

REVIEW OF "A SYMPOSIUM ON A NATIONAL MALARIA PROGRAM FOR THE CONTROL OF MALARIA,"

presented at the joint session of the National Malaria Society and the American Society of Tropical Medicine, Cincinnati, Ohio, November 18, 1943.
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By **ROBERT L. USINGER, P.A. Sanitarian (R), U.S. Public Health Service**

With World War II, malaria has achieved the dubious distinction of being the number one disease of the world. The importance of the disease has been well known to malariologists for many years but the significant point for the future of malaria control is that its importance is now becoming apparent at first hand to a large proportion of the human race. This tremendous increase in every day knowledge of malaria coupled with the epoch making advances in control methods are a challenge to malariologists. The stage is set for the greatest all-out attack on a disease in the history of preventive medicine. Rising to the occasion, the National Malaria Society gives us this National Program for the control of malaria.

1. American Mobilization for the Conquest of Malaria in the United States. By Brig. Gen. J. S. Simmons, M.C., U.S.A.

In his presidential address General Simmons introduces the Symposium and suggests a new goal for the future — namely, the conquest of malaria in the United States. He proposes a National Program for Malaria Control, a coordinated effort by all agencies to make the United States a malaria-free country.

2. The Malaria Control Program of the Army. By Major O. R. McCoy, M.C., U.S.A.

The two phases of the Army malaria control program are: The protection of soldiers at training camps and bases and the protection of troops in forward areas and in combat. Success of the Army program is indicated by a comparison with monthly malaria admissions per 1000 per annum for the last war in the continental United States. Peak rates were over three times as great in 1917 as in 1941 and over twenty times as great in 1919 as in 1943. The malaria control organization of the Army consists of malariologists, survey units, and control units. The responsibility of the Army in helping prevent the spread of malaria by returning military personnel is stressed.

3. The Malaria Control Program of the Navy. By Commander O. J. Brown, M.C., U.S.N.

The malaria control programs of the Army and Navy were developed jointly, even to the inclusion of comparable equipment, but the Navy program differs in details of organization. The Construction Battalions include sanitary sections of 110 men completely equipped for malaria control and small, highly mobile control teams. Much attention is being given to the rehabilitation of malaria cases.

4. The Malaria Control Program of the U. S. Public Health Service, among Civilians in Extra-Military Areas. By Senior Surgeon (R) Stanley B. Freeborn, U. S. Public Health Service.

The program, Malaria Control in War Areas, is responsible for the protection of troops and vital war workers in the vicinity of war establishments in cooperation with state boards of health. Funds, equipment, and consultation along technical and policy making lines are provided by the Public Health Service. The organization, procedure, and scope of the work are discussed. Mobile malaria control units have been outfitted recently as "circuit riders" to cover General Hospitals, Prisoner-of-war Camps, and Debarkation centers, even outside of malarious areas, so that, without relaxing, the original mandate of protection of troops from civilian malaria the civilian population may also be protected from troop-borne malaria.

5. Malaria Control Activities of the Pan American Sanitary Bureau. By Hugh S. Cumming.

The development of the Pan American Sanitary Bureau is outlined from 1901 to date. Work accomplished includes publication of a Monthly Bulletin and many other contributions to the literature of malariology. The Pan American Committee on Malaria has gathered valuable information on malaria and has paved the way for further advances. In addition to its activities in the coordination of Pan American malaria control and dissemination of new information, active cooperation has been given to field projects throughout Latin America by traveling representatives of the Pan American Sanitary Bureau.

6. Malaria Control Activities of the Institute of Inter-American Affairs. By G. C. Dunham.

Permanent mosquito control measures throughout Latin America under the Inter-American Cooperative Health Services are described. Work is carried on in cooperation with the Rubber Development Cooperation around airports, and along the Pan American Highway and the Emergency Military Highway. Facilities were greatly augmented when the Brazilian staff, equipment and buildings of the Malaria Service of the Northeast and the Institute de Patalogia Experimental Evandro Chagas in Belem were assigned to the Amazon project of the Cooperative Services after the eradication of *Anopheles gambiae*. The Health and Sanitation Division of the office of Coordinator of Inter-American Affairs, with representatives of the National Department of Health of each country is an important achievement in international public health.

7. Facilities for the Training of Malarialogists in Military and Civil Institutions. By H. E. Meleney.

Most of the training of malarialogists since the outbreak of the war has been conducted by the Army, Navy, and Public Health Service in cooperation with the T.V.A., the Florida State Board of Health, and the Rockefeller Foundation. Army training is carried on at Carlisle Barracks, Pennsylvania, the Army Medical School, Tulane University, T.V.A., The Florida State Board of Health, and the Health and Sanitation Division of the Office of Coordinator of Inter-American Affairs. In addition, Survey Units receive special training and a new school for malariology has been set up by the Army in Panama.

Navy training is centered at the Navy Medical School, at Quantico, Virginia, and at New River, North Carolina. A field course is given in the South Pacific. Training for Construction Battalions is carried on at Camp Peary, Virginia.

Training in malariology by the U. S. Public Health Service is located at the Atlanta headquarters of the Malaria Control in War Areas program. Visits are made to the Malaria Investigations Laboratory of the National Institute of Health at Columbia, South Carolina and to field training areas where actual malaria control operations are studied.

8. Contributions of the Bureau of Entomology and Plant Quarantine of the Department of Agriculture to the National Program for the Control of Malaria. By F. C. Bishop.

The Bureau of Entomology pioneered the study of mosquitoes and mosquito control in the United States. From the first work of L. O. Howard in 1892 to the present day, the Bureau of Entomology and Plant Quarantine has contributed substantially to our knowledge of mosquitoes and mosquito control. Outstanding contributions during the present war include taxonomic survey and identification work, and development of spectacular larvicides, adult sprays, aerosols, and repellents. Insecticidal research is carried on at the Orlando, Florida laboratory under contract with the office of Scientific Research and Development.

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9 The Activities of the National Research Council in the National Program for the Control of Malaria. By G. A. Carden, Jr.

The National Research Council was created in 1916 as the active agent of the National Academy of Sciences. On September 3, 1941, the Chairman of the Division of Medical Sciences called the first Conference on the Chemotherapy of Malaria. Later, in connection with the Office of Scientific Research and Development, a Board for the Coordination of Malaria Studies was set up with the following four panels: (1) Synthesis of antimalarials; (2) Biochemistry of antimalarials; (3) Pharmacology; (4) Clinical Testing. Results include data on about 6000 new drugs which have been tested on one or more parasites. Exchange of information through the office of the Survey of Antimalarial Drugs conserves manpower by avoidance of duplication of effort. It is hoped that out of this large coordinated effort an effective field prophylactic will be discovered.

10. A Proposed Program to Prevent the Spread of Malaria in the United States from Infected Individuals returning from abroad. By W. A. Sawyer.

The danger of introduction of exotic strains or vectors of malaria is emphasized and the following measures are proposed to minimize introduction of infection into communities: (1) All individuals with malaria among returning military personnel should be treated until clinically free of the disease before discharge; (2) Special anopheline surveys and control should be undertaken to minimize the spread of malaria from places in which returning personnel with malaria are concentrated; (3) The malaria patient on discharge from a military hospital should be notified in writing of the diagnosis and the species of *Plasmodium* involved and should be instructed to consult a physician and show him the communication on the occasion of any subsequent illness within a year; and any reports requested by civilian health authorities should be supplied; (4) Strong efforts should be made to educate physicians in the diagnoses and treatment of malaria and the fundamentals of prevention.

Measures to make the community non-infectible are listed as follows:

(1) Extensive malaria and anopheline surveys, particularly the latter, must be

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was followed by many others, and the stimulus of his work led finally to the establishment of some 26 mosquito abatement districts in California.

In the first World War he was a Major in the Sanitary Corps, U. S. Army, handling malaria control at the Port of Embarkation, Newport News. In 1943 he was called back into active service as Lieutenant Colonel, and until retired in October was assigned to teaching duties at the Army Medical Field Service School at Carlisle Barracks, Pennsylvania.

Professor Herms received the honorary degree of Doctor of Science from Baldwin-Wallace College in 1935. He is a Fellow of the American Association for the Advancement of Science and the California Academy of Sciences, and a member of the Entomological Society of America (President, 1940), the Association of Economic Entomologists (President, 1928), the American Society of Parasitology, the American Society of Tropical Medicine, etc. For many years he has been Consulting Entomologist to the California State Department of Public Health. He has been a Trustee of the Alameda County Mosquito Abatement District since its organization in 1930.

His principal hobby is the Boy Scout movement, and for many years he has been President and guiding spirit of the Berkeley-Contra Costa Area Council. In 1937 the City of Berkeley conferred upon him the Benjamin Ide Wheeler award, granted occasionally to its most distinguished and useful citizen. In 1935 the Republic of France awarded him the Croix de Chevalier du Merite.

made if malaria is not to take us by surprise; (2) Suppression of the breeding of dangerous anopheline species by the destruction of the larvae where their presence has been revealed by the surveys should be the main dependence for preventing the establishment and spread of the introduced infection; (3) As supplementary measures for protection against infected *Anopheles*, the effective screening of houses and the spray-killing of adult mosquitoes should be instituted and popularized through propaganda.

Finally, the need for a master plan for the eradication of malaria or its vectors or both, is stressed.

11. A Program for the Eradication of Malaria from Continental United States. By Assistant Surgeon General J. W. Mountin, U. S. Public Health Service.

As a climax to the Symposium, Dr. Mountin proposed a bold plan, originally advanced by Dr. L. L. Williams, Jr. of the Public Health Service, for the eradication of malaria from continental United States as an aggressive answer to the problem of returning malaria carriers. It is pointed out that malaria has reached the lowest ebb in history and the cyclic upswing which previous experience had taught us to expect in 1941-42 failed to materialize.

It is not proposed to eradicate malaria vectors, but only to reduce anopheline densities below the point where transmission is likely to occur or to institute protective measures against the bites of infected mosquitoes in the permanently endemic malarious areas of the country.

Forty-two counties in the United States from 1938 to 1942 had an annual average mortality rate of over 20 per 100,000 population. The average estimated expenditure per county per year is \$125,000 and it is felt that three years would be an adequate trial period. Such an undertaking would require the fullest cooperation of Federal, State and local agencies. Dr. Mountin asks that serious consideration be given this proposal, keeping in mind that such a favorable opportunity for the eradication of malaria may not occur again for a generation.

CALIFORNIA MOSQUITO CONTROL ASSOCIATION CONFERENCE

By HAROLD F. GRAY

The California Mosquito Control Association held a very successful two-day conference at the University of California, Berkeley, on February 28-29, 1944. There was a total attendance of about 180, of which more than one-half were officers in the Army and Navy.

The high lights of the meeting were the papers and discussions presented by Sanitary Engineer Nelson H. Rector, U. S. Public Health Service, Office of Malaria Control in War Areas, at Atlanta, Georgia, and by Senior Entomologist Harry H. Stage, U. S. Bureau of Entomology and Plant Quarantine, Washington, D. C. Mr. Rector presented a paper on "The use of ditch lining, underground drains and sanitary fills for malaria and mosquito control," illustrated by lantern slides.

Mr. Stage presented a paper on "Mosquito repellents and their uses," which was illustrated by projected kodacrome photographs; a brief discussion on new larvicidal materials, and a discussion on the proposed reorganization, on a national scale, of the Eastern Association of Mosquito Control Workers.

"The *Aedes aegypti* program of the U. S. Public Health Service," a paper prepared by Asst. San. Engr. Harvey F. Ludwig, U. S. Public Health Service, Atlanta, Georgia, was read by P. A. Sanitarian W. C. Frohne, U.S.P.H.S., San Francisco. This paper was illustrated by an excellent motion picture film prepared by the Service, and by slides.

A symposium on diseases transmitted by mosquitoes in the Pacific area (malaria, dengue, filariasis and encephalitis) provoked considerable discussion, as did the symposium on mosquito control problems in the South Pacific area.