
THE STATUS OF MALARIA ERADICATION PROGRAMS IN THE AMERICAS

Prepared for the
**X Meeting of the Directing Council
of the Pan American Sanitary Organization**

and

**IX Meeting of the Regional Committee of
the World Health Organization for the Americas**

(Washington, D. C., September 1957)



PAN AMERICAN SANITARY BUREAU
Regional Office of the World Health Organization
Washington, D. C.

**THE STATUS OF MALARIA ERADICATION PROGRAMS
IN THE AMERICAS**

Prepared for the
X Meeting of the Directing Council
of the Pan American Sanitary Organization
and
IX Meeting of the Regional Committee of
the World Health Organization for the Americas

(Washington, D. C., September 1957)

Document CD10/21

August, 1957

PAN AMERICAN SANITARY BUREAU
Regional Office of the World Health Organization
1501 New Hampshire Avenue, N. W.
Washington 6, D. C., U.S.A.

Considering Resolution XXI of the IX Meeting of the Directing Council of the Pan American Sanitary Organization (Antigua Guatemala, 1956), and in order to carry out the wishes of the Council as expressed in paragraph 8 of that resolution, the following report on the status of malaria eradication programs has been prepared from forms completed by the individual countries of the Americas.

The following countries and areas which have no history of malaria or in which the disease has disappeared without specific eradication measures, and finally those in which malaria has been eradicated, do not appear in the summary tables:

Canada	Martinique
Chile	Montserrat
United States of America	Netherlands Antilles
Uruguay	Puerto Rico
...	St. Kitts-Nevis-Anguilla
Antigua	St. Vincent
Bahamas	Virgin Islands (Br.)
Barbados	Virgin Islands (U.S.A.)
Bermuda	

Reports were not received from Cuba and the Panama Canal Zone, in which autochthonous malaria is known to exist.

Wherever possible, comparable data available in the standard form have been presented in the summary tabulations. There are instances in which certain questions as asked did not apply exactly to situations existing in an individual country, or where variations in interpretation lead to deficiency in the comparability of the data. Such discrepancies, along with additional information given by some countries but for which no provision was made in the body of the table, are covered by footnotes. Although reports for a few areas were not completed in detail, such comparable information as was available from these reports has been utilized.

The report will be considered in three sections concerned with the various phases of malaria eradication. These three sections, namely, (A) Extent of malaria problem and present status of campaign for its eradication, (B) Organization of national malaria services, and (C) Antimalaria operations, have been used to conform with the format of the forms completed by the countries. Each section includes a group of tables containing information pertinent to the sectional heading.

A. Extent of Malaria Problem and Present Status of Campaign for its Eradication

The extent of the problem by area and population, as well as the progress in eradication, are given in Tables 1 and 2. For the purposes of these tables, the definitions of the terms "eradication" and "surveillance" are as shown in Chapter 4.5 of the VI Report of Expert Committee on Malaria, 1956, WHO/Mal/180. Thus to establish the claim of eradication there should be in relation to a specific defined area:

- "(a) proof that an adequate surveillance system has existed in the area for at least three years, in at least two of which no specific anopheline control measures have been carried out. Any claim based on a lesser period of post-operational surveillance would need to be supported by proof of a surveillance mechanism above the usual quality;
- (b) evidence that in this period of three years no indigenous cases, originating within that time, have been discovered;
- (c) the evidence of a register of malaria infections discovered during that time, it being established beyond reasonable doubt that each case was either:
 - (i) imported, as shown by the tracing of the case to its origin in an acknowledged malarious area, or

(ii) a relapse of a pre-existing infection, as shown by the history of the case, and the absence of any associated cases in the neighborhood of its origin, or

(iii) induced, as shown by its relation to a blood transfusion within an appropriate interval, or to another form of parenteral inoculation to which infection could be properly attributed;

(iv) directly secondary to a known imported case."

For the countries listed in these tables, it is seen that the population of areas under surveillance, and in which the disease has been eradicated, is at present limited, and such areas are reported only for Argentina, Brazil, Venezuela, British Guiana, Guadeloupe, and Surinam.

The total initial malarious area for the countries listed in Table 1 is 12,301,138 square kilometers, with a total population of 85,311,000 (Table 2). The total of areas in which malaria has been eradicated or which are under surveillance (Table 1) is 461,214 square kilometers, or 3.7 per cent of the total initially malarious, while the population of those areas is 5,342,000 (Table 2), or 6.3 per cent of the population in initially affected areas. Of the above 461,214 square kilometers, Venezuela contributed 88.4 per cent, or 407,697 square kilometers, made up of 361,049 square kilometers from which malaria has been eradicated and 46,648 square kilometers under surveillance; the population in the area with malaria eradicated is 2,879,000 and that in the area under surveillance is 441,000, making a total of 3,320,000, or 75.5 per cent of Venezuela's total population. It should be borne in mind that even after malaria has been eliminated in an area, a period of three years of surveillance must elapse before malaria can be considered eradicated.

Of the countries and areas listed earlier as being free of malaria, those that achieved this status as a result of active eradication measures are shown below, together with the area from which malaria was eradicated and the population living therein:

	<u>Area</u>	<u>Population</u>
Barbados	430 Km ²	228,000
Chile	55,287 "	112,000
Martinique	300 "	45,000
Puerto Rico	8,865 "	2,263,000
U.S.A.	2,257,809 "	42,366,000

The total area with malaria eradicated in these countries is 2,322,691 square kilometers, with a total population of 45,014,000. The area from which malaria is still to be eradicated in the countries listed in Table 1 is approximately 5 times as great and the population to be protected twice as large as for the above-listed countries in which the program has been completed.

From the standpoint of the progress made toward malaria eradication, it is important to consider the present situation from the data available in Table 3. This is summarized below:

	<u>Countries</u>	<u>Other Areas</u>	<u>Total</u>
With indigenous malaria	18	11	29
With a malaria eradication program	16	10	26
With total coverage on 31/VII/57	7	8	15
With program of total coverage on 31/XII/57	14*	9	23

* Peru will have a program of total coverage by areas on 31/XII/57.

Thus, at the present time half of the countries and other areas with indigenous malaria (15 out of 29) have a program of total coverage, and at the end of the year 23 out of 29 will have attained this status. Of the remaining 6, no information was received from Cuba and the Panama Canal Zone, while Brazil reports a program of control. Bolivia and Colombia have just begun a period of conversion and will commence total coverage in May and July 1958, respectively. The island of Dominica reports that there has never been a true malaria eradication program and that malaria control has been part of the wider Insect Control Program, which was aimed primarily at the eradication of Aedes aegypti.

Table 1

EXTENT OF MALARIAL PROBLEM BY AREA IN THE AMERICAS, 1956

Country	Original Malarious Areas in Km ²	Areas with Malaria Eradicated		Areas under Surveillance		Areas with Malaria not yet Eradicated	
		Three or more years without indigenous case		Less than three years without indigenous case		Regularly sprayed	Spraying not started
		Area in Km ²	Spraying continued	Area in Km ²	Spraying continued	Area in Km ²	Area in Km ²
Total	12, 301, 138	370, 030		91, 184		6, 884, 927	4, 954, 997
Argentina a)	120, 000	-	-	44, 200	No	75, 800	-
Bolivia	792, 013	-	-	-	-	-	792, 013
Brazil	7, 299, 969	611	Yes	-	-	5, 958, 814	1, 340, 544
Colombia	1, 026, 433	-	-	-	-	169, 805	856, 628
Costa Rica	31, 526	-	-	-	-	31, 526	-
Cuba	**	**	**	**	**	**	**
Dominican Republic	41, 010	-	-	-	-	41, 010	-
Ecuador	153, 440	-	-	-	-	-	153, 440
El Salvador	19, 310	-	-	-	-	19, 310	-
Guatemala	80, 380	-	-	-	-	80, 380	-
Haiti	21, 300	-	-	-	-	b) 5, 000	16, 300
Honduras	87, 390	-	-	-	-	-	87, 390
Mexico c)	1, 147, 564	-	-	-	-	-	1, 147, 564
Nicaragua	127, 199	-	-	-	-	69, 441	57, 758
Panama	68, 447	-	-	-	-	29, 857	38, 590
Paraguay	42, 286	-	-	-	-	-	42, 286
Peru	154, 191	-	-	-	-	62, 979	91, 212
Venezuela	600, 000	361, 049	Yes	46, 648	Yes	192, 303	-
<u>Other Areas</u>							
British Guiana	215, 000	5, 000	No	-	-	20, 000	190, 000
British Honduras	22, 963	-	-	-	-	22, 963	-
Dominica	790	-	-	-	-	-	790
French Guiana	90, 000	-	-	-	-	90, 000	-
Grenada	344	-	-	-	-	344	-
Guadeloupe	504	50	No	336	Yes	118	-
Jamaica	10, 050	-	-	-	-	6, 318	3, 732
Panama Canal Zone	**	**	**	**	**	**	**
St. Lucia	430	-	-	-	-	430	-
Surinam	143, 470	3, 320	d)	-	-	3, 400	136, 750
Trinidad and Tobago	5, 129	-	-	e)	-	5, 129	-

a) Situation as of April 1957.

b) Spraying started as training for spraying teams.

c) Figures subject to correction. Epidemiological study to be completed in August 1957.

d) Area of 1620 Km² still being sprayed. No spraying in remaining 1700 Km².

e) No indigenous cases reported in Tobago (area 300 Km²) since 1953. No surveillance work yet started.

- Nil.

** No report received.

Table 2

EXTENT OF MALARIAL PROBLEM BY POPULATION IN THE AMERICAS, 1956

Country	Population of the Original Malarious Areas	Areas with Malaria Eradicated		Areas under Surveillance		Areas with Malaria not yet Eradicated	
		Three or more years without indigenous case		Less than three years without indigenous case		Regularly sprayed	Spraying not started
		Population	Spraying continued	Population	Spraying continued	Population	Population
Total	85,311,000	4,117,000	-	1,225,000	-	35,214,000	44,755,000
Argentina	a) 1,430,000	-	-	660,000	No	770,000	-
Bolivia	1,087,000	-	-	-	-	-	1,087,000
Brazil	29,495,000	638,000	Yes	-	-	19,921,000	8,936,000
Colombia	9,796,000	-	-	-	-	3,348,000	6,448,000
Costa Rica	329,000	-	-	-	-	b) 329,000	-
Cuba	**	**	**	**	**	**	**
Dominican Republic	2,418,000	-	-	-	-	2,418,000	-
Ecuador	2,036,000	-	-	-	-	-	2,036,000
El Salvador	1,900,000	-	-	-	-	1,900,000	-
Guatemala	1,360,000	-	-	-	-	1,360,000	-
Haiti	4,096,000	-	-	-	-	c) 739,000	3,357,000
Honduras	1,282,000	-	-	-	-	-	1,282,000
Mexico	d) 16,995,000	-	-	-	-	-	e) 16,995,000
Nicaragua	1,034,000	-	-	-	-	565,000	469,000
Panama	910,000	-	-	-	-	268,000	642,000
Paraguay	700,000	-	-	-	-	-	700,000
Peru	2,878,000	-	-	-	-	595,000	2,283,000
Venezuela	4,386,000	2,879,000	Yes	441,000	Yes	1,066,000	-
<u>Other Areas</u>							
British Guiana	494,000	441,000	No	-	-	50,000	3,000
British Honduras	82,000	-	-	-	-	82,000	-
Dominica	62,000	-	-	-	-	-	62,000
French Guiana	28,000	-	-	-	-	28,000	-
Grenada	24,000	-	-	-	-	24,000	-
Guadeloupe	193,000	35,000	No	124,000	Yes	34,000	-
Jamaica	1,287,000	-	-	-	-	861,000	426,000
Panama Canal Zone	**	**	**	**	**	**	**
St. Lucia	57,000	-	-	-	-	57,000	-
Surinam	250,000	124,000	f)	-	-	97,000	29,000
Trinidad and Tobago	702,000	-	-	g)	-	702,000	-

a) Situation as of April 1957.

b) Estimated figure for 1957 is 424,000.

c) Spraying started as training for spraying teams.

d) Figures subject to correction. Epidemiological study to be completed in August 1957.

e) Inhabitants protected directly or indirectly.

f) Population in area where spraying continued, 120,000; where spraying discontinued, 4,000.

g) No indigenous cases reported in Tobago (population 34,000) since 1953. No surveillance work yet started.

- NIL.

** Report not received.

Table 3

STATUS OF MALARIA ERADICATION CAMPAIGN IN THE AMERICAS, 1957

Country	Status of Program			Eradication by Total Coverage of Malarious Areas			
	Eradication by total coverage of malarious areas	Eradication by areas	Control	Period of conversion		Period of total coverage	
				Date started or will start	Date completed or will be completed	Date started or will start	Date completed or will be completed
Argentina	Yes	-	-	April 1949	Aug. 1949	Sept. 1949	a)
Bolivia	Yes	-	-	July 1, 1957	June 30, 1958	July 1, 1958	June 30, 1962
Brazil	b) -	-	Yes	...	...	...	...
Colombia	Yes	-	-	May 1, 1957	April 30, 1958	May 1, 1958	Oct. 31, 1961
Costa Rica	Yes	-	-	Jan. 1, 1957	June 15, 1957	July 1, 1957	Dec. 31, 1960
Cuba	**	**	**	**	**	**	**
Dominican Republic	Yes	-	-	Mar. 1, 1957	Sept. 30, 1957	Oct. 1, 1957	Oct. 1961
Ecuador	Yes	-	-	Sept. 1, 1956	Feb. 20, 1957	Mar. 18, 1957	April 18, 1961
El Salvador	Yes	-	-	Feb. 1955	June 30, 1956	July 1, 1956	Dec. 31, 1959
Guatemala	Yes	-	-	Feb. 1, 1955	July 31, 1956	Aug. 1, 1956	Aug. 31, 1960
Haiti	Yes	-	-	Oct. 1956	Sept. 1957	Oct. 1957	Sept. 1961
Honduras	Yes	-	-	June 1956	Sept. 1957	Oct. 1957	Oct. 1961
Mexico	Yes	-	-	-	Dec. 1956	Jan. 1, 1957	Dec. 31, 1960
Nicaragua	Yes	-	-	July 1956	Oct. 1957	Oct. 1957	Sept. 1961
Panama	Yes	-	-	Jan. 1957	July 31, 1957	Sept. 1, 1957	Aug. 31, 1961
Paraguay	Yes	-	-	July 1, 1956	July 31, 1957	Aug. 1, 1957	Aug. 31, 1961
Peru	-	c) Yes	-	Jan. 1957	Nov. 1957	Nov. 1957	Jan. 1962
Venezuela	Yes	-	-	1945	1950	1950	1960
<u>Other Areas</u>							
British Guiana	d) Yes	-	d) Yes	-	-	Jan. 1945	e) 1949
British Honduras	Yes	-	-	Jan. 1956	Jan. 1957	Feb. 4, 1957	June 1961
Dominica	-	-	Yes	-	-	-	-
French Guiana	Yes	-	-	-	-	May 1948	f) 1953
Grenada	Yes	-	-	-	-	Feb. 12, 1957	Dec. 31, 1960
Guadeloupe	Yes	-	-	1955	1956	1957	1960
Jamaica	Yes	-	-	April 1, 1957	Aug. 31, 1957	Sept. 1, 1957	Aug. 31, 1961
Panama Canal Zone	**	**	**	**	**	**	**
St. Lucia	Yes	-	-	Jan. 1, 1956	June 30, 1956	July 1, 1956	Dec. 31, 1959
Surinam	Yes	-	-	1957	1957	Jan. 1, 1957	Dec. 31, 1960
Trinidad and Tobago	Yes	-	-	-	-	June 1957	Dec. 1960

a) To be determined.

b) Anticipate completing plan for eradication by December 1957.

c) Program under development for the Andean western slopes; pre-eradication survey on the eastern slopes and the Amazon basin.

d) Total coverage for coastlands but control program for sparsely populated interior.

e) Refers only to coastlands.

f) Reimportation in 1954, spraying recommenced.

- Nil.

... Data not available.

** Report not received.

In the light of data presented in Table 3, the majority of countries will have completed the period of total coverage by October 1961.

B. Organization of National Malaria Services

Included in this section is the information relating to the central organization of national malaria services (Table 4), the financial contributions of the countries to malaria eradication (Table 5), and the employment of professional and technical personnel (Table 6).

In Table 4 the official name of the service has been recorded and it is interesting to note the frequency of the title "National Service for the Eradication of Malaria," indicating a degree of uniformity among the countries and the prominence of the program within countries. An autonomous service is considered here as one in which the director of the malaria eradication service is responsible directly to a ministerial level. Primary rank is indicated in this table when the chief executive of the malaria eradication service is responsible to the Director of Health of the individual country. Where the line of authority involves more than these two levels, the service has been considered as having secondary rank. It must be realized that the interpretation of the above terms cannot be rigid but is given only as an indication of the standing of the national malaria eradication service in the individual countries.

Many of the countries combine other activities with that of malaria eradication, the commonest of these being eradication of Aedes aegypti in the campaign against yellow fever. The importance of restricting operations to malaria eradication wherever practicable is increasingly apparent, however, and already seven countries are thus committed.

It can also be seen from Table 4 that nearly all the countries supplied charts indicating lines of authority both centrally and in the field. Naturally there is some degree of variation in these line charts which it is not possible to reproduce in this report. All countries and other areas with the exception of Haiti, Paraguay, and Dominica indicated the existence of special legislation relating to the eradication of malaria. No information was received on this point from Guadeloupe. With respect to Paraguay, it should be pointed out that such special legislation is expected to be approved by the National Congress in the near future.

In order to show the financial contributions of the countries to malaria eradication and the progress in increasing appropriations to antimalaria work, data were provided by the countries for 1954, 1955, and 1956 in the national currency (Table 5). Since antimalaria work is often combined in a national malaria service with programs for control of other diseases, both the total appropriation for the national malaria service and that for antimalaria work exclusively are given. This latter amount has been converted into U.S. dollars. The rates of conversion are those of the World Health Organization which were effective for October 1954, October 1955, and 1 January 1957. These rates are not necessarily the countries' official rates. The total of the appropriations for antimalaria work in 1956 was US\$14,889,439. This figure does not include the appropriations from Guadeloupe, which did not indicate the amounts assigned specifically for antimalaria work. The total amounts assigned exclusively to antimalaria work for 1954 and 1955 are shown to be \$10,620,402 and \$11,806,110, respectively (Table 5), but these are not strictly comparable with each other nor with the figure for 1956, for in addition to Guadeloupe information was not available in 1954 and/or 1955 for Guatemala, Mexico, Panama, and Grenada. With these exceptions, the figures show an increase in the national budgets assigned to malaria eradication in most of the countries.

The total of professional and technical personnel employed in malaria eradication programs of the Americas in 1957 (Table 6) is reported as 850. This figure does not include the personnel shown in the column "Others" because there was considerable variation from country to country in the type of personnel listed therein. No figure is given for Brazil, where malaria personnel are reported to be engaged in other activities of the Department of Rural Endemics, in addition to malaria work. No information was received from Cuba, Dominica, and the Panama Canal Zone. Of the 850 persons indicated above, 267 are employed at headquarters and 583 in the field. Of those at headquarters, 24 are in training and 33 are part time. Of those working in the field, 5 are in training and 35 are part time. The status of the programs is responsible for the variation in distribution of these workers and must be taken into account when considering the ratio of those employed at headquarters to those in the field.

Table 4

THE ORGANIZATION OF NATIONAL MALARIA SERVICES IN THE AMERICAS, 1956

Country	Official Name of Service	Position of Service	Activities Other than Malaria Eradication	Organization Chart Available		Existence of Special Legislation
				Central	Field	
Argentina	Department of Malaria and Yellow Fever	Primary	Campaign for the eradication of <u>Aedes aegypti</u> .	Yes	Yes	Yes
Bolivia	Special Service for the Eradication of Malaria	Primary	None	No	No	Yes
Brazil	National Department for Rural Endemics - Campaign against Malaria	Secondary	Schistosomiasis, Plague, Yellow Fever, and Chagas' Disease, etc.	Yes	Yes	Yes
Colombia	National Service for the Eradication of Malaria	Autonomous	None	Yes	Yes	Yes
Costa Rica	Department of Campaign against Insect Vectors of Diseases	Primary	None	Yes	Yes	Yes
Cuba	**	**	**	**	**	**
Dominican Republic	Division of Malarology - Office of Secretary of Health and Social Welfare	Primary	Campaign for the eradication of <u>Aedes aegypti</u> and insect control	Yes	Yes	Yes
Ecuador	National Service for the Eradication of Malaria	Primary	None	Yes	Yes	Yes
El Salvador	Division of Anti-Malaria Campaign	Primary	Anti- <u>Aedes aegypti</u> campaign	Yes	Yes	Yes
Guatemala	National Service for the Eradication of Malaria	Primary	Eradication of <u>Aedes aegypti</u> and vaccination against Yellow Fever	Yes	Yes	Yes
Haiti	Campaign for the Eradication of Malaria and <u>Aedes aegypti</u>	Primary	Activities against <u>Aedes aegypti</u> and the common pest mosquitoes	Yes	Yes	No
Honduras	National Service for the Eradication of Malaria	Primary	Anti- <u>Aedes aegypti</u> campaign	Yes	Yes	Yes
Mexico	National Commission for the Eradication of Malaria	Autonomous	None	Yes	Yes	Yes
Nicaragua	National Service for the Eradication of Malaria	Autonomous	Anti- <u>Aedes aegypti</u> campaign	Yes	Yes	Yes
Panama	National Service for the Eradication of Malaria	Primary	Yellow Fever control	Yes	Yes	Yes
Paraguay	National Service for the Eradication of Malaria	Primary	Anti- <u>Aedes aegypti</u> campaign, rodent control	Yes	Yes	a) No
Peru	Department of the Campaign against Vectors and Rodents	Secondary	Control of vectors and rodents; Yellow Fever, Bubonic Plague, Chagas' Disease	No	No	Yes
Venezuela	Division of Malarology	Primary	<u>Aedes aegypti</u> eradication, control of triatomidae, flies, rodents, etc.	Yes	Yes	Yes
<u>Other Areas</u>						
British Guiana	Mosquito Control Service	Secondary	<u>Aedes aegypti</u> and bancroftial filariasis control	Yes	Yes	Yes
British Honduras	Health Department	Secondary	Yellow Fever and all other public health activities	Yes	Yes	Yes
Dominica	Malaria Activities under Sanitary Service	Secondary	Insect control in general	No	No	No
French Guiana	Service of Disinfection and Campaign against Malaria and Yellow Fever	Secondary	Disinfection and disinsecting in general	No	No	Yes
Grenada	Medical Department Grenada	Secondary	None	Yes	Yes	Yes
Guadeloupe	Departmental Disinsecting Service	Secondary	Disinfection and disinsecting in general	No	No	...
Jamaica	Insect Control Service	Primary	<u>Aedes aegypti</u> eradication service	Yes	Yes	Yes
Panama Canal Zone	**	**	**	**	**	**
St. Lucia	Malaria Eradication Campaign Saint Lucia	Secondary	None	Yes	Yes	Yes
Surinam	Anti-Malaria Service	Primary	Health education, distribution of mosquito bed nets	Yes	Yes	b) Yes
Trinidad and Tobago	Malaria Division Health Department Trinidad and Tobago	Primary	<u>Aedes aegypti</u> eradication. Investigation and control of insect vectors of disease	Yes	Yes	Yes

a) Soon to be approved by Congress.

b) National legislation on insect control.

** No report received.

... Data not available.

Table 5

APPROPRIATIONS TO THE NATIONAL MALARIA SERVICE IN THE AMERICAS IN 1954, 1955 AND 1956

Country	Monetary Unit	Appropriation in National Currency									In U. S. Currency* for Antimalaria Work Only		
		1954			1955			1956					
		Appropriation Malaria Service	Antimalaria Work Only		Appropriation Malaria Service	Antimalaria Work Only		Appropriation Malaria Service	Antimalaria Work Only				
			Amount	Per Cent		Amount	Per Cent		Amount	Per Cent			
Total.....										10,620,402	11,806,110	14,889,439	
Argentina	Peso	6,894,500	6,894,500	100.0	14,894,485	8,435,085	56.6	14,894,485	8,435,085	56.6	492,464	255,609	241,002
Bolivia	Boliviano	18,000,000	18,000,000	100.0	26,000,000	26,000,000	100.0	250,000,000	250,000,000	100.0	7,826	6,341	26,316
Brazil	Cruzeiro	...	233,892,910	...	...	250,302,970	...	...	250,302,970	...	2,923,661	3,735,865	3,735,865
Colombia	Peso	3,003,000	2,558,000	85.2	3,063,000	2,663,000	86.9	3,063,000	2,618,000	85.5	799,375	665,750	402,769
Costa Rica	Colón	674,800	674,800	100.0	734,601	734,601	100.0	1,200,000	1,200,000	100.0	101,474	110,466	180,451
Cuba	Peso	**	**	**	**	**	**	**	**	**	**	**	**
Dominican Republic	Peso	161,480	124,740	77.2	275,300	234,060	85.0	446,180	404,940	90.8	124,740	234,060	404,940
Ecuador	Sucre	3,800,000	600,000	15.8	3,800,000	600,000	15.8	6,071,750	2,621,750	43.2	34,286	34,286	141,716
El Salvador	Colón	700,000	656,999	93.9	1,200,000	1,200,000	100.0	1,200,000	1,200,000	100.0	262,800	480,000	480,000
Guatemala	Quetzal	...	...	...	365,924	...	...	570,000	480,000	84.2	...	...	480,000
Haiti	Gourde	1,100,000	1,100,000	100.0	1,381,300	1,381,300	100.0	2,067,760	1,792,410	86.7	220,000	276,260	358,482
Honduras	Lempira	220,000	200,000	90.9	250,000	230,000	92.0	350,000	330,000	94.3	100,000	115,000	165,000
Mexico	Peso	...	...	...	2,500,000	2,500,000	100.0	30,000,000	30,000,000	100.0	...	200,000	2,400,000
Nicaragua	Córdoba	1,484,300	1,281,500	86.3	1,337,000	1,259,600	94.2	1,241,900	1,201,100	96.7	194,167	179,943	171,586
Panamá	Balboa	283,480	...	...	347,140	...	...	447,460	343,310	76.7	...	...	343,310
Paraguay	Guaraní	...	360,000	...	...	800,000	...	...	1,702,866	...	5,806	10,667	15,915
Peru	Sol	3,521,761	2,247,967	63.8	...	3,773,412	...	...	2,829,312	...	117,695	197,561	148,132
Venezuela	Bolívar	16,737,764	15,054,480	89.9	17,463,352	14,980,068	85.8	17,174,732	14,691,448	85.5	4,493,875	4,471,662	4,385,507
<u>Other Areas</u>													
British Guiana	Dollar(BG)	4,967,814	178,418	3.6	4,634,786	168,393	3.6	4,241,618	155,204	3.6	103,731	97,903	90,235
British Honduras	Dollar(BH)	415,176	39,870	9.6	419,540	40,491	9.6	425,741	49,540	11.6	27,881	28,315	34,643
Dominica	Dollar(EM)	24,136	3,000	12.4	25,243	3,000	11.9	29,338	3,500	11.9	1,765	1,765	2,059
French Guiana	Franc	24,844,000	18,633,000	75.0	38,003,000	28,502,250	75.0	30,330,000	22,747,500	75.0	53,237	81,435	64,993
Grenada	Dollar(EM)	23,700	...	...	19,835	...	...	23,835	a) 23,756	...	...	...	13,974
Guadeloupe	Franc	30,450,000	...	...	31,583,000	...	...	30,985,000	...	...	...	...	...
Jamaica	Pound(St.)	82,769	76,769	92.8	119,155	93,401	78.4	106,180	86,180	81.2	214,953	261,523	241,304
Panama Canal Zone	Dollar(USA)	**	**	**	**	**	**	**	**	**	**	**	**
St. Lucia	Dollar(EM)	55,583	24,480	44.0	66,047	30,855	46.7	64,265	27,074	42.1	14,400	18,150	15,926
Surinam	Florin	115,000	115,000	100.0	115,000	115,000	100.0	115,000	115,000	100.0	60,976	60,976	60,976
Trinidad and Tobago	Dollar(EM)	521,244	450,993	86.5	739,500	480,374	65.0	742,500	483,374	65.1	265,290	282,573	284,338

* Rates of conversion of the World Health Organization, not necessarily the countries' official rates.

a) Antimalarial work only separated from Aedes aegypti eradication in 1957. Data taken from T. P. O.

... Data not available.

** No report received.

Table 6

PROFESSIONAL AND TECHNICAL PERSONNEL EMPLOYED IN MALARIA ERADICATION PROGRAMS
IN THE AMERICAS, 1957

Country	All Personnel*			Physicians		Engineers		Entomologists		Entomology Aides		Laboratory Chiefs		Microscopists		Others	
	Head- quar- ters & Field	Head- quar- ters	Field	Head- quar- ters	Field	Head- quar- ters	Field	Head- quar- ters	Field	Head- quar- ters	Field	Head- quar- ters	Field	Head- quar- ters	Field	Head- quar- ters	Field
Total.....	850	267	583	62	222	25	44	28	27	27	119	29	-	96	171	89	323
Argentina	20	6	14	2	5	2	-	-	-	-	1	1	-	1	8	1	5
Bolivia	26	9	17	1	a) 6	b) 1	b) 4	b) 1	-	b) 2	-	1	-	b) 3	b) 7	1	-
Brazil	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Colombia	63	21	42	c) 6	12	1	-	1	-	4	-	d) 1	-	8	30	9	e) 36
Costa Rica	13	13	-	d) 2	-	d, f) 2	-	f) 1	-	g) 3	-	1	-	4	-	-	-
Cuba	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Dominican Republic	6	6	-	1	-	1	-	1	-	-	-	d) 1	-	h) 2	-	i) 3	j) 2
Ecuador	29	11	18	2	d) 8	2	-	1	-	-	c) 3	1	-	5	7	k) 3	2
El Salvador	13	13	-	d, f) 3	-	1	-	1	-	3	-	1	-	4	-	-	-
Guatemala	29	12	17	d) 4	1	1	1	1	-	3	2	1	-	2	h) 13	k) 5	-
Haiti	9	8	1	f) 3	-	1	-	-	-	-	1	1	-	d) 3	-	30	90
Honduras	9	9	-	2	-	-	-	1	-	-	-	2	-	4	-	2	-
Mexico	391	33	358	12	143	5	31	7	27	-	103	6	-	3	54	21	m) 68
Nicaragua	15	7	8	2	f) 3	1	-	1	-	-	1	1	-	2	4	-	1
Panama	27	12	15	f) 1	-	1	-	2	-	2	-	1	-	5	15	n) 1	-
Paraguay	15	15	-	c) 2	-	1	-	2	-	-	-	-	-	o) 10	-	3	-
Peru	33	11	22	d) 2	p) 8	1	r) 6	d) 1	-	-	8	d) 1	-	s) 6	-	-	-
Venezuela	72	22	50	3	15	2	2	t) 3	-	1	-	-	-	13	33	u) 3	v) 40
Other Areas																	
British Guiana	5	5	-	d) 1	-	-	-	-	-	1	-	2	-	1	-	-	68
British Honduras	6	6	-	2	-	-	-	-	-	-	-	1	-	3	-	4	-
Dominica	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
French Guiana	12	5	7	1	p) 7	-	-	1	-	-	-	1	-	2	-	w) 1	-
Grenada	4	3	1	d) 1	d) 1	d) 1	-	-	-	-	-	d) 1	-	-	-	1	1
Guadeloupe	5	5	-	d) 2	-	-	-	-	-	-	-	1	-	2	-	-	-
Jamaica	26	13	13	3	x) 13	-	-	-	-	1	-	f) 2	-	y) 7	-	-	-
Panama Canal Zone	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
St. Lucia	3	3	-	d) 1	-	-	-	d) 1	-	-	-	-	-	1	-	1	2
Surinam	9	9	-	d) 2	-	d) 1	-	d) 1	-	d) 1	-	d) 1	-	z) 3	-	-	-
Trinidad and Tobago	10	10	-	1	-	-	-	1	-	6	-	-	-	2	-	-	8

- a) 2 in training, to be employed.
b) To be employed.
c) 2 in training.
d) 1 part-time.
e) Includes 22 inspectors (entomological classification).
f) 1 in training.
g) 3 in training.
h) 2 part-time.
i) Auxiliaries, 1 in training, 2 part-time.
j) Supervisors.

- k) Statistician and assistants.
l) Technical assistants.
m) Includes 41 auxiliary nurses.
n) Engineer's assistant.
o) 5 in training.
p) 7 part-time.
r) 4 part-time.
s) 6 part-time.
t) Includes 1 parasitologist.
u) 1 chemist, 2 senior malaria inspectors.
v) Senior malaria inspectors.

- w) Chemist.
x) 13 part-time.
y) 4 in training.
z) 3 part-time.

* Excluding "Others."
- Nil.
... Data not available.
** Report not received.

C. Antimalaria Operations

This section has been subdivided into three parts, namely, spraying operations, evaluation operations, and other operations.

1. Spraying Operations

This subsection of "Antimalaria Operations" includes the number of spraying squads (Table 7), the number of field personnel employed in spraying operations (Table 8), data concerning the number of houses sprayed (Table 9), and the transportation system for operating squads (Table 10) in the malaria eradication programs in the Americas, 1956 and 1957.

Many countries described the operative structure of the spraying work in their national malaria service. This structure varied from country to country and could not be presented in tabular form. Usually, countries have been divided into zones which were in turn divided into sectors and sections, and the composition of these was given along with the number of spraying squads and the lines of authority at present existing.

In Table 7 the total number of spraying squads working in malaria eradication programs is seen to be 1,192. This figure does not include information from Brazil, Cuba, Dominica, and the Panama Canal Zone. Brazil has indicated that it is still preparing the plan of operations and hopes to have it ready by the end of 1957.

Of the 1,192 squads working, 624 travel by truck, 39 by motor-boat or canoe, 82 on foot, and 247 are mounted squads. The remaining 200 squads are shown to have transportation of more than one type, the number in this group varying in individual countries depending on geographic and climatic factors and distribution of the population in malarious areas.

In Table 8 the total of all personnel "at present" employed in the field in spraying operations is seen to be 6,322 and the total of those "in training" is 194. Eight countries gave data relating to personnel employed "at present" but no information on the "total needed." For this reason, a comparison could not be made of the combined total personnel at present employed and those in training, with the "total needed" for all the countries as listed in Table 8. Brazil, Cuba, Dominica, and the Panama Canal Zone did not forward information on this subject.

The information available relating to the spraying of houses in areas in which malaria has not been eradicated is given in Table 9. Data were supplied by all countries and areas with the exception of Cuba, Dominica, and the Panama Canal Zone but were not sufficiently complete to allow compilation of totals and their comparison. Discrepancies existing between the number of houses "to be sprayed" and houses "actually sprayed" in those countries furnishing complete information were attributable to many causes. For example, in El Salvador and Guatemala the figure given for houses actually sprayed once or twice represents only a period of six months' spraying by total coverage; other countries such as Bolivia, Nicaragua, and Peru withdrew men from spraying operations and applied them to the completion of geographic surveys or reconnaissance. In several countries the lack of budgetary funds has been the reason principally blamed. For the year 1956 and the period January through June 1957, the deficit of houses remaining unsprayed in those areas where spraying operations were carried out, excluding operational and/or administrative factors, is expressed as a percentage, in Table 9. Such deficits as existed were attributed in the main to closed houses, new houses, and uninhabited houses, while in a few countries refusals and inclement weather were the factors responsible.

For countries which gave the pertinent information, the number of houses sprayed per man-day varied from 5.0 to 12.0 in 1956. For 1957 the information related at most to six months' spraying operations and in some countries to a much shorter period, so that the range from 2.3 to 11.2 houses per man-day must be interpreted with caution.

When comparing the total number of necessary sprayings in the plan of operations for individual countries in 1956 and 1957, factors such as a change in the type of insecticide used must be considered. In Nicaragua, for example, 356,468 sprayings were planned in 1956 using DDT while in 1957 dieldrin is to be sprayed in 184,644 houses. This reduction in the number of sprayings relates to the accepted period of effectiveness of the respective insecticides, which is six months for DDT and twelve months for dieldrin.

NUMBER OF SPRAYING SQUADS WORKING IN MALARIA ERADICATION PROGRAMS IN THE AMERICAS, 1957

Country	Total Number of Squads Working	By Truck	By Motorboat or Canoe	Mounted Squads	On Foot	With Transportation of More Than One Type
Total.....	1,192	624	39	247	82	200
Argentina	38	38	-	-	-	-
Bolivia	61	19	7	35	-	-
Brazil	...	...	...	...	...	...
Colombia	29	24	4	-	1	-
Costa Rica	16	...	...	...	...	16
Cuba	**	**	**	**	**	**
Dominican Republic	22	22	-	-	-	a)
Ecuador	38	11	2	4	-	21
El Salvador	58	b) 58	...	...	...	...
Guatemala	32	...	...	...	...	32
Haiti	74	...	...	...	...	74
Honduras . c)	27	...	3	...	...	24
Mexico	500	223	5	195	77	-
Nicaragua	19	16	3	-	-	d)
Panama	25	13	5	2	-	5
Paraguay	16	11	3	-	2	-
Peru	e) 92	92	...	...	...	...
Venezuela	64	47	6	11	-	-
<u>Other Areas</u>						
British Guiana	6	3	1	-	2	-
British Honduras	9	3	...	-	...	6
Dominica	...	...	...	...	...	...
French Guiana	6	...	...	-	...	6
Grenada	2	...	-	-	...	f) 2
Guadeloupe	5	5	-	-	-	-
Jamaica	29	g) 29	...	...	...	-
Panama Canal Zone	**	**	**	**	**	**
St. Lucia	4	4	-	-	-	-
Surinam	5	3	h)	-	-	h) 2
Trinidad and Tobago	15	3	...	...	...	12

- a) Use horses when houses are inaccessible by truck.
b) One "power wagon" for every 2 squads.
c) In period of conversion.
d) On foot or mounted, according to condition of terrain.
e) To begin work in November 1957.
f) By truck and on foot.
g) Includes 3 squads in 2 jeeps.
h) 2 squads work from truck, motorboat or canoe as required.

- Nil.

... Data not available.

** Report not received.

Table 8

FIELD PERSONNEL EMPLOYED IN SPRAYING OPERATIONS IN MALARIA ERADICATION PROGRAMS
IN THE AMERICAS, 1957

Country	All Personnel			Staff Personnel			Sector Chiefs			Squad Chiefs			Spraymen			Drivers			Others				
	At Present	Total Needed	In Training	At Present	Total Needed	In Training	At Present	Total Needed	In Training	At Present	Total Needed	In Training	At Present	Total Needed	In Training	At Present	Total Needed	In Training	At Present	Total Needed	In Training		
Total	6,322	*	194	93	*	16	227	*	28	1,021	*	8	4,169	*	134	259	*	-	553	*	8		
Argentina	202	219	a)	5	5	-	9	11	-	38	38	-	107	108	-	29	42	-	b)	14	15	-	
Bolivia	42	360	-	-	c)	12	-	-	-	11	61	-	31	182	-	-	32	-	-	d)	51	-	
Brazil	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Colombia	242	...	-	...	...	-	10	...	-	29	...	-	174	...	-	24	...	-	-	5	...	-
Costa Rica	81	132	e)	3	3	-	3	3	-	16	16	-	40	80	40	3	14	-	f)	16	16	-	
Cuba	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
Dominican Republic	163	...	-	-	-	-	...	...	-	22	...	-	112	...	-	27	...	-	-	2	...	-
Ecuador	226	227	-	g)	7	7	-	14	15	-	h)	38	38	-	167	167	-	-	-	-	-	-	
El Salvador	363	363	-	i)	2	2	-	11	11	-	58	58	-	243	243	-	45	45	-	j)	4	4	-
Guatemala	231	231	-	k)	3	3	-	8	8	-	32	32	-	160	160	-	23	23	-	l)	5	5	-
Haiti	244	349	111	m)	2	4	2	14	15	1	66	74	8	156	250	94	6	...	-	-	n)	6	6
Honduras	34	165	1	-	-	-	3	8	1	31	27	-	-	130	-	-	-	-	-	-	-	-	
Mexico	2,998	3,008	29	o)	43	53	10	104	104	19	500	500	-	2,047	2,047	-	5	5	-	p)	299	299	-
Nicaragua	141	141	-	i)	2	2	-	5	5	-	19	19	-	93	93	-	22	22	-	-	-	-	
Panama	156	156	3	q)	1	1	-	6	6	3	25	25	-	106	106	-	5	5	-	r)	13	13	-
Paraguay	60	121	8	s)	3	3	2	4	...	4	6	16	-	40	81	-	6	16	-	t)	1	5	2
Peru	182	575	2	u)	4	4	2	18	18	-	-	92	-	-	461	-	-	-	-	v)	160	-	-
Venezuela	505	...	-	e)	5	...	-	h)	6	...	-	64	...	-	382	...	-	41	...	-	w)	7	...
<u>Other Areas</u>																							
British Guiana	64	...	-	x)	3	...	-	-	-	9	...	-	50	...	-	-	-	-	-	2	...	-	
British Honduras	46	...	-	h)	1	...	-	...	...	9	...	-	36	...	-	-	-	-	-	-	-	-
Dominica	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
French Guiana	55	56	-	-	-	-	1	1	-	6	7	-	42	42	-	4	4	-	-	2	2	-	
Grenada	16	...	-	-	-	-	1	...	-	2	...	-	10	...	-	2	...	-	-	1	...	-	
Guadeloupe	45	...	-	-	-	-	-	-	-	5	...	-	35	...	-	5	...	-	-	-	-	-	
Jamaica	27	59	-	-	-	-	3	3	-	11	14	-	13	42	-	-	-	-	-	-	-	-	
Panama Canal Zone	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
St. Lucia	30	...	-	y)	2	...	-	1	...	-	4	...	-	20	...	-	2	...	-	1	...	-	
Surinam	53	108	-	x)	1	1	-	3	4	-	5	11	-	30	55	-	4	15	-	10	22	-	
Trinidad and Tobago	116	134	-	z)	6	7	-	3	4	-	15	17	-	75	85	-	6	8	-	11	13	-	

a) Chiefs of D. D. T. service.

b) Caretakers and laborers.

c) 4 spraying engineers; 8 regional spraying inspectors.

d) Stablehands and helpers.

e) Supervisors.

f) Foremen.

g) 4 zone chiefs; 3 section chiefs.

h) Inspectors.

i) Auxiliary chiefs of operations.

j) Weight measurers.

k) 1 auxiliary engineer; 2 spraying inspectors.

l) Boat attendants.

m) 1 controller general; 3 assistant zone chiefs.

n) 3 zone mechanics; 3 zone supply officers.

o) 22 engineers; 21 assistant engineers.

p) 104 administrative officers; 195 aides to mounted squads.

q) Assistant engineer.

r) 6 packers; 2 clerks; 3 mechanics;

s) 2 assistant mechanics.

t) Malariaologists (1 engineer; 2 physicians).

u) Storehouse manager.

v) Engineers.

w) Geographic surveyors.

x) 3 engineering aides; 4 laboratory assistants.

y) Chief inspectors.

z) 1 supervisor; 1 assistant supervisor.

* Incompleteness of data does not allow compilation of totals.

- Nil.

... Data not available.

** Report not received.

Table 9

DATA REGARDING RESIDUAL HOUSE SPRAYING IN AREAS IN WHICH MALARIA HAS NOT BEEN ERADICATED
IN THE AMERICAS, 1956 AND 1957

Country	Number of Houses in 1956				Percentage of Houses Remaining Unsprayed In Sprayed Areas #		Average Number of Houses Sprayed per Man-Day		Total Number of Necessary Sprayings in Plan of Operations	
	To be Sprayed Once	Actually Sprayed Once	To be Sprayed Twice	Actually Sprayed Twice	1956	1957*	1956	1957*	1956	1957
Argentina	31,193	28,806	64,180	60,321	0.8	...	11.0	11.2	159,553	124,706
Bolivia	...	...	23,194	9,265	...	...	11.0	...	46,388	...
Brazil a)	1,260,826	450,000	3,150,000	422,750	...	...	...	...	...	...
Colombia	...	398,615	398,615	...	2.0	...	9.2	9.3	819,074	837,912
Costa Rica	7,620	7,358	64,318	50,487	2.0	1.1	6.3	b) 3.5	71,938	74,815
Cuba	**	**	**	**	**	**	**	**	**	**
Dominican Republic	80,000	95,149	134,720	106,397	...	...	11.2	c) -	349,440	402,152
Ecuador	...	...	...	...	...	...	...	d) 8.2	...	...
El Salvador	282,477	281,634	259,935	172,916	0.3	e) 0.2	8.6	e) 9.1	281,634	f) 464,171
Guatemala	272,177	130,143	-	-	g) 915	g) 282	8.2	8.2	235,000	274,898
Haiti	771,996	...	771,996	...	7.8	h) 5.0	i) 12.0	j) 10.0	...	761,695
Honduras	...	...	...	...	...	...	...	...	...	255,067
Mexico	...	...	...	...	...	k) 6.0	8.7	9.0	452,904	5,497,875
Nicaragua	...	...	178,234	64,998	14.7	l) 0.0	10.5	l) 2.3	i) 356,468	j) 184,644
Panama	j) 69,689	j) 51,813	...	...	1.0	...	9.0	...	69,689	144,409
Paraguay	...	...	...	...	...	...	...	...	63,451	63,451
Peru	247,412	122,954	73,696	...	5.0	...	6.0	...	394,804	m) 103,808
Venezuela	...	...	136,314	135,769	0.4	...	8.5	...	901,687	...
<u>Other Areas</u>										
British Guiana	15,257	15,257	-	-	-	-	...	...	...	...
British Honduras	17,102	16,702	-	-	g) 1,030	g) 466	11.0	n) 8.9	17,602	17,480
Dominica	...	...	...	...	...	...	...	...	...	...
French Guiana	6,088	6,026	630	593	1.5	...	o) ...	o) ...	p) 1	p) 2
Grenada	6,000	-	-	-	-	e) 7.5	-	9.5	-	15,000
Guadeloupe	8,527	2,300	6,227	6,180	0.9	0.4	8.0	8.0	...	...
Jamaica	-	22,392	137,000	118,369	3.0	b) 3.0	8.0	8.0	374,000	347,709
Panama Canal Zone	**	**	**	**	**	**	**	**	**	**
St. Lucia	...	...	13,050	12,250	g) 132	g) 75	5.0	9.0	p) 2	p) 2
Surinam	7,500	-	25,000	r) 3,500	0.4	b) 0.4	10.0	10.0	57,500	57,500
Trinidad and Tobago	104,000	99,903	712	635	5.5	b) 2.0	8.3	s) ...	...	116,000

a) Excluding State of São Paulo.

b) January - May only.

c) No spraying. Personnel engaged in survey.

d) March - June only.

e) February - May only.

f) 172,740 with dieldrin; 291,431 with D. D. T.

g) Only number of unsprayed houses given.

h) May only.

i) Using D. D. T.

j) Using dieldrin.

k) January - April only.

l) January only.

m) Planned for November and December.

n) February - April only.

o) Considerable time spent in travel to spray few houses.

p) Figure given for number of spraying cycles.

r) In addition 18,500 sprayed once.

s) Not calculated due to change in insecticide.

Not due to operational or administrative factors.

* January through June.

... Data not available.

** Report not received.

- Nil.

The methods of transportation at present used in the malaria eradication programs in the Americas are shown in Table 10. Variations from country to country with respect to the frequency of a particular mode of transport are indicative of the differences in the natural terrain as well as the variations in the extent of the malaria problem. All the countries and areas listed, with the exception of Brazil, Cuba, Dominica, and the Panama Canal Zone, gave detailed information on available mechanized transport but some did not include vehicles which will be supplied by UNICEF. The total of 1,712 was made up of 69 station wagons and automobiles, 470 jeeps, 924 pick-ups, 97 trucks, 79 motorboats, and 73 outboard motors--figures which give an indication of the financial importance of this phase of the operations. Many of the countries will increase their motorized fleet after receiving new vehicles supplied by UNICEF. Bolivia, Colombia, Ecuador, Haiti, Mexico, and Venezuela are shown in Table 10 to have in service a total of 2,149 beasts of burden. Nine other countries plan to hire animals as the need arises to satisfy the demand of individual programs.

Many countries gave an outline of the facilities available for the maintenance and repair of the various means of transport. This information was not sufficiently comparable to present in tabular form. In the main, reference was made to the number of workshops existing both centrally and in the field and the number of mechanics and assistants employed therein. A few countries included a description of the administrative set-up for the control of these workshops and the supervision of transport in the field.

To conclude the subsection "Spraying Operations," each country was asked to indicate the important problems which jeopardized the success of the spraying operations. The answers to this question were varied but can best be summarized under four headings:

a) Budget.

In some cases the budget was simply insufficient, while in others its inflexibility and unrealistic apportionment throughout the fiscal year prevented achievement of the spraying operations planned.

b) Equipment and Material.

Reference was made to insufficient transport or to unserviceable and old vehicles which hampered the work in the field. Lack of sufficient insecticide or insecticide or poor quality was also a problem in some countries.

c) Personnel.

Here the problem was twofold. Some countries were unable to employ sufficient numbers of persons because of lack of funds. Others had difficulty in hiring personnel of the calibre considered necessary to do the work required.

d) Terrain, Climatic Conditions, and Population Density.

Some countries drew attention to the difficulties involved in carrying the program to remote areas. These included lack of essential facilities such as sufficient water, inaccessibility of the houses to be sprayed, and the sparse distribution of the population to be covered.

2. Evaluation Operations

This important subsection includes the field personnel employed in epidemiological evaluation operations (Table 11), the parasitological facilities available (Table 12), and the results of case-finding from various sources (Table 13). Those countries forwarding information with respect to evaluation operations outlined the operative structure existing in their particular program. No information was received concerning the personnel employed in Brazil, Cuba, Dominica, and the Panama Canal Zone. Surinam gave only the number needed and in training, indicating that at present this phase of the operation is not under way.

Table 10

TRANSPORTATION SYSTEM IN MALARIA ERADICATION PROGRAMS IN THE AMERICAS, 1957

Country	Vehicles in Service or Which will be in Service							Beasts of Burden
	All Mechanized Transport *	Station Wagons and Automobiles	Jeeps	Pick-ups	Trucks	Motor-boats	Out-Board Motors	
Total	1,712	69	470	924	97	79	73	2,149
Argentina	64	4	23	20	17	-	-	a)
Bolivia	64	1	22	30	2	3	6	150
Brazil	...	...	...	...	...	...	...	...
Colombia	47	2	9	24	2	5	5	5
Costa Rica	38	1	9	14	1	6	7	a)
Cuba	**	**	**	**	**	**	**	**
Dominican Republic	30	-	4	25	1	-	-	a)
Ecuador	108	2	33	30	9	20	14	50
El Salvador	47	4	14	24	1	1	3	-
Guatemala	45	6	6	27	-	3	3	a)
Haiti	65	4	25	34	2	-	-	100
Honduras	46	4	8	30	2	-	2	a)
Mexico	663	12	200	415	16	11	b) 9	1,700
Nicaragua	39	1	12	14	2	5	5	a)
Panama	59	6	15	24	2	6	6	a)
Paraguay	32	1	8	17	1	2	3	a)
Peru	159	1	24	124	6	2	2	-
Venezuela	104	8	36	45	4	11	-	144
<u>Other Areas</u>								
British Guiana	11	7	-	-	1	1	2	-
British Honduras	5	1	1	3	-	-	-	a)
Dominica	...	...	...	...	...	...	...	...
French Guiana	9	2	1	3	1	-	2	...
Grenada	3	-	-	-	3	-	-	-
Guadeloupe	5	-	2	1	2	-	-	...
Jamaica	43	2	15	12	14	-	-	-
Panama Canal Zone	**	**	**	**	**	**	**	**
St. Lucia	3	-	-	3	-	-	-	-
Surinam	c) 12	-	1	2	2	3	4	-
Trinidad and Tobago	11	-	2	3	6	-	-	-

a) Hired as necessary.

b) Includes 3 inboard motors.

c) 3 motorcycles are not included in this total.

* Includes motorboats and outboard motors.

- Nil.

... Data not available.

** Report not received.

Table 11 shows the total for all personnel employed "at present" in evaluation operations to be 1,059, while the total of those "in training" is 67. The sum of these, 1,126, cannot be compared with a "total needed," as there were seven countries which reported a total of 326 personnel at present employed but gave no information of the number needed. There is apparently considerable variation in the background and training of those in charge of the evaluation section, as indicated in the footnotes relating to Professional Personnel in Table 11. This variability also existed with respect to those employed as evaluators or supervisors and evaluation aides, and was such that it was not possible to give details in the table. By comparison of Tables 6 and 11, especially with respect to the columns labelled "Others," it would appear that some countries have not included personnel employed in epidemiological evaluation operations in the table showing professional and technical personnel employed in the whole program. In other countries, personnel appearing in Table 6 and specified as working in epidemiological evaluation operations do not appear in Table 11.

Table 12 shows a total of 664 centers available for parasitological diagnosis. Of these, 224 were administered by the national malaria eradication services of the countries concerned and 440 by other agencies collaborating with the service. A total of 899,063 slides were examined in 1956. From the number of the slides examined in the first few months of 1957 (Table 12), it would appear that in the majority of countries the total for 1957 will be considerably larger than that for 1956. Descriptions of the diagnostic facilities available to private physicians were included by some countries; these referred to the administrative policy by which the services of the diagnostic centers shown in Table 12 could be utilized.

Table 13 has been arranged to show the results of case-reporting in the same group of areas used in Tables 1 and 2, namely, those in which malaria has been eradicated, those under surveillance, those with malaria not yet eradicated but sprayed regularly, and those with malaria not eradicated and in which spraying has not yet started. The numbers of cases reported by physicians and other sources are shown together with the number of confirmed positive cases. The total of confirmed positive cases, which are shown broken down by parasite species, is the sum of all confirmed positive cases resulting from previously mentioned reports by physicians and other sources plus those resulting from "case-finding in medical services," "case-finding by home visiting," and "cases found in other surveys." The following discussion is restricted to consideration of the confirmed positive cases.

Brazil, Surinam, and Venezuela reported a total of 157 confirmed positive cases of malaria from areas in which the disease has been eradicated. As shown in Table 13, these were all non-indigenous cases and in fact 154 were "imported" cases. Venezuela reported 1 "introduced" and 2 "induced" cases.

In areas under surveillance a total of 375 confirmed cases were reported from Argentina, Surinam, and Venezuela. These were composed of 1 "sporadic" case from Argentina, 42 "imported" cases from Venezuela, and 332 "indigenous" cases in Surinam. Eighteen countries reported a total of 33,513 positive cases in areas from which malaria has not yet been eradicated but which are regularly sprayed. Of this total, 23,524 (70.2 per cent) were the result of "case-finding by home visiting," 4,511 (13.5 per cent) were reported by physicians, and the remaining 5,478 (16.3 per cent) were from other sources, including government medical services and malaria morbidity surveys.

In those areas where malaria is present but spraying has not yet started, six countries reported a total of 6,805 positive cases. Of this total, 5,001 (73.5 per cent) were found as a result of "home visiting," 1,096 (16.1 per cent) were reported by government medical services, and 420 (6.2 per cent) were reported by private physicians. The remaining 288 cases (4.2 per cent) came from surveys and other sources. The setting up of an efficient case-reporting system is of vital importance if malaria eradication is to be achieved and will involve the maximum utilization of all sources from which cases can be reported, including an effective home-visiting program.

The breakdown of positive infections by parasite species is shown in Table 13, in the same four groups of areas mentioned above. Three countries included the species involved in mixed infections and two countries reported 112 positive cases not specifically identified. The inclusion of these data accounts for the fact that the totals of specific infections and mixed cases do not add up to the total of positive cases.

Table 11

FIELD PERSONNEL EMPLOYED IN EPIDEMIOLOGICAL EVALUATION OPERATIONS IN MALARIA
ERADICATION PROGRAMS IN THE AMERICAS, 1957

Country	All Personnel			Professional Personnel			Evaluators or Supervisors			Evaluation Aides			Others		
	At Present	Total Needed	In Training	At Present	Total Needed	In Training	At Present	Total Needed	In Training	At Present	Total Needed	In Training	At Present	Total Needed	In Training
Total	1,059	*	67	87	*	7	274	*	29	554	*	30	144	*	1
Argentina	48	81	-	a) 2	5	-	3	10	-	15	38	-	28	28	-
Bolivia	8	31	2	b) 4	9	2	4	22	-	-	-	-	-	-	-
Brazil	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Colombia	124	...	-	-	-	-	19	...	-	105	...	-	-	-	-
Costa Rica	31	31	-	-	-	-	4	4	-	27	27	-	-	-	-
Cuba	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Dominican Republic	11	11	-	-	-	-	11	11	-	-	-	-	-	-	-
Ecuador	24	24	24	-	-	-	24	24	24	-	-	-	-	-	-
El Salvador	57	64	-	-	-	-	4	4	-	53	60	-	-	-	-
Guatemala	26	36	-	c) 1	1	-	1	1	-	20	30	-	4	4	-
Haiti	31	61	31	-	-	-	1	1	1	30	60	30	-	-	-
Honduras	19	20	-	-	-	-	-	-	-	19	20	-	-	-	-
Mexico	368	406	-	d) 49	49	-	135	156	-	103	103	-	e) 81	98	-
Nicaragua	26	26	-	c) 3	3	-	-	-	-	23	23	-	-	-	-
Panama	24	21	-	f) 1	1	-	2	2	-	18	18	-	g) 3	-	-
Paraguay	7	10	5	b) 2	2	2	3	6	3	-	-	-	h) 2	2	-
Peru	21	40	3	i) 4	4	2	8	18	1	9	18	-	-	-	-
Venezuela	81	...	-	17	...	-	5	...	-	59	...	-	-	-	-
<u>Other Areas</u>															
British Guiana	61	...	-	...	...	...	9	...	-	52	...	-	-	-	-
British Honduras	30	...	-	j) 2	...	-	8	...	-	20	...	-	-	-	-
Dominica	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
French Guiana	1	1	-	-	-	-	1	1	-	-	-	-	-	-	-
Grenada	23	...	-	-	-	-	2	...	-	-	-	-	k) 21	...	-
Guadeloupe	2	...	-	-	-	-	1	...	-	1	...	-	-	-	-
Jamaica	25	26	-	l) 1	...	-	24	26	-	-	-	-	-	-	-
Panama Canal Zone	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
St. Lucia	5	...	-	l) 1	...	-	3	...	-	-	-	-	1	...	-
Surinam	...	8	1	...	b) 1	1	...	4	-	-	-	-	...	3	-
Trinidad and Tobago	6	98	1	-	-	-	2	70	-	-	-	-	m) 4	28	1

a) Chiefs of evaluation operations.

b) Physicians.

c) Epidemiologists.

d) Physician malariologists.

e) Microscopists and entomologists.

f) Assistant chief, evaluation operations.

g) 1 entomologist; 2 assistants.

h) Entomologists.

i) Zone chiefs.

j) General supervisors.

k) District nurses.

l) Supervisor for evaluation.

m) Microscopists and dispensers.

* Total not shown because data incomplete.

- Nil.

... Data not available.

** Report not received.

Table 12

PARASITOLOGICAL FACILITIES AVAILABLE IN MALARIA ERADICATION PROGRAMS IN THE AMERICAS,
1956 AND 1957

Country	All Centers	Number Administered by the National Malaria Eradication Service	Number Administered by other Agencies which Collaborate	Number of Slides Examined	
				1956	1957 *
Total	664	224	440	899,063	#
Argentina	58	11	47	27,072	March 5,307
Bolivia	1	1	-	2,062	June 23,285
Brazil	a) 61	61	-	335,592	May 105,977
Colombia	11	11	-	164,086	May 140,795
Costa Rica	b) 53	1	b) 52	23,771	May 6,635
Cuba	**	**	**	**	**
Dominican Republic	16	1	15	6,086	May 1,905
Ecuador	16	9	7	27,592	May 7,943
El Salvador	41	1	40	c) 23,093	June 2,523
Guatemala	87	15	72	9,858	March 7,630
Haiti	17	4	13	6,252	d) May 12,361
Honduras	e) 12	3	9	1,818	...
Mexico	134	70	64	62,962	May 44,191
Nicaragua	61	5	f) 56	11,372	May 8,571
Panama	15	2	13	...	...
Paraguay	6	4	2	1,499	June 368
Peru	29	1	28	50,674	June 10,190
Venezuela	g) 18	18	g) 18	88,081	...
<u>Other Areas</u>					
British Guiana	3	1	2	558	June 24
British Honduras	6	-	6	647	May 405
Dominica	1	-	1	57	May 74
French Guiana	1	1	-	785	March 413
Grenada	1	-	1	1,170	April 1,120
Guadeloupe	2	1	1	4,936	June 1,724
Jamaica	3	1	2	14,016	... 5,157
Panama Canal Zone	**	**	**	**	**
St. Lucia	1	-	1	4,341	May 2,246
Surinam	8	1	7	20,000	...
Trinidad and Tobago	2	1	1	10,683	May 3,020

a) Under the National Department of Rural Endemics.

b) 1 S. N. E. M. laboratory and 52 centers cooperating as required by Malaria Eradication Law No. 2115, Art. 16.

c) Slides examined by the laboratories of antimalaria campaign only.

d) 7,520 by S. E. M.; 4,841 by S. C. I. S. P.

e) Not yet organized.

f) 32 official and 24 private.

g) All government and private clinics cooperate in parasitological diagnosis.

* January through stated month.

Total not shown because data incomplete.

- Nil.

** Report not received.

... Data not available.

Table 13

CASE FINDING FROM VARIED SOURCES IN MALARIA ERADICATION PROGRAMS IN THE AMERICAS, 1956

Country	Cases Reported by Physicians		Cases Reported by Others		Case Finding in Medical Services		Case Finding by Home Visiting			Cases Found in other Surveys		Form of Infection					Nature of Cases	
	No. Reported	No. Positive	No. Reported	No. Positive	No. Fever Cases Examined	No. Positive	No. of Visits	No. Fever Cases Examined	No. Positive	No. Examined	No. Positive	Total	P. falciparum	P. vivax	P. malariae	Mixed	Non-indigenous	Indigenous
In Areas with Malaria Eradicated																		
Total	*	137	-	-	-	-	1,001,810	42,968	20	810	-	157	*	*	*	*	157	-
Brazil	-	-	-	-	-	-	840,117	29,090	9	-	-	9	3	6	-	-	9	-
Venezuela	182	22	-	-	-	-	161,693	13,879	11	810	-	33	1	31	1	-	33	-
Surinam	...	115	-	-	-	-	-	-	-	-	-	115	...	...	...	...	115	-
In Areas Under Surveillance																		
Total	*	363	-	-	-	-	46,861	6,674	12	742	-	375	*	*	*	*	43	332
Argentina	35	1	-	-	-	-	-	-	-	-	-	1	-	1	-	-	1	-
Venezuela	118	30	-	-	-	-	46,861	6,674	12	742	-	42	1	41	-	-	42	-
Surinam	...	332	-	-	-	-	-	-	-	-	-	332	...	...	...	...	-	332
In Areas with Malaria not yet Eradicated but Sprayed Regularly																		
Total	109,542	4,511	13,721	2,865	19,383	1,166	3,865,189	473,109	23,524	204,873	1,447	33,513	*	*	*	*	-	-
Argentina	4,680	234	1,356	35	...	27	14,193	3,340	143	17,696	267	706	35	688	3	-	-	-
Brazil	-	-	-	-	-	-	3,238,105	305,231	17,964	1,721	126	18,090	3,934	13,679	9	468	-	-
Colombia	69,714	...	-	-	602	...	58,410	38,796	263	125,290	691	a) 954	238	692	63	39	-	-
Costa Rica	441	95	3	3	-	-	23,327	23,327	1,107	-	-	b) 1,205	83	1,051	4	17	-	-
Dominican Republic	6,086	904	-	-	-	-	-	-	-	-	-	904	324	569	10	1	-	-
El Salvador	7,813	2,461	726	269	54	-	271,405	26,079	3,072	-	-	5,802	2,239	3,449	7	107	-	
Guatemala	-	-	9,858	2,397	-	-	-	-	-	-	-	2,397	694	1,691	-	12	-	-
Haiti	-	-	-	-	6,252	563	-	-	-	-	-	563	462	74	27	-	-	-
Nicaragua	50	5	20	1	11,302	452	-	-	-	-	-	d) 458	65	321	10	-	-	
Panama	3,393	...	-	-	-	-	-	27,195	239	-	-	239	85	133	17	4	-	-
Peru	8,241	...	-	-	-	-	-	-	-	50,674	308	308	61	219	28	-	-	-
Venezuela	8,381	475	-	-	-	-	256,841	46,233	709	1,050	7	e) 1,191	62	1,128	-	1	-	-
British Guiana	28	13	4	-	526	23	-	-	-	-	-	36	31	-	5	-	-	-
British Honduras	-	-	584	-	647	72	-	-	-	-	-	72	49	23	-	-	-	-
French Guiana	-	-	-	-	...	29	-	-	-	-	-	f) 29	28	1	-	-	-	-
Grenada	-	-	1,170	160	-	-	-	-	-	-	-	160	159	-	1	-	-	-
St. Lucia	441	50	-	-	-	-	2,750	2,750	12	377	5	67	59	-	8	-	-	-
Trinidad and Tobago	274	274	-	-	-	-	158	158	15	7,792	43	332	265	64	3	-	-	-
In Areas with Malaria not yet Eradicated and Spraying not Started																		
Total	5,459	420	739	190	5,368	1,096	96,895	109,319	5,001	59,824	98	6,805	*	*	*	*	-	-
Bolivia	-	-	-	-	-	-	...	2,062	1,343	-	-	a) 1,343	273	1,011	225	166	-	-
Colombia	-	-	-	-	-	-	80,729	42,968	688	-	-	688	262	411	15	-	-	-
Honduras	-	-	-	-	-	-	16,166	1,818	74	-	-	74	23	51	-	-	-	-
Mexico	1,747	420	739	190	5,139	1,035	...	55,337	2,546	51,772	42	4,233	668	3,486	32	47	-	-
Paraguay	-	-	-	-	229	61	-	-	-	1,270	9	70	...	...	...	...	-	-
Jamaica	3,712	...	-	-	-	-	...	7,134	350	6,782	47	397	358	9	30	-	-	-

a) Mixed cases also included by species.

b) 50 not specifically identified.

c) Official and private sources.

d) 62 not specifically identified.

e) 1,149 indigenous and 42 imported cases.

f) 15 introduced; 14 indigenous.

* Total not shown because data incomplete.

- Nil.

... Data not available.

3. Other Operations

This subsection includes information on the drugs used for treatment and prophylaxis in 1956 (Table 14) and entomological operations relating to the malaria eradication programs (Table 15). Some countries also returned information with respect to existing educational operations relating to the instruction and cooperation of medical and paramedical groups and plans for the collaboration of the public in general.

With respect to the use of drugs, no comparable data are available with regard to dosage for treatment or prophylaxis, but the drugs used in the respective countries, the manner in which they were used, and the number of persons to whom drugs were administered are shown in Table 14. The table has been prepared to show synonyms where they occur and the basic type of the drug involved. The use of drugs in the campaign throughout the Americas is a vital and necessary adjunct to the spraying operations and this will become more evident as transmission of the disease is reduced as a result of spraying. It is of great importance, therefore, that an effective system involving distribution of drugs best suited for prophylaxis and/or therapeutics be planned at an early stage.

The number and location of organized and functioning laboratories available for entomological operations in malaria eradication programs in the Americas in 1956 are shown in Table 15. There were 69 laboratories in which a total of 145 persons were employed to carry out the entomological studies. Of this personnel, 82 were employed in central laboratories and 63 in zone laboratories.

The following results of tests to determine the susceptibility of local vectors are given as an adjunct to the information appearing in Table 15, as this information was too detailed to be included in the body of that table. Brazil reported that Anopheles darlingi in a certain area of the Central Plateau and probably in other areas showed changes in behavior (ecological resistance). A similar occurrence seems to have been observed with A. cruzii in certain areas of Santa Catarina. Mexico reported tests done on A. pseudopunctipennis in 32 localities as being essentially the same as the basic susceptibility tests, which showed a mortality of 69.0 - 80.6 per cent when observed for 24 hours after a 5-minute exposure to a 0.25 per cent solution of Technical DDT. A. albimanus was tested in 24 localities with essentially the same results as those found in the basic susceptibility tests, which indicated 38.6 - 50.9 per cent mortality when observed for 24 hours after a 10-minute exposure to a 0.25 per cent solution of Technical DDT. And finally, A. aztecus was tested in 5 localities and again the susceptibility was essentially the same as that for the basic susceptibility tests, with a 75.7 - 85.0 per cent mortality when observed for 24 hours after a 20-minute exposure to a 0.25 per cent Technical DDT solution.

Panama reported that A. albimanus was 100 per cent susceptible to DDT using a Busvine-Nash technique. Venezuela, also using the Busvine-Nash technique, reported for A. albimanus 96.6 per cent mortality with a 1 per cent DDT solution; 90 per cent mortality with a solution of 0.66 per cent, and 67.6 per cent mortality with 0.33 per cent solution. With A. aquasalis the mortality was 89.5 per cent with a 1 per cent DDT solution; 85.6 per cent with a 0.66 per cent solution; and 50 per cent with a 0.33 per cent solution. A. albitarsis had a mortality of 93.5 per cent with a 1 per cent solution of DDT; 70.3 per cent with a 0.66 per cent solution; and 45.5 per cent with a 0.33 per cent solution.

DRUG USAGE IN MALARIA ERADICATION PROGRAMS IN THE AMERICAS, 1956

Name of Drug and Basic Type	Countries Using Drug	Use of Drug	Number of Persons
4 - AMINOQUINOLINES			
Camoquin	Bolivia	Therapeutic	3,100
	Brazil	"	...
	Colombia	"	...
	Costa Rica	(Therapeutic	23,330
		(Prophylactic	1,000
	Ecuador	Therapeutic	8,402
	El Salvador	"	23,324
	British Honduras	Therapeutic & Prophylactic	...
	St. Lucia	Therapeutic	...
	Surinam	Therapeutic & Prophylactic	...
Chloroquine	Brazil	Therapeutic & Prophylactic	...
	Mexico	Therapeutic	31,481
	Venezuela	Therapeutic & Prophylactic	a) 1,066,000
Aralen (Synonym of Chloroquine)	Argentina	Therapeutic	431
	Brazil	Therapeutic & Prophylactic	...
	Colombia	Therapeutic	...
	Ecuador	"	100
	El Salvador	"	1,020
	Panama	Prophylactic	2,667
Nivaquine (Synonym of Chloroquine)	Brazil	Therapeutic & Prophylactic	...
	Panama	Prophylactic	1,700
	St. Lucia	Therapeutic & Prophylactic	...
Resochin (Synonym of Chloroquine)	Brazil	Therapeutic & Prophylactic	...
	Panama	Prophylactic	160
8 - AMINOQUINOLINES			
Primaquine	El Salvador	Prophylactic	692
(Neo) Quipenyl (Synonym of Primaquine)	Argentina	Therapeutic	181
	Costa Rica	"	700
Rodopréquine	French Guiana	(Prophylactic	173
		(Therapeutic	10
DIAMINOPYRIMIDINES			
Pyrimethamine	Mexico	Prophylactic	1,900
Daraprim (Synonym of Pyrimethamine)	Panama	Prophylactic	266
	St. Lucia	"	...
	Surinam	"	...
	Trinidad	"	200
BIGUANIDES			
Paludrine	Ecuador	Prophylactic	5,587
	St. Lucia	Therapeutic & Prophylactic	...
	Surinam	"	...
Chloroquanide (Synonym of Paludrine)	Mexico	Therapeutic	32,560
9 - AMINOACRIDINES			
Mepacrine	Trinidad	Therapeutic	200
Atebrin (Synonym of Mepacrine)	Nicaragua	Therapeutic & Prophylactic	...
	St. Lucia	Therapeutic	...
Metoquina (Synonym of Mepacrine)	Argentina	Therapeutic	178
	Ecuador	"	...
CINCHONA ALKALOIDS			
Quinine	Argentina	Therapeutic	40
	British Honduras	"	...
MIXED DRUGS			
4 - and 8 - Aminoquinolines			
Camoprin	El Salvador	Prophylactic	1,500
	Peru	Therapeutic & Prophylactic	...
Quinine & 8 - Aminoquinolines	Ecuador	Therapeutic	261
Quinipler			

a) Population in the distribution zones, that is, in areas where malaria has not yet been eradicated.

... Data not available.

Table 15

ENTOMOLOGICAL OPERATIONS IN MALARIA ERADICATION PROGRAMS IN THE AMERICAS, 1956

Country	Organized and Functioning Laboratories				Determination of the Base Line Susceptibility of Local Vectors						
	No.	Location	No. of Personnel		Species	Result	Species	Result	Species	Result	Type of Test Used in the Laboratory
			Central Lab.	Zone Labs							
Total.....	69		82	63							
Argentina	1	Resistencia	-	1	...	...	...	...	...	...	...
Bolivia	1	Cochabamba	1	-	...	...	...	...	...	...	...
Brazil	17	a)	b)20	...	cruzi	c)	darlingi	c)	...	...	Busvine-Nash
Colombia	10	d)	6	13	e)	...	...	...	...	...	W. H. O.
Costa Rica	1	San Jose	2	-	f)	...	...	...	...	...	...
Cuba	**	**	**	**	**	**	**	**	**	**	**
Dominican Republic	1	Cdad. Trujillo	1	-	f)	...	...	...	...	...	...
Ecuador	4	g)	1	4	...	...	...	...	...	...	...
El Salvador	1	San Salvador	4	-	albimanus	Susceptible	pseudo-punctipennis	Susceptible	...	...	Busvine-Nash
Guatemala	1	Guatemala	4	2	...	...	...	...	...	...	...
Haiti	-	-	-	-	albimanus	f)	grabhami	f)	...	...	W. H. O.
Honduras	1	Tegucigalpa	2	-	f)	...	...	...	...	...	...
Mexico	16	h)	7	28	albimanus	Susceptible	pseudo-punctipennis	Susceptible	aztecus	Susceptible	Fay
Nicaragua	1	Managua	2	1	...	...	...	...	...	...	...
Panama	2	Panama and Aguadulce	3	6	albimanus	Susceptible	...	...	...	...	Busvine-Nash
Paraguay	1	Asuncion	1	1	...	...	...	...	...	...	...
Peru	1	Lima	2	-	...	...	...	...	...	...	...
Venezuela	i) 2	Maracay	9	j)	albimanus	Susceptible	aquasalis	Susceptible	albitarsis	Susceptible	Busvine-Nash
<u>Other Areas</u>											
British Guiana	1	Georgetown	1	-	...	...	...	...	...	...	...
British Honduras	...	...	...	...	f)	...	...	...	...	...	...
Dominica	...	...	...	...	...	...	...	...	...	...	...
French Guiana	1	Cayenne	2	7	darlingi	Susceptible	aquasalis	Susceptible	peessoai	Susceptible	W. H. O.
Grenada	1	St. George's	1	-	f)	...	...	...	...	...	...
Guadeloupe	1	Basse-Terre	3	-	aquasalis	Susceptible	albimanus	Susceptible	argyritarsis	Susceptible	...
Jamaica	1	Kingston	1	-	...	...	...	...	...	...	...
Panama Canal Zone	**	**	**	**	**	**	**	**	**	**	**
St. Lucia	1	Castries	1	-	f)	...	...	...	...	...	...
Surinam	1	Paramaribo	2	-	...	...	...	...	...	...	...
Trinidad and Tobago	1	Port-of-Spain	6	-	aquasalis	...	bellator	...	hannulus	...	Busvine-Nash

a) Laboratory of Medical Entomology of National Institute of Rural Endemics; Laboratory of Federal District Antimalarial Campaign; 15 regional laboratories.

b) Distributed in the 17 laboratories.

c) Slight degree of behavioristic or ecological resistance in some areas.

d) In Bogota, Barranquilla, Cali and in zones of investigation.

e) In experimentation.

f) No tests have been made.

g) One in each zone.

h) Two in Mexico City and one in each of the 14 zones.

i) Facilities exist in 18 zones for entomological studies.

j) In each zone at least 1 malaria inspector and 1 laboratory assistant.

- Nil.

... Data not available.

** No report received.

ADDENDUM

Dominica

After reproduction of the tables and text of this report the following information was received regarding Dominica:

The funds for malaria work shown for 1956 (see Table 5) as BWI\$3,500 do not include amounts allotted by the Dominica Government from its Development and Welfare grants as follows: malaria control, BWI\$2,716 and insect control, BWI\$1,728, giving a grand total (with the BWI\$3,500 mentioned above) for the year for malaria and insect control, of BWI\$7,944. For the year 1957 the total for malaria and insect control is BWI\$15,212.

The personnel for 1957 (see Table 6) should read: at headquarters, part-time, one physician and two microscopists; in the field, full-time, one sanitary inspector and two other workers, and part-time, three inspectors and two other workers employed for insect control work.



directing council

PAN AMERICAN
SANITARY
ORGANIZATION

X Meeting

regional committee

WORLD
HEALTH
ORGANIZATION

IX Meeting



Washington, D. C.
September 1957

CD10/21 (Eng.)
ADDENDUM I
19 September 1957
ORIGINAL: ENGLISH

Topic 25: REPORTS ON THE STATUS OF MALARIA ERADICATION IN THE AMERICAS

Panama Canal Zone

After reproduction of this report the following information was received regarding Panama Canal Zone which may be inserted in the following tables:

Table 3 - Status of Program: Eradication

Table 4 - Health Bureau Canal Zone Government. Other activities include "An intensive program of mosquito and other pest insect control is maintained for the efficiency and morale of our population. This program embodies all practicable basic measures and includes the control of our local malaria vector. Our eradication effort is necessarily interwoven with pest insect control and other environmental sanitation activities."

Table 5 -

	1954	1955	1956
Total appropriation	\$ 168,000	\$ 172,000	\$ 192,000
For antimalaria work	50,000	55,000	60,000

Table 6 - The professional personnel in headquarters number 12 full time, namely:- engineer - 1; laboratory chiefs - 2; microscopists - 2 and others - 7 (sanitary inspector in malaria control in addition to environmental sanitation). There is 1 part-time physician. The engineer works also in the field. One entomologist and 2 entomology aides are to be employed.

Table 12 - All Centers - 8; by National Malaria Service - 2; by other agencies - 6. In 1956, 12,586 slides were examined and in 7 months of 1957, 9,411.

Table 13 - In 1956 there were 14 cases of malaria in the Canal Zone found by the Medical Service. Blood surveys are periodically made among suspect groups and any positives immediately given free treatment. All clinical cases of malaria are hospitalized, and the probable location of infection immediately checked.

Table 14 - Chloroquine and primaquine were given to 14 persons for treatment. Aralen for prophylaxis but not routinely used.

Table 15 - "Our local vector is A. albimanus, whose habits are well known. There is no evidence of developing resistance to DDT."