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MALARIA ERADICATION ACTIVITIES IN ASIA

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The world-wide malaria eradication program was the subject of a paper presented at this meeting one year ago by Fritz and Johnson. It also has been the subject of a study by an ICA Expert Panel on Malaria which is to be released soon.

Although malaria is a world-wide public health problem, more persons in Asia are at risk from malaria than in all other areas of the world combined. In the world it is estimated that approximately 1.3 billion



Aborigines, i.e., descendants of the ancient tribes which inhabited Taiwan, China, in earliest days, give their aid in the control of malaria. These men carry drums of D.D.T. and spraying equipment in a roadless mountain area.

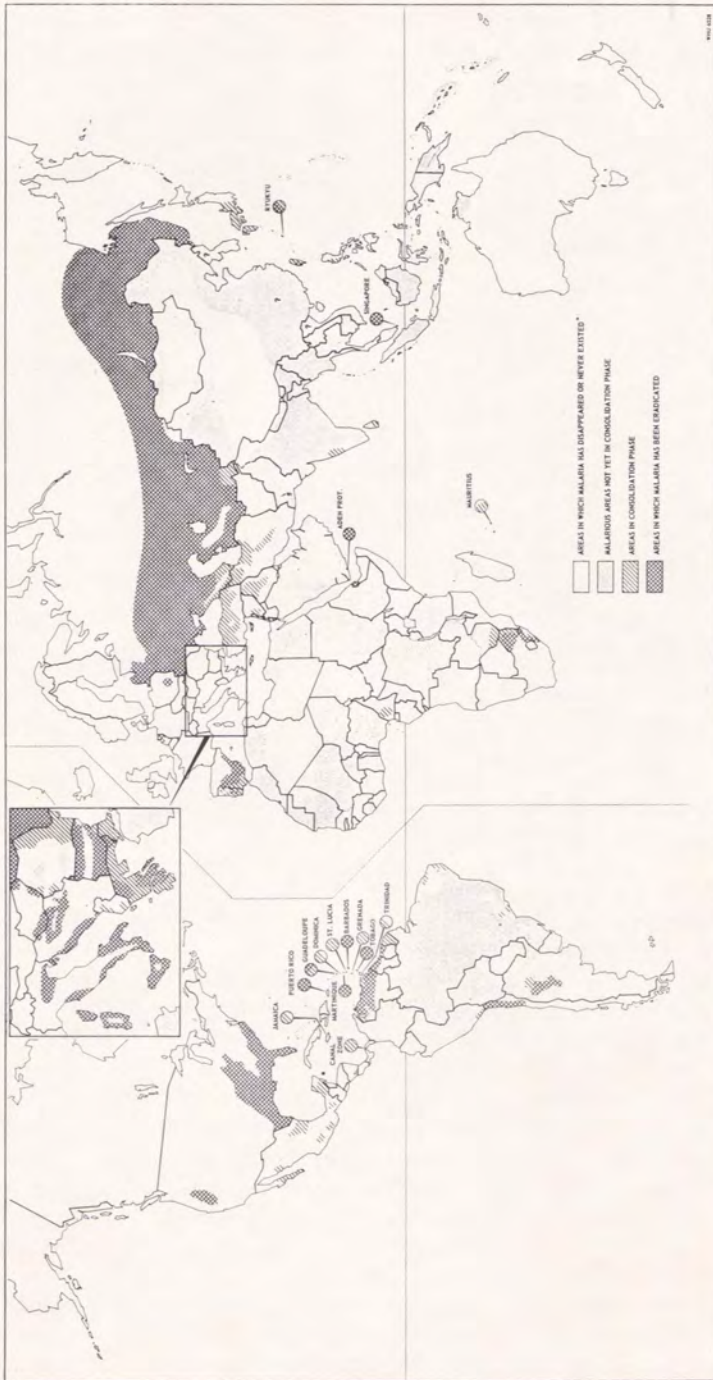
TABLE I.—*Malaria Eradication Status in Asian Countries Receiving ICA Assistance during 1960 - 1961.**

Region	Total Pop.	Mal. Areas	With Erad. Prog. or Pre-Erad. Survey	Not Protected
Eastern Mediterranean		(population in thousands)		
Iran	21,000	13,000	13,000	0
Jordan	1,506	787	787	0
S. E. Asia				
Ceylon	9,611	6,269	4,798	1,471
India	398,000	390,000	390,000	0
Indonesia	87,230	87,230	40,889	46,341
Nepal	9,100	4,171	1,862	2,309
Thailand	24,900	24,900	24,900	0
Western Pacific				
Cambodia	4,800	1,000	0	1,000
China (Taiwan)	10,447	10,447	10,447	0
Laos	2,000	2,000	0	2,000
Philippines	27,001	8,893	8,193	700
Vietnam	13,750	12,000	12,000	0
Grand Total	609,345	560,697	506,876	53,821

*Data obtained from WHO Document A 14/P&B/2 Part II, 15 Dec. 1960.

persons are living in areas where malaria is or was found at one time or another. (See Map 1, obtained from WHO). The figures in Table I obtained from the World Health Organization (Anon.) indicate the number of persons living in 12 countries of Asia receiving direct malaria eradication assistance from the United States Government at the present time.

The programs in Asia, as in most of the 24 countries of the world assisted by ICA (See Map 2), are built upon the use of residual insecticides sprayed upon anopheline resting surfaces inside of human and animal shelters. DDT is the insecticide of choice and usually is applied at the rate of one or two grams of DDT per square meter, in one to three applications per year. Dieldrin and BHC also are utilized in some programs but usually are reserved for use in the event that DDT resistance of vectors becomes a problem. The determination of optimum insecticide dosages and cycles of application is of major concern to malariologists at the present time. Because of the obvious economy in using the



Map 1. Status of malaria eradication from WHO, December, 1960.



Map 2. Countries with Government-ICA cooperative malaria eradication projects.

minimum effective dosage, studies are being undertaken in a number of countries to solve this problem.

The problems of malaria eradication are great, but dramatic progress is being made in many countries of Asia. China (Taiwan) is a beautiful example of dramatic results being attained as a result of malaria eradication measures. In 1952, from a total population of 8.1 million persons, 1.2 million cases of malaria were recorded, with some 12,000 deaths. For the year ending June 30, 1960, with a population of over 10 million, only 1122 positive cases were reported, with no deaths (ICA files). This was accomplished by the Nationalist Chinese malaria specialists with financial help from ICA and technical help from WHO. China (Taiwan) should attain eradication in the very near future. Ceylon also seems to be well advanced but still has some active troublesome foci, particularly in remote jungle areas. The attainment of eradication in many areas has permitted development of large irrigation projects and land settlement schemes. This has greatly helped alleviate economic problems of these sections of the island.

The Philippines is going ahead with its eradication program but is plagued with several problems, such as insufficient funds to complete the job and inaccessibility of certain areas where anti-malaria operations



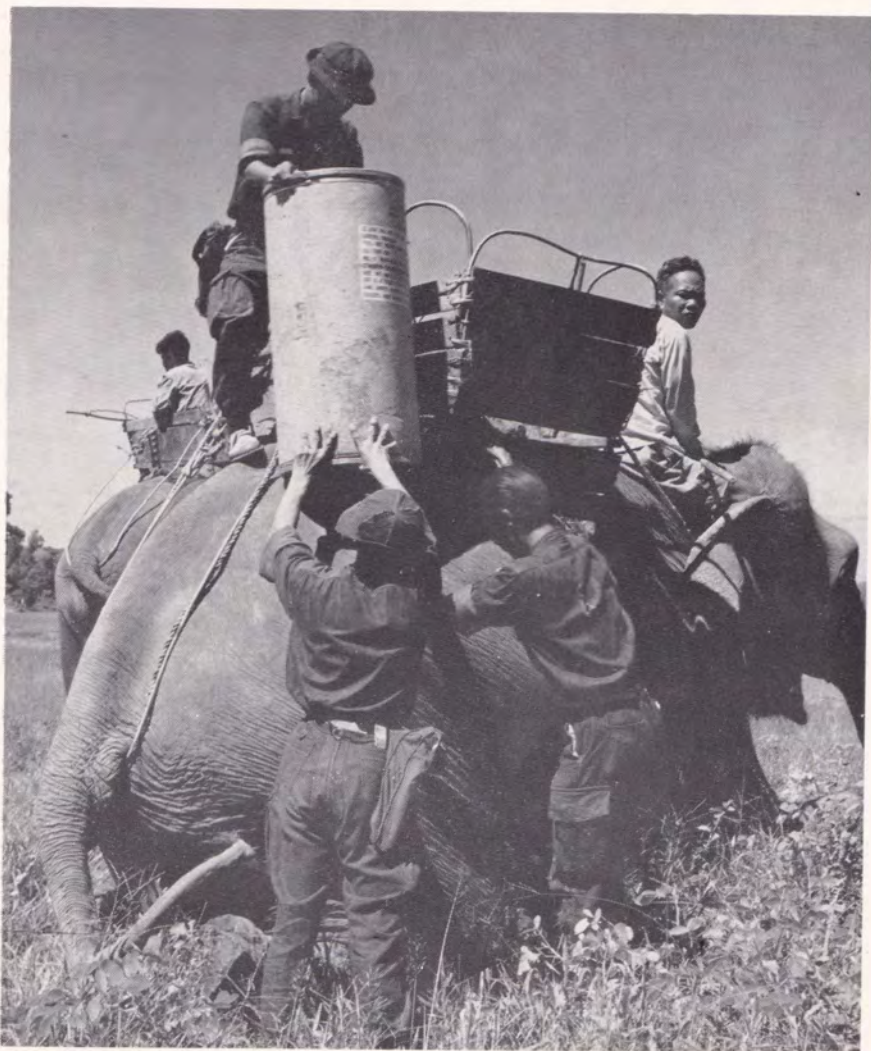
Spraying with DDT in Taiwan, China. This program is a joint activity of the Chinese government at both provincial and local levels and of ICA and WHO.

must be carried out. Indonesia has similar problems, but they are even more acute. The country is larger than the Philippines with a population of over 80,000,000 persons. ICA is concentrating a major effort upon Indonesia, with 20 ICA malaria specialists assigned there. The cost this year to ICA for support of the program is approximately \$7,500,000 utilized for insecticides, sprayers, vehicles, training, technicians, etc. It is anticipated that the major part of the program there can be completed within the next 10 years.

India is protecting approximately 400,000,000 persons through the tremendous effort put forth by this nation. ICA has provided most of the insecticide for India as well as many vehicles, drugs and other commodities. The spraying will gradually be withdrawn from India as cessation of malaria transmission is proven. This will require a well-organized surveillance program which is now getting underway.

Probably some of the more inaccessible areas of the world, geographically speaking, are found in Nepal. Yet, despite large mountains and other obstacles, the eradication effort has been started. Many areas of Nepal can be reached only after many days of foot travel. It is probable





Upper Left: Training spraymen in Vietnam, March, 1959.

Lower Left: Vietnam malaria program transport of DDT, sprayers and personnel.

Above: Loading DDT on elephants in Vietnam.

that it will take several years before spraying operations reach all areas of Nepal.

Iran and Jordan have a problem in common, insofar as malaria eradication is concerned. Both have nomadic tribes which still live as their forebears did in Biblical days. These people travel over the wide areas carrying malaria with them. It is difficult to effectively spray the tents of these nomads, and drug administration appears to be an inadequate method of eradication. Despite this serious problem, the program is going forward in both countries with major attention being given to the migration problem.

At present in the world picture, malaria eradication work is most active in Asia, insofar as sheer magnitude of the operation is concerned. Latin America for the most part should attain eradication before Asia. The progress is dramatic on both continents. Africa is barely scratching the surface, but as Latin America and Asia are able to see their way clear toward the goal, the Africa programs will gain momentum in order that some day malaria will be a thing of the past.

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