par. 5. We don't expect to have an individual certificate for each man. We want a group certificate saying that all the men, with the exceptions of those noted, have met the requirements, based on that inspection.

It is felt that if you wait for that examination shortly before arrival, that you are going to reach port with men who do not meet the requirements and you will have more administrative difficulty at the port of arrival. This screening will keep them off the vessel on the other side until they can meet these requirements. That is essentially the reason for it.

MAJOR BUZZERD: I don't think you are ever going to have an ideal situation because when the men get off the ship they are not going to be immunized. It is necessary to give immunization during the voyage.

We receive, before the troops embark, a clearance certificate which states the diseases that have been prevalent in the camp, which units are affected with the diseases, those in which there are contacts to certain communicable diseases, and which states how many typhus, tetanus and other innoculations are required. Sometimes they are finished up before they get here and sometimes they are not. It is necessary to pass the information on to a port surgeon at the port of debarkation so that the immunization can be completed.

CAPTAIN SHAFFER: If there is an easier way to do this than the way prescribed, that is what we want to find out. No doubt Col. Knies will be up to New York and he would like to hear about it. It is possible that there is an easier way to do it.

MAJOR NEWMAN: The information as presented by the staging area to the port is mainly information utilized by the transport surgeon while with the troops aboard the vessel, to enable him to carry out any treatments on vaccinations as necessary enroute. Then he makes a certificate up for the port surgeon of the receiving port as to the number of treatments that are still due on arrival.

That, to me, is to some extent a separate thing from that required by the Public Health Service with regards to quarantinable diseases and clearance on the quarantine certificate. It will have to be stated that certain immunizations were given to troops going into that country and on leaving the country. It would have to be so stated.

CAPTAIN COOPER: I might ask one question that is not entirely academic. It actually occurred in the San Francisco report. We

received two Japanese prisoner of war patients with leprosy. Who gets them? Who takes care of them?

CAPTAIN SHAFFER: The enforcement of foreign quarantine is further complicated by military security. A lot of things happen in that connection and the Public Health Service just has to say, "Well, there is a war to win." Those lepers are going to be taken under the guidance of the Provost Marshal General and confinement is assured. They don't come under our regulations as such. Although alien lepers are not allowed to come into this country, we can't keep a Japanese prisoner of war out once he has reached a port.

COLONEL TURNER: I wonder if the representatives from Canada might like to comment on quarantine problems?

MAJOR NEUFELD: We have nothing to say.

COLONEL YOUMANS: What about the return value of these examinations and all this paraphernalia of the Public Health Service? What diseases would we have gotten, if we had not known they were going to have it when they came across the border?

COLONEL TURNER: That is my thought. However, the value of the policeman, even if he doesn't arrest anybody, is that he is there.

COLONEL YOUMANS: If we had let them come we would probably have had more than 13 cases in ten years.

CAPTAIN SHAFFER: Yes. Typhus, plague, and yellow fever are the ones we don't have here and they are the ones we want to keep out particularly. Leprosy and samllpox we have already in this country.

COLONEL NORTON: I would like to present Capt. Allen who has charge of the Industrial Hygiene Laboratory, located in this building. He mentioned earlier today that some of us might want to go through there. He has some things out on display and he expressed the thought that perhaps it might be better, instead of just drifting in from time to time, that if we could set aside just ten or fifteen minutes sometime, all of us could go over there, or at least those of us who are interested in seeing it. It is right here in the building and he would be glad to be of any service that he can.

COLONEL TURNER: That is fine. I don't know where those ten or fifteen minutes are coming from during this lunch hour. We get lunch and there are photographs to be taken at 1:10. If anyone wants to go badly enough to finish lunch by one o'clock and go up there I think that would be find. We meet back here at one thirty, and I dare say that something after the meeting might be arranged for those who are particularly interested.

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Afternoon session not recorded.