

# ANNUAL REPORT



OF THE DIRECTOR

1958

PAN AMERICAN HEALTH ORGANIZATION  
Pan American Sanitary Bureau - Regional Office of the  
WORLD HEALTH ORGANIZATION

**PAN AMERICAN HEALTH ORGANIZATION**

**Official Documents  
No. 30**

**May 1959**

**INDEXED**

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of the  
PAN AMERICAN SANITARY BUREAU  
REGIONAL OFFICE FOR THE AMERICAS  
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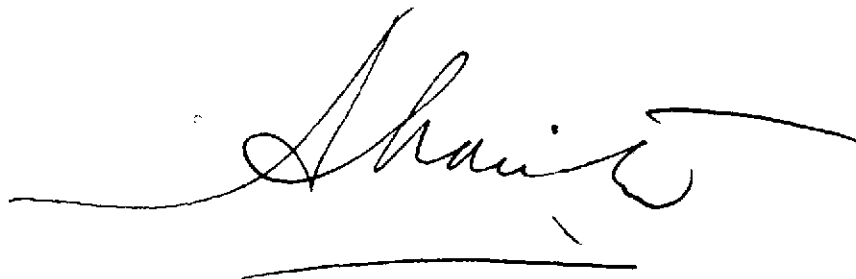
**PAN AMERICAN SANITARY BUREAU**

**Regional Office of the World Health Organization  
1501 New Hampshire Avenue, N.W.  
Washington 6, D. C.**

To the Member States of the Pan American  
Health Organization

I have the honor to transmit herewith the Annual Report of the Pan American Sanitary Bureau, Regional Office for the Americas of the World Health Organization, for the year 1958. This Report covers the work of the Washington Office as well as a summary of the projects implemented in collaboration with the governments of Member States and with other international organizations. The Financial Report for the year is submitted separately.

Respectfully yours,

A handwritten signature in black ink, appearing to read 'A. Horwitz', with a long horizontal line extending to the left and a shorter one to the right.

Abraham Horwitz  
Director

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## ABBREVIATIONS

AIDIS	Inter-American Association of Sanitary Engineering
CARE	Cooperative for American Remittances to Everywhere
CDC	Communicable Diseases Center
CNEP	National Commission for Eradication of Malaria
COMEP	Coordination Office for Malaria Eradication Program
CREFAL	Fundamental Education Training Center for Latin America
ECFMG	Educational Council for Foreign Medical Graduates
FAO	Food and Agriculture Organization
IACI	Inter-American Child Institute
ICA	International Cooperation Administration
INCAP	Institute of Nutrition of Central America and Panama
INNE	National Institute of Nutrition of Ecuador
ME	Malaria Eradication
MEIC	Medical Education Information Center
NMES	National Malaria Eradication Services
OAS	Organization of American States
OAS/TA	Organization of American States—Technical Assistance
PAHO	Pan American Health Organization
PASB	Pan American Sanitary Bureau
PASC	Pan American Sanitary Conference
PASO	Pan American Sanitary Organization
PAU	Pan American Union
SCIDA	Inter-American Cooperative Service for Agriculture
SCISP	Inter-American Cooperative Public Health Service
SNEM	National Service for the Eradication of Malaria
SESP	Special Public Health Services
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Fund
UN/TA	United Nations Technical Assistance
USPHS	United States Public Health Service
WHO	World Health Organization

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# ACTIVITIES IN 1958

Director's Introduction



# DIRECTOR'S INTRODUCTION

Collaboration between the Pan American Health Organization and the countries of the Americas reached a new stage of advancement in 1958. Since 1947, when the Constitution of the Organization was approved, public health programs in practically every corner of the Western Hemisphere have been gaining momentum. The accomplishments to date promise rich dividends in health in ensuing years for the nearly 390 million people living in this part of the world.

The PAHO, established to strengthen national health programs individually and coordinate health activities internationally, is comprised of four organs: 1) The Pan American Sanitary Conference; 2) the Directing Council; 3) the Executive Committee; and 4) the Pan American Sanitary Bureau (PASB), operating arm of the Organization.

By agreement with the World Health Organization (WHO) in 1949, the Bureau also became the Regional Office of WHO in the Americas, and the Conference or Directing Council, whichever convenes during the year, began serving as the Regional Committee. In this way international cooperation in health, which in the Americas was initiated with the founding of the Bureau in 1902, is now encompassing every political unit in the Western Hemisphere.

In accordance with the Constitution of PAHO, the XV Pan American Sanitary Conference (PASC), supreme Governing Body of the Organization, met in San Juan, Puerto Rico, September 21 to October 3. The Conference was attended by delegations of 19 American Republics and of France, the Kingdom of the Netherlands, and the United Kingdom. Canada was represented by an official observer. Other observers attended from a number of governmental and non-governmental organizations.

In addition to evaluating public health progress over the past years in a number of fields and taking action toward long-term development of existing and future programs, the Conference made a number of significant changes. In order to clarify the broad basic character and functions of the Organization, the name "Pan American Sanitary Organization" was changed to "Pan American Health Organization".

With the completion of the third four-year term of office of Dr. Fred L. Soper, Dr. Abraham Horwitz of Chile was elected Director of PASB for a term of four years, commencing February 1, 1959. At the same time Dr. Soper was

named Director Emeritus and the Conference decided to strike a medal in his honor.

Two important reports had been prepared specifically for consideration by the Conference: 1) The Quadrennial Report of the Director, 1954-57; and 2) the Summary of Four-Year Reports on Health Conditions in the Americas, based on information submitted by individual countries. Joint reference to these two documents helps immeasurably in elucidating what has been done in the field of health so far and where the needs are still serious. The Director's Four-Year Report gave an account of the work accomplished along the three traditional areas of activity of the Organization: 1) The attack on communicable diseases, particularly the use of eradication as a tool for the solution on international scale of public health problems such as malaria, smallpox, yaws, and urban yellow fever; 2) collaboration with governments in strengthening their health services; and 3) preparation of adequately trained public health personnel and development of educational centers at national and regional levels. The "Summary" of health conditions reflects the increasing attention given by the Governing Bodies of the Organization to the necessity for evaluating needs and resources as a requirement for the planning, organization, and financing of national and international health programs.

The regular PAHO budget for 1959 was approved by the Conference in the amount of \$3,600,000, which represents a 20 per cent increase over the previous year. It also considered and recommended the proposed regional program and budget of WHO for 1960 for the Americas in the amount of \$1,720,810. Collaboration with Member Governments is also supported by United Nations Technical Assistance Funds, the PAHO Special Malaria Fund, and other sources; thus some 215 field projects are either already in operation or are planned for 1959.

The Conference accepted the invitation of the Argentine Government to hold the XVI Pan American Sanitary Conference (fourteenth session of the WHO Regional Committee for the Americas) at Buenos Aires in 1962.

These are but a few of the highlights of the XV PASC. Its decisions, contained in the 40 resolutions passed, which will have an important bearing on the future work of the Organization, are discussed in more detail in a description of the various programs presented in the main body of this Report.

## Eradication Programs—A Major Contribution

Under the auspices of the Organization, there has been a gradual acceptance of eradication as a sound principle in the fight against certain communicable diseases and as a practical instrument in international health work. This has been manifested especially in the case of malaria, smallpox, and yaws, as well as the *Aedes aegypti* mosquito.

### Attack on Malaria

The Americas are privileged to have given initial impetus to a multi-nation united front for the eradication of malaria. The Resolutions approved by the XIII PASC (Ciudad Trujillo, Dominican Republic, 1950) and the XIV PASC (Santiago, Chile, 1954) formed the beginnings of a chain reaction among international organizations working in collaboration with national health services in the Hemisphere. In 1955 the WHO/UNICEF Joint Committee on Health Policy recommended that UNICEF give highest priority to support malaria eradication programs, a principle adopted by the UNICEF Executive Board. The Eighth World Health Assembly in the same year in Mexico City called for the implementation of a program having as its ultimate objective the world-wide eradication of the disease.

Additional contributions to the Special Malaria Fund (SMF) of PAHO were received in 1958 from the Dominican Republic (\$100,000) and Haiti (\$5,000). The United States Government, which had already donated \$2,000,000 for 1958, announced a sum of \$3,000,000 to be donated early in 1959. These and earlier contributions from the Dominican Republic, United States and Venezuela, as well as funds from other sources, have provided the Bureau with the means necessary to carry out the functions entrusted to it by the Governing Bodies, and have permitted the necessary collaboration with the countries of the Americas, which, one after the other, have joined in the continental program. At the end of 1958 practically the entire Western Hemisphere was covered by national malaria eradication campaigns where needed. Acknowledgment must also be made of the cooperation and contributions of the United Nations International Children's Fund (UNICEF) and the International Cooperation Administration of the United States (ICA).

In malaria work the Bureau in 1958 sponsored, in collaboration with the Government of Panama, a Seminar on Susceptibility of Insects to Insecticides, with the aim of facilitating the exchange of information among research experts and field workers on the biochemistry, genetics, and ecology of resistance, and on methods for testing levels of

susceptibility to residual insecticides in insects of public health importance. The practice of periodical meetings of the Directors of National Malaria Services in countries had been successfully established for the countries of Central America, Panama, and Mexico as early as 1954. Their usefulness was demonstrated to be so great that by 1958, six of these meetings had been held for that group of countries; in 1957-1958 similar meetings were organized for the countries of South America, and, in 1958, for the English-speaking Caribbean countries and territories. Discussions at the meetings have centered on a review of the development of national eradication programs, special technical problems related to persistence of transmission, and coordination of efforts to achieve greater uniformity in reporting or to solve malaria problems in border areas.

The year 1958 was a milestone in malaria eradication. It witnessed the completion of hemisphere-wide planning and the initiation of remaining scheduled programs. The promotional phase and the basic training of a large number of field workers have now been accomplished. The difficult job of getting the work finished lies ahead. Implementing the eradication techniques, carrying out an active search for remaining foci, and learning much more about the "epidemiology of disappearing malaria" and evaluation methods endure as challenges for national and international malaria workers alike.

### Smallpox

While evident progress has been made in the past few years and the disease has not been reported north of the isthmus of Panama, smallpox is still a serious problem in South America. It is encouraging to note that some of these countries are showing an increasing interest in the solution of the problem. For example, Colombia considerably expanded its nationwide campaign and vaccinated more persons in 1958 than in the preceding two years of the program. There is good reason to believe that the campaign will be completed within the five-year period originally planned. Ecuador has allocated the necessary funds for the reactivation of a five-year program. Brazil, one of the important foci of the disease, launched a nationwide campaign, to be completed within a seven-year period.

The XV Pan American Sanitary Conference, in emphasizing the urgency of this problem, requested the cooperation of Member Governments in supplying vaccine and technical advice, and also directed that PASB take all necessary measures to achieve eradication. These include collaboration in the production of vaccine, advice in the organization of



The Mexican malaria eradication campaign reaches even the solitary woodcutter, high in the Sierras, 1,000 feet above Jacaltepec

campaigns, the holding of inter-country meetings for the purpose of coordinating activities in this field, and the undertaking of studies to establish a definition of eradication suitable for uniform application in the different countries.

## Yaws

Haiti can be cited for its accomplishments in the eradication of this disabling disease. In 1950 it was estimated that more than 60 per cent of the population of the country suffered from this ailment while by 1958 the remaining cases had been reduced to approximately 1500. A system of surveillance has been established to seek these out in order to eliminate the last sources of infection. The success of this program has stimulated other countries and areas to undertake readication programs, particularly in the Caribbean area where over the past two years more than a million persons have been protected through a Bureau-assisted program.

## *Aedes aegypti* and Yellow Fever

The first eradication program sponsored by PASB—that for the eradication of *Aedes aegypti*, vector of urban yellow fever—was approved and initiated in 1947. The progress made since then was manifested as already mentioned by the XV PASC when it accepted the reports declaring the elimination of the mosquito in Bolivia, Brazil, British Honduras, the Canal Zone, Ecuador, French Guiana, Nicaragua, Panama, Paraguay, Peru, and Uruguay. No evidence of aegypti-transmitted yellow fever has been found anywhere in the Americas since 1954. It is evident, however, that an increase in the resources of the Bureau is necessary, as well

as strengthening of the activities of the other countries in order for the XVI Pan American Sanitary Conference to be able to declare considerable advance in the effort to exterminate this vector from the Americas.

The importance of continuous observation of jungle yellow fever has been confirmed by the apparent relationship existing between cases occurring in Colombia and in the contiguous areas of Venezuela during the period 1954-58. Studies continued during the year in the San Vicente de Chucuri area of Colombia on the complex problem of how the virus maintains itself. In 1958 jungle yellow fever was reported from Bolivia, Brazil, Colombia, Peru, and Venezuela with a total of 64 cases. Since, however, this is essentially a reporting of fatal cases found by viscerotomy, it does not necessarily reflect the true incidence of the disease.

Jungle yellow fever had occurred again in 1956-57 in those areas of Panama through which yellow fever virus began moving eight years earlier on a path to Western Panama, Costa Rica, Nicaragua, Honduras, Guatemala, and British Honduras, but no case was reported west of the Canal Zone during the last six months of 1957 or all of 1958. In Guatemala, the yellow fever virus had been traced in 1957 to the forest area which is continuous over the border between Guatemala and Mexico. No reports were received from southern Brazil in the epizootic areas in which cases had been found in 1956-57 and from where it was anticipated the virus might once more move farther south.

Collaboration has been continued with the Governments of Colombia and Brazil in supporting the work of the laboratories of the Carlos Finlay and Oswaldo Cruz Institutes, which are manufacturing and distributing yellow fever vaccine free of charge to the American countries.

## Other Communicable Diseases

The past decade has seen what is apparently an accelerating change in the epidemiological picture of poliomyelitis south of the Rio Grande, from a relatively low reported incidence, limited almost entirely to early infancy, to one of increasing severity in a number of countries.

The Pan American Sanitary Bureau has been very much interested in the possible use of an attenuated live-virus vaccine. Therefore, after the Second Meeting of the WHO Expert Committee in July 1957, which recommended large-scale tests of live virus vaccine, collaboration was started

with the State health authorities of Minnesota, USA, in small-scale studies, which were continued in Minneapolis on a larger scale in 1958. A PASB official participated in the preparation, planning, and field work for the February-June trials covering an entire community of some 600 persons in Minnesota.

Following the occurrence of a series of paralytic poliomyelitis cases in the Municipio of Andes in Colombia, the Ministry of Health requested collaboration in vaccinating the children there, then those in Medellin, and progressively in the remainder of Colombia, provided that no contraindications to the use of oral attenuated virus vaccine were encountered.

Vaccination in Andes commenced in May 1958, and some 7,000 children under seven years of age were immunized with all three types of polio virus vaccine. Activities were then transferred to Medellin, where from September 23 to the end of the year, approximately 150,000 were vaccinated. In mid-1958 a sharp outbreak of paralytic polio occurred in Nicaragua, found to be due to type 2 virus. At the request of the government, the Bureau collaborated in vaccinating some 50,000 children with type 2 attenuated virus in a period of 18 days. Those same children have since been vaccinated with viruses of types 3 and 1.

Should the field studies provide clear evidence for the utility of an oral attenuated virus vaccine against poliomyelitis, the possibilities are all the more meaningful as the relatively low cost would probably bring the vaccine within reach of every public health service.

Since 1951, the Organization has collaborated with the governments concerned in collecting data on the extent and characteristics of leprosy as well as the human and material resources available in the Americas to deal with it. The completion of surveys in a number of countries made possible the holding in Belo Horizonte, Brazil, of a Seminar on Leprosy Control, attended by some of the leading leprologists in the Americas. Specifically, the Seminar dealt with: 1) the extent and magnitude of the leprosy problem in the Americas; 2) a discussion of the present methods available for control of leprosy, and the need to revise or formulate, as the case may be, national and regional control plans; and 3) an analysis of the program being carried out in Paraguay with the collaboration of the Organization.

Modern treatment with sulfones, properly organized and supervised, constitutes the most effective measure against leprosy. There is need, however, for a rapid and surer therapeutic agent to control the acute phases of the disease. Furthermore, adequate and up-to-date legislation is required to deal with the problem.

## Strengthening National Health Services

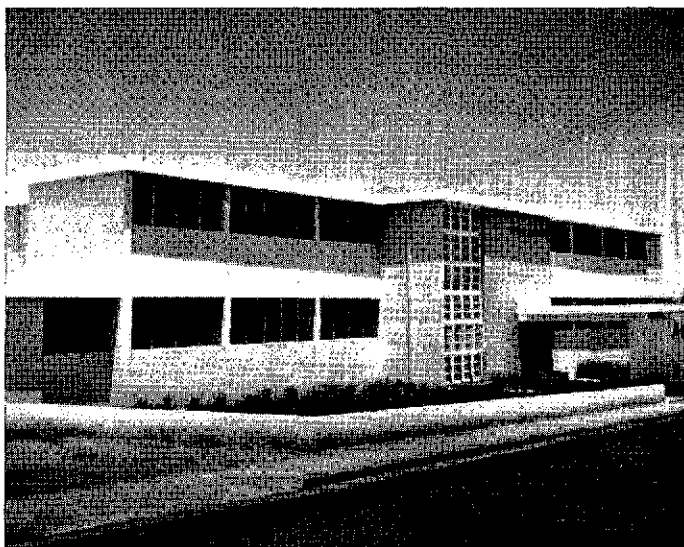
The Organization has again devoted major attention to ways and means for improving the quantity and quality of health services within the member countries. In addition to advice and counsel from the regular staff of the Zone offices, chief reliance has been placed on the integrated health projects which, at the end of 1958, were functioning in 15 countries. The Organization continues to believe that through providing balanced teams of advisers including, basically, physicians, nurses, and engineers, governments will be helped not only to strengthen the core units of their health services, but will also be assisted in developing proper integration among these services.

It is in this phase of the program that most has been accomplished in relation to maternal and child health,

public health nursing, and environmental sanitation. Development of Maternal and Child Health Centers has expanded and these are linked with the programs for the control of communicable disease through the regular procedures for infant and child immunization.

A very important part of the integrated health services projects has been the emphasis on training. In one Zone, for example, three times as many persons were trained locally within the integrated health projects as went abroad on fellowships.

In the relevant section of this Report the progress of the integrated health projects is discussed in some detail. Note may be taken here that a total of 49 advisers served in these projects in 1958.



The "Unidad Sanitaria" at San Cristóbal, dedicated August 15, 1955

### Water Supply

In addition to the work carried out within the integrated health projects, the Organization is devoting increasing attention to urban water supplies. An Advisory Committee, established by the Director to review the program and initiate major expansion in environmental sanitation was convened April 23-24. The Committee suggested that since it does not appear practicable either now or in the immediate future to carry out large-scale improvement simultaneously in all phases of sanitary control of the environment, strong efforts should be undertaken as quickly as possible on *one* function certain to produce low cost results—installation of piped water systems throughout populated communities. In addition to direct benefits to health, a water program will also help to improve rapid development of community housing, industrial and commercial growth, and tourism—all of which are economically significant for the Hemisphere.

According to available data, diarrheal diseases are the leading cause of death in seven of 18 countries or other political units of the Americas, and one of the five leading causes in nine others. Quite important is the fact that diarrheal disease leads in 11 of 16 countries as a cause of death for the population between ages one to four.

As a measure of its deep concern with the problem, the XV Pan American Sanitary Conference decided that the Technical Discussions of the Directing Council in 1959 will be on the topic "Technical, Financial, and Administrative Aspects of Water Supply in the Urban Environment in the Americas".

### Promoting Interchange of Experience

Experience in the Americas has shown that general international conventions are not in and of themselves sufficient to establish satisfactory coordination in the activities of governments having common problems and common boundaries. Only through a regular organization, with a trusted international staff, is it possible to develop a free interchange of information and harmonious action in areas of mutual concern. This interchange has been fostered by the Bureau through such publications as the Annual Reports of the Director, the Summaries of Four-Year Reports on Health Conditions in the Americas, the PASB *Boletín*, which is in its 37th year of publication, and the Weekly Epidemiological Reports.

But the promulgation of published information is not enough. For a full exchange of views the holding of seminars, conferences, and other meetings has been maintained regularly.

In addition to those meetings described in connection with the respective subject-headings, a particularly useful type of meeting sponsored by the Organization has been that devoted to the health problems of nations with common borders. The Organization's representative in El Paso acts as Secretary of the U. S.-Mexico Border Health Association, and as such is the person chiefly responsible for organizing the annual meeting. The 16th, held in 1958 at Ciudad Juarez, Mexico and El Paso, USA, was one of the most successful and generally appreciated meetings to date.

Chief of construction supervises the making of latrine platforms under a program of the Sanitation Section of the San Cristóbal Health Center, Dominican Republic





PASB/WHO nurse consultant attends a meeting of the San Cristóbal Health Center Public Health Nursing Staff, Dominican Republic

### Education and Training

In 1958 the Bureau, as in previous years, continued to aid in advising on teaching programs and in helping to strengthen courses of instruction in medical schools throughout Latin America. A comprehensive survey of teaching in the basic sciences was initiated to help establish

a basis for improvement in this vital phase of the preparation of the general practitioner, who constitutes such an important element in the health services of the community.

The effects of the seminars on the teaching of preventive medicine in medical schools, sponsored by the Bureau in 1955 and 1956, were manifested during 1958 through receipt of reports on changes made in teaching programs and numerous requests for fellowship training. The Bureau collaborated with the health authorities of the Dominican Republic in organizing a national Round Table on National Health Planning in January 1958, and in the Round Table on Teaching of Biostatistics in Schools of Medicine (August 1958) sponsored by the health authorities of Mexico and the Faculty of Medicine of the University of San Luis Potosi, Mexico. The South American Conference on the Teaching of Medical Statistics (July 1958) was sponsored by the Bureau and the Faculty of Hygiene and Public Health of the University of São Paulo. PASB/WHO also organized a Seminar on Pediatric Education (Paipa, Colombia) in November 1958 for Colombia and Venezuela. Direct assistance to schools of nursing was given in some cases in order to strengthen nursing education, post-basic nursing education, and the training of auxiliary personnel. Nursing surveys were conducted in a number of countries.

The Bureau fellowship program is an essential part of the work of the Bureau inasmuch as it helps to provide a corps of professionally trained workers who constitute the backbone of the hemisphere-wide attempt to improve public health. A constant increase both in the number of fellowships awarded in the Americas and in the number of fellows from other regions of the world placed for training in the Americas was again evident in 1958.

## Research

The significance of the Bureau's efforts in the field of research grows each year. Collaboration with Member Governments and scientific institutions for the development of special studies and research projects has particular importance when, because of its international character, the Organization fills a role which no single government or

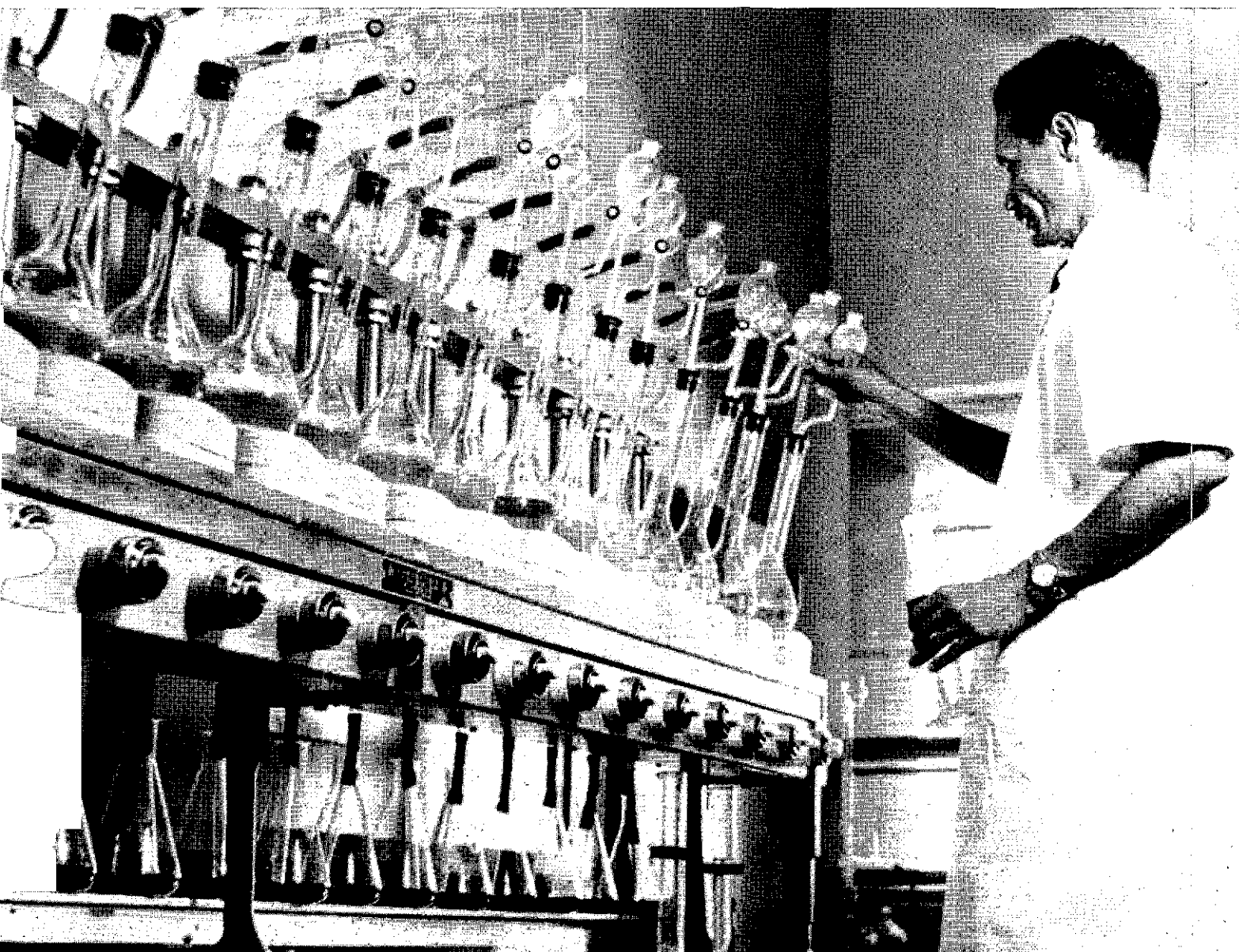
institution can do. Research is no new effort for the Bureau, as can be cited in the studies on penicillin therapy in treponematoses, collaboration in studies with the Government of Guatemala and the US Public Health Service on onchocerciasis, and many other studies carried on in previous years.

During 1958 the most extensive work in research was, as might be expected, in the field of malaria. The investigations regarding duration of effectiveness of dieldrin and regarding the likelihood that certain muds used for walls of homes would deactivate the insecticide were completed in December 1958. Results of these studies will have major

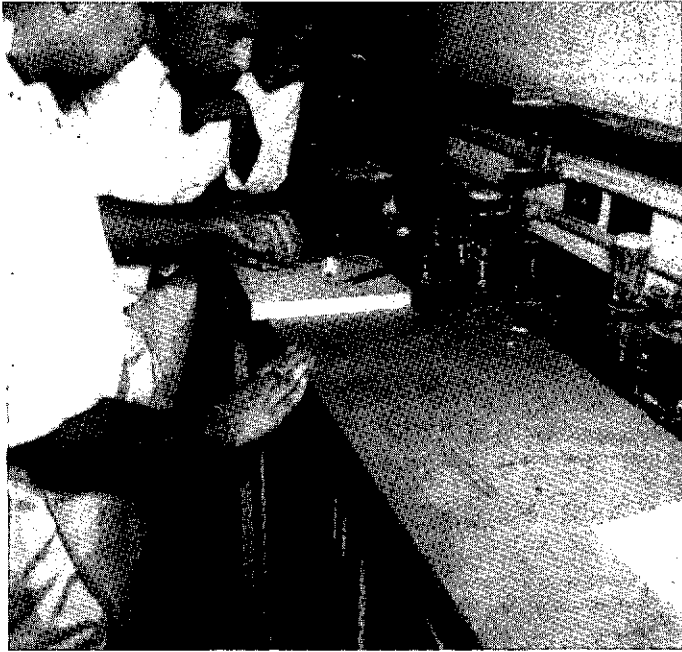
implications for the technical and financial aspects of the world-wide malaria eradication program.

To study the resistance to insecticides which has appeared in several species of anophelines in the Americas, intense field-work has started. Colonies of resistant anophelines were developed in some countries of the Americas

Protein content of food is measured by means of a Kjeldahl apparatus, Institute of Nutrition of Central America and Panama, Guatemala







Observation of inoculated rats at rabies training course, University of San Carlos, Guatemala

and the eggs of these species have been shipped to laboratories in the United States and England for further studies of the genetics of these mosquitoes. As a routine, susceptibility tests on anophelines are developed in all malaria programs in the Americas. Special studies on malathion, a new type of phosphorus insecticide, have begun in Central America as a consequence of the appearance of anopheline resistance to chlorinated insecticides. The effects of several drugs in malaria treatment and prophylaxis are also being investigated.

While the above studies are more in the nature of predominantly scientific and technical investigations it should be noted that another phase of considerable significance concerns administrative problems in connection with cycles of spraying, methods of providing materials, and related problems.

Elsewhere in this Introduction and in the body of the Report, there are described in some detail the studies on live poliovirus vaccine in which the Bureau has played a

most active role. This is a particular example of how an international health organization can take advantage of its knowledge of epidemiological information to move quickly in submitting to the test new and promising procedures.

During the year, laboratory studies continued on the materials collected as part of the field investigations of a vaccine against typhus. These studies are proceeding in collaboration with the Department of Tropical Medicine and Public Health of the School of Medicine, Tulane University.

At the Institute of Nutrition of Central America and Panama (INCAP) a whole series of research programs are in constant development. One may cite particularly the studies on protein malnutrition (*síndrome pluricarencial infantil*), studies on vegetable food mixtures, dietary habits, composition of local foods, methods of commercial treatment of foods in relation to nutritional and vitamin composition, and other similar studies. A special research program is also being developed in connection with the Bureau's efforts in the field of diarrheal diseases of childhood. Particular attention is being given to the interrelation of the nutritional and infectious factors in these diseases to attempt to elucidate how preventive measures may be more effectively applied. Collaborative studies with several universities in North and South America are being started in relation to atherosclerosis and these studies have been extended since the Report of the WHO Study Group on Classification of Atherosclerotic Lesions, which met in Washington in October 1957. Here the Organization and INCAP have been able to use their international character to facilitate examination of comparative factors in this disease related to differences in living conditions, diets, and national customs.

The Pan American Zoonoses Center in Azul, Argentina, is developing its research program in those diseases whose transmission between animal and man constitutes a control problem, beginning with brucellosis, rabies, and hydatidosis.

Research is also the chief function of the Pan American Foot-and-Mouth Disease Center, operated by the Bureau with funds of the Technical Cooperation Program of the Organization of American States.

It is to be expected that the Bureau's program in research will expand as further opportunities for using the Bureau's special techniques and facilities, as well as its role of coordinator, present themselves.

## Administrative Matters

With the further expansion of the resources of the Bureau, reaching a total expenditure of \$8,252,450, as shown in the Financial Report, comparable increase took place in the staff. At the end of 1958 the regular personnel of the Bureau, including both PAHO and WHO numbered 725, representing 42 nationalities. Of these staff members, 215 were at the Headquarters in Washington and 510 in the Zone Offices and field projects.

The well-established principle of decentralization witnessed a further advance in 1958 with the inauguration of

Zone I in Caracas, Venezuela. The Directing Council in 1957 had approved the re-definition of Zone I to include Venezuela as well as the area previously covered by the Field Office for the Caribbean at Kingston, Jamaica. In July 1958, through the generous collaboration of the Government of Venezuela, the new office was opened in Caracas and the Zone took its place with the other five. With the addition of a nurse and sanitary engineer to the regular staff, the Office will be able to render the increasingly needed services for the variable health problems and widely separated geographic areas of the Zone.

\* \* \* \*

The work of 1958 summarized above, and detailed in the following pages, covers a wide spectrum of activities. The broad character of the responsibilities with which the Organization is charged presents a constant challenge to choose those activities where its efforts are most likely to

be significant and where its contribution can be greatest. Nineteen-hundred and fifty-eight has been another year of expansion, but expansion which it is believed has followed closely the priorities so well established by the Governing Bodies.

# COMMUNICABLE DISEASES

## Malaria Eradication

An account of the work against malaria which PASB/WHO has been carrying out in collaboration with Member Governments and other agencies during the year is presented below. The chapter is divided into two parts: 1) a review of activities for which the Office of Malaria Eradication (ME) has been mainly responsible; and 2) the developments of each country up to the end of the year.

### Office for Malaria Eradication

The Coordination Office for the Malaria Eradication (COMEP) was established in March 1955 in Mexico City to advise governments in the preparation, execution, and evaluation of malaria eradication programs; prepare operational standards; and assist in personnel training and report preparation.

In January 1957 its name was shortened to Office of Malaria Eradication (ME) and it was transferred to Washington, D. C., in order that the Organization could better carry out the mandate entrusted to it by the XIV Pan American Sanitary Conference . . . "to promote the intensification and coordination of antimalarian work, with a view to achieving the eradication of this disease in the Western Hemisphere." The office is a part of the Division of Public Health though retaining a certain degree of administrative autonomy under the direct supervision of the Director PASB/WHO. It is so organized in order to carry out the work more expeditiously and to enable it to maintain closer contact with the other units of the Organization. At the end of 1958 its professional staff included the chief (M.D.), a deputy chief (San. Eng.), an epidemiologist (M.D.), a sanitary engineer, and an administrative officer. In addition, it has two field teams, located, for operational convenience, one in Bogota and the other in Panama.

The technical advisory team (AMRO-90) is composed of an entomologist, a parasitologist, and an adviser on motor vehicle operation and maintenance, whereas, the evaluation team (AMRO-111) has a medical officer (chief), an epidemiologist, and a parasitologist. Staff members of the

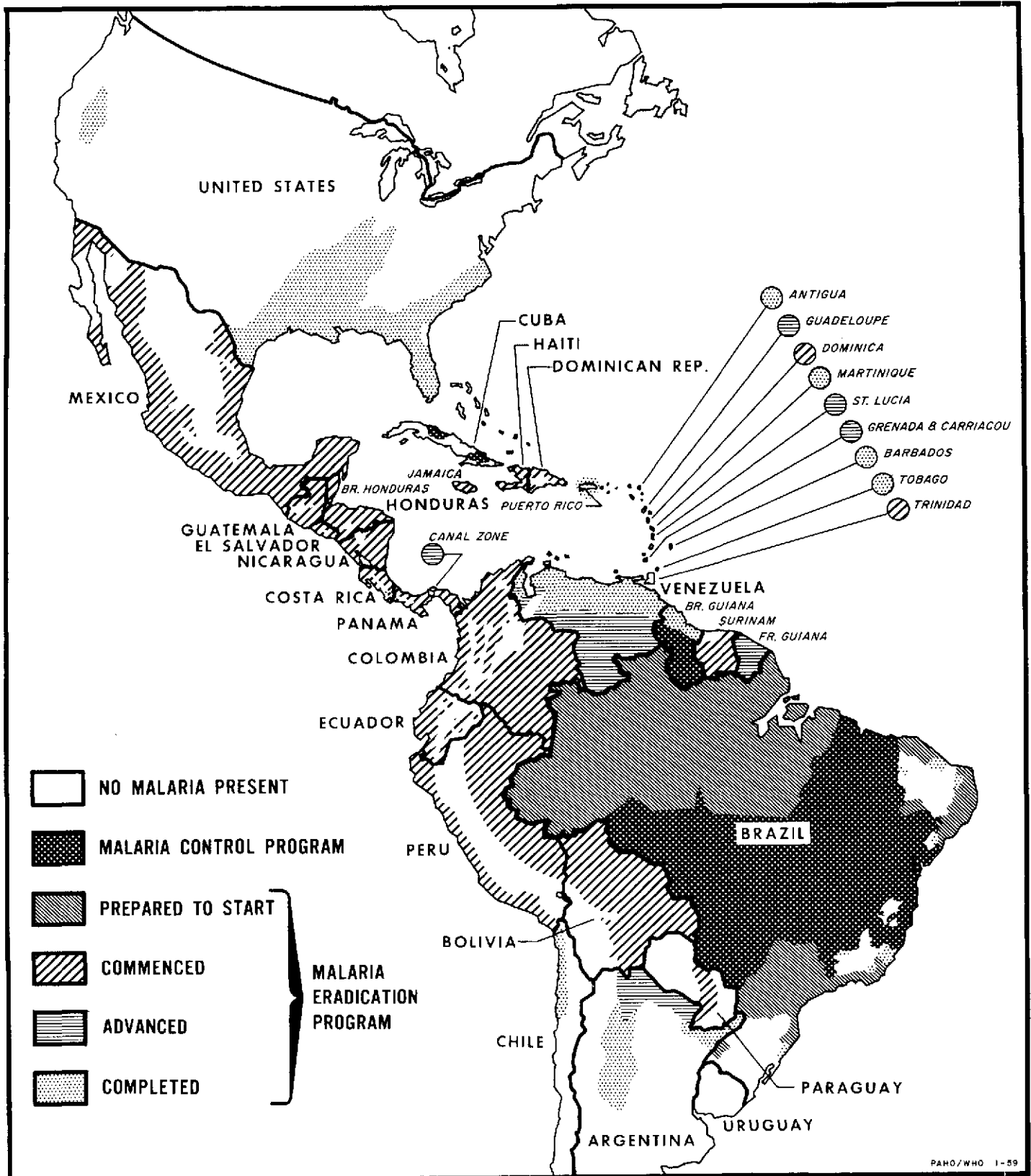
technical advisory team work independently from one another, and they are available to assist individual country programs by investigating or surveying special problems, each giving advice and recommendations and assisting with training of personnel as required. The evaluation team's terms of reference consist primarily of collecting information looking to an appraisal of national evaluation services in such a way as to determine the degree of reliability of their findings, and of assisting in the detection of isolated malaria episodes and of small residual foci in countries where eradication programs are well under way.

### Preparation of Technical and Administrative Standards

During 1955 and 1956 a number of documents were prepared in order to clarify the principles on which malaria eradication campaigns should be based and to achieve uniformity in the preparation and conduct of national programs. In 1957, due to the important role which the use of drugs plays in eradication campaigns, a document was prepared on "The Use of Drugs in Malaria Eradication Programs", to give guidance on the appropriate methods to be followed in the utilization of drugs, the types of drugs to be used, and dosages. In 1958, other standard guides or manuals were issued, namely: a) A transport manual for the malaria eradication programs prepared in collaboration with UNICEF and made available in English and Spanish versions; b) A manual of suggested procedures in collecting and consolidating records of spraying operations and evaluation activities; c) A manual on "The microscopic diagnosis of malaria based on thick blood film examination", to be reproduced in several official languages with the purpose of making it readily available for training of personnel throughout the Hemisphere.

Furthermore, training charts, educational pamphlets, films and film strips, and posters, are being prepared for their use either in training centers sponsored by the Organization or for wider distribution to national malaria eradication services.

# STATUS OF MALARIA ERADICATION IN THE AMERICAS DECEMBER 1958



## Preparation of Programs

Because the Bureau's malaria eradication program is one of the most recent and because of the great implications in the application of the concept, the program operates on the experience gained as it proceeds. During the early years of operation emphasis was placed on promotion and development of sources of financing, setting up of standards, training of personnel, and getting the operations started. This first phase can now be considered accomplished but other problems come into focus and the program is being re-oriented to meet the new challenges. The most important single factor affecting the development of eradication programs in the near future is the resistance shown to residual insecticides, principally dieldrin, by several anopheline vectors in Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Trinidad, and Jamaica.

The direct consequence to program planning of this physiological resistance has been: a) an intensive advisory activity from the office to the Zones concerned, in order to safeguard the results achieved so far in the affected countries; b) a series of meetings to appraise and consider the factors involved in the inevitable change of tactics to achieve malaria eradication; c) the promotion and organization of studies and field experiments on use of newer insecticides; and finally, d) the facing of the consequences of the additional financial responsibilities which this development has caused to governments and the assisting international agencies.

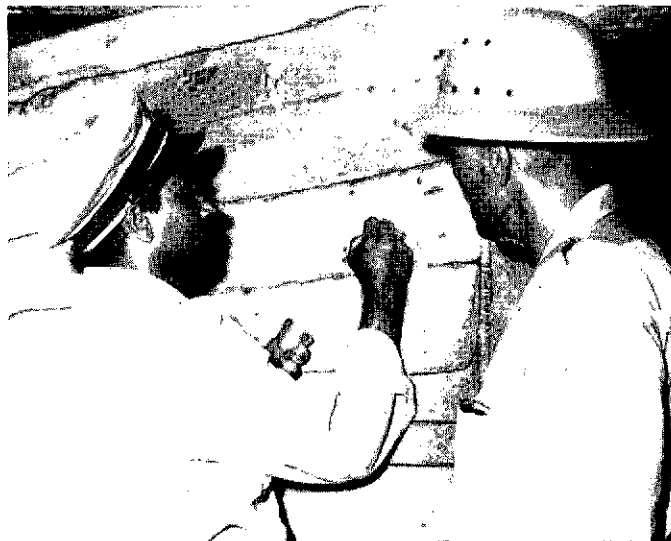
Further, totally new research programs are under consideration on the genetics of anopheline resistance to insecticides and on the effectiveness of other insecticides.

Routine program review and planning also progressed during the year.

Technical programs for 1959 and 1960 for country projects anticipate continued and increased assistance to the governments of nearly all Latin American countries and other political units in the Region. This includes advisory services made available through PASB/WHO staff in Washington, the various Zone Offices, and in the field; consultant services for special problems; equipment and supplies which cannot be purchased locally and are not currently furnished by other international agencies. Table I reflects the increase in the assistance to be given to some countries in the form of additional advisory staff.

Certain activities which could better be developed by inter-country cooperation have been given close consideration in relation to future planning and the following inter-country program has been proposed for the next two years:

- a) Research and development of protective equipment against toxic insecticides (AMRO-123);
- b) Field trials of the Pinotti method of mass drug administration (salt), according to the recommendations made by the Fourth Meeting of the Directors of Malaria Programs in Central America, Mexico, and Panama, (AMRO-124);



Checking houses in order to ensure total coverage, malaria eradication program, Surinam

- c) A seminar on malaria eradication evaluation (AMRO-125), to deal with the question of evaluation techniques used in malaria eradication programs;
- d) A seminar on malaria eradication surveillance techniques (AMRO-129), for the study of the techniques required during the surveillance phase of malaria eradication programs after spraying operations have been stopped;
- e) A seminar on mass chemoprophylaxis in malaria eradication (AMRO-130), to discuss the results obtained and the problems encountered in the application of various methods of administration of antimalarial drugs;
- f) Studies on malaria chemotherapy (AMRO-138), to evaluate antimalarial drug preparations in human volunteers. This project will be carried out by the National Institute of Allergy and Infectious Diseases, National Institutes of Health, U. S. Public Health Service;
- g) Research and development of insecticide application equipment (AMRO-122), seeking to improve the available equipment with the aim of obtaining a better and more accurate deposit of insecticides on the wall surfaces, at the same time saving a substantial portion which is lost on the floor due to the high pressure presently used in the pumps;
- h) Insecticide testing teams (AMRO-196), for scientific field trials of new insecticides and variations of their lethal action against the different malaria vectors of the Americas;
- i) Research on the resistance of anophelines to insecticides (AMRO-197), to facilitate the basic laboratory studies of genetics and physiology of the resistant malaria vectors of the Americas;

TABLE I. PASB/WHO MALARIA ERADICATION STAFF BY ZONE AND PROJECT NUMBER IN THE AMERICAS, 1957-1959

Zone and project number	Medical officers			Sanitary engineers			Sanitary inspectors			Entomologists			Administrative officers			Other		
	1957	1958	1959	1957	1958	1959	1957	1958	1959	1957	1958	1959	1957	1958	1959	1957	1958	1959
Total	13	21	22	5	16	18	3	33	53	1	3	4	—	2	4	1	3	7
Zone I																		
AMRO-117	1	1	2	—	1	1	—	—	1	—	1	1	—	—	1	1 <sup>a</sup>	1 <sup>a</sup>	1 <sup>b</sup>
Cuba-5	1	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
British Guiana-5	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Jamaica-2	—	1	1	1	1	1	—	2	2	—	—	—	—	—	—	—	—	—
Surinam-1	—	1	1	—	—	—	—	1	2	—	—	—	—	—	—	—	—	—
Trinidad-1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Windward Islands-2	—	—	—	—	—	—	—	2	3	—	—	—	—	—	—	—	—	—
Zone II																		
Dominican Republic-2	1	1	1	1	1	1	—	2	2	—	—	—	—	—	—	—	—	—
Haiti-4	—	2	—	—	1	—	—	3	—	—	—	—	—	2	—	—	1 <sup>c</sup>	— <sup>d</sup>
Mexico-53	1	2	1	1	1	1	1	1	2	—	—	—	—	—	—	—	—	1 <sup>e</sup>
Zone III																		
AMRO-118	—	1	1	—	1	1	—	—	—	—	1	1	—	—	1	—	—	4 <sup>f</sup>
Costa Rica-2	1	1	1	—	—	—	—	1	2	—	—	—	—	—	—	—	—	—
El Salvador-2	1	1	1	—	1	1	—	1	2	—	—	—	—	—	—	—	—	—
Guatemala-1	—	1	1	—	—	1	1	2	2	—	—	—	—	—	—	—	—	—
Honduras-1	—	1	1	—	—	1	1	1	2	—	—	—	—	—	—	—	—	—
Nicaragua-1	1	1	1	—	—	1	—	1	2	—	—	—	—	—	—	—	—	—
Panama-2	1	1	1	—	1	1	—	1	2	—	—	—	—	—	—	—	—	—
British Honduras	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Zone IV																		
AMRO-119	—	—	1	—	1	1	—	—	—	—	1	2	—	—	2	—	—	—
Bolivia-4	1	1	1	—	1	1	—	3	4	—	—	—	—	—	—	—	—	—
Colombia-5	1	1	2	—	1	1	—	4	6	—	—	—	—	—	—	—	1 <sup>g</sup>	1 <sup>g</sup>
Ecuador-14	1	1	1	—	1	1	—	2	4	—	—	—	—	—	—	—	—	—
Peru-5	—	1	1	1	1	1	—	3	6	1	—	—	—	—	—	—	—	—
Zone V																		
AMRO-139	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Brazil-24	1	1	—	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—
Brazil-41 (São Paulo)	—	—	—	—	1	1	—	2	4	—	—	—	—	—	—	—	—	—
Zone VI																		
Argentina-8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Paraguay-1	—	1	1	—	1	1	—	1	2	—	—	—	—	—	—	—	—	—

<sup>a</sup> Laboratory technician. <sup>b</sup> Laboratory technician. <sup>c</sup> Health educator. <sup>d</sup> Health educator and statistician. <sup>e</sup> Senior Technical Adviser. <sup>f</sup> Entomologist aide. <sup>g</sup> Malaria statistician.

- j) Routine susceptibility testing of adult anophelines (AMRO-199), and the provision of impregnated papers required for this important work.

### Provision of Advisory Technical Assistance

ME was frequently called upon for advice and guidance on problems concerning administration, vector resistance, use of drugs, evaluation techniques, spraying operations, and training.

The technical advisory team (AMRO-90) also played a major role in advising Zone Offices and Member Governments on various problems concerning entomology, diagnosis, epidemiological evaluation, transport organization and maintenance, and administrative methods in malaria eradication projects.

a) Microscopic diagnosis of malaria. The parasitologist of the advisory team had been, since July 1956, engaged in visits to the following countries: Colombia; Ecuador; Panama; Honduras; Costa Rica; El Salvador; and Mexico with the objective of assisting the national governments in developing a sound and reliable service of malaria diagnosis based on the technique of the thick blood film. Special demonstrations have been set up in some of these countries aiming at standardization of equipment and adequate preparation of slides and procedures for examination. It was apparent however that trained microscopists were not in sufficient number, nor was their training of such a standard as to warrant complete reliance on their findings. Furthermore, checking positive slides was difficult because of the staining technique as well as the fact that in highly humid areas the material deteriorates after a few weeks.

Therefore, since the beginning of 1958, the parasitologist has dedicated most of his time to training activities, giving courses on malaria diagnosis at the Malaria Eradication Training Center (Jamaica) and at the international courses given in Mexico. It is hoped that in 1959 the large majority of the medical officers of the national malaria services who are responsible for evaluation operations will have been suitably trained. It is envisaged that by this time the advisory work of the team parasitologist can be resumed with much more effectiveness. He will, however, continue to deliver courses for malaria diagnosis at the Jamaica and Mexico Training Centers.

b) Entomology and anopheline resistance to residual insecticides. Laboratory studies on the behavior of *A. albimanus* in Panama with respect to DDT were performed by the advisory service team entomologist in collaboration with staff from the Division of Environmental Sanitation of WHO, Geneva. From earlier observations, Gorgas Memorial Laboratory staff concluded that the cause of survival of *A. albimanus* in the houses treated with DDT—“must be one due to a behavior change and not to any

change in the intrinsic toxicity of DDT to mosquitoes”—and suggested that the change might be due to “the selection of a population hyperirritable to DDT”. An attempt was, therefore, made to collect quantitative evidence of the behavioristic resistance discovered in *A. albimanus* in Rio Chagres area of Panama.

Insecticide studies carried out during several months in 1958 also included dieldrin since, at that time, this was the insecticide used for malaria eradication in Panama. The conclusions reached at the end of these studies can be summarized as follows: *A. albimanus* of Santa Rosa (near Rio Chagres) presents in fact a change in behavior caused by a hyperirritability to DDT. This prevents the anopheline from absorbing a lethal dose from treated surfaces. The strain tested reveals a normal physiological susceptibility to DDT and to dieldrin. It does not appear that there has been any change in behavior in respect to dieldrin.

The results of the work made it possible to rely, for the time being, on dieldrin to continue the eradication campaign in Panama.

In addition the entomologist of the technical advisory service team conducted preliminary investigation leading to the discovery of strains of *A. albimanus* physiologically resistant to dieldrin in El Salvador, Guatemala, and Nicaragua. In El Salvador there is also some resistance to DDT. Other activities carried out with the cooperation of staff members and with the assistance of national malaria services include formal training of a number of assistant entomologists in the routine testing of susceptibility levels.

c) Transport organization and maintenance. In recognition of the vital importance of trouble-free transport systems for smooth development of spraying and surveillance operation, an adviser on organization and maintenance of motor transport was added to the advisory team in 1958. Visits were made to the following countries: Bolivia; the Dominican Republic; Haiti; Honduras; Mexico; Nicaragua; Panama; Paraguay; Peru; and Trinidad. Advice was given on the reorganization of the transport system as well as on the more acute problem of vehicle maintenance. Assistance was extended for the preparation of suitable forms, manuals, and log books to serve as guides for the motor transport services. In addition cooperation was given in the three courses (Lima, Tegucigalpa, and Port of Spain) organized for the chiefs of national transport.

The team in charge of epidemiological evaluation activities (AMRO-121) carried out surveys during 1958 in the following areas: Carriacou, Grenada, and Dominica.

In Dominica, according to the evaluation team, the good spraying program for malaria control in 1955 and 1956 eradicated malaria infection from most of the island excepting only the township of Portsmouth where active transmission persisted in mid-1958. Results of this evaluation led to a revision of plans for Dominica for which a campaign for eradication has been elaborated. It also dem-



Administration of drugs to fever case, after taking a blood slide, malaria eradication program, Surinam

onstrated that the local evaluation services need strengthening if eradication is to be achieved.

In Grenada the evaluation team demonstrated the existence of a small number of isolated cases. It was also shown that the local evaluation services required greater strengthening in order to carry out intensive evaluation in areas of disappearing malaria, such as Grenada.

The conclusion of the team in respect to Carriacou Island is that eradication has been achieved there. The island is now under effective vigilance.

Similar surveys were in progress at the end of the year in Guatemala, British Honduras, and Panama. No final results have as yet been reported but it is felt that in each country, which has now completed the second year of total coverage with insecticides, a number of foci of transmission still persist.

### Cooperation with Other Agencies

Existing collaboration with UNICEF and ICA, which are to a large extent assisting malaria eradication programs in the Hemisphere, has been maintained and made more effective in 1958 by frequent exchanges of views, reports, and consultation.

PASB/WHO staff has regularly attended UNICEF Execu-

tive Board meetings where they supplemented the information contained in routine reports on the status of development of the eradication campaign. Special problems regarding supply and technical matters have been dealt with in *ad hoc* meetings, as for example in connection with the need for sprayer replacement and spare parts in certain countries, frequency of spray nozzle changing, suitability of the insecticide formulation, and methods of preparation, in the field, of spraying suspensions.

After confirmation of resistance now shown by some vectors in several countries, the position was reviewed in a meeting which both UNICEF and ICA representatives attended. During the meeting the implications of a change in insecticides in certain programs were pointed out and the responsibility of each agency in relation to existing commitments discussed.

Beyond routine matters regarding the over-all eradication campaign, and of assistance to countries where both agencies are involved, cooperation with ICA was extended by making available to them PASB/WHO staff members for special duties in Nicaragua and Indonesia.

### Meetings

The value of zonal and regional meetings of technical malaria workers, or of the persons responsible for the direction of national programs, had been recognized at an early date. The operating program for 1958 included:

- a) Seminar on the susceptibility of insects to insecticides. This was sponsored by PASB/WHO in collaboration with the Government of Panama and was held in Panama, June 23-28, with the aim of facilitating the exchange of information among research experts and field workers. Eighty-three participants from more than 20 countries attended. Discussions in plenary sessions and group meeting centered on methods for testing levels of susceptibility to residual insecticides in insects of public health importance, and the biochemistry, genetics, and ecology of resistance. It proved to be a valuable experience, particularly from the point of view of the interchange of ideas by specialists of the many disciplines involved in a scientific approach to the problem of resistance. A provisional report comprising the papers presented at the meeting, as well as the summary of the discussions, has been reproduced for the benefit of the participants. The report in final form for wider distribution was being edited as the year ended and will be distributed in early 1959;
- b) Meetings of Directors of National Malaria Services. The practice of periodic meetings of the Directors of National Malaria Services in countries of the Zones had been successfully established for the countries of Central America, Panama, and Mexico as early as 1954. Their usefulness was demonstrated to be so



great that by 1958 six of these meetings had been held for that group of countries. More recently (in 1957 and 1958) similar meetings have been organized for the countries of South America and, in 1958, for the English-speaking Caribbean countries and territories. Though the agenda for these meetings are different, the objectives are similar and the discussions generally centered on a review of the development of national programs of eradication, special technical problems related to persistence of transmission, and coordination of efforts to achieve greater uniformity in reporting or to solve malaria problems in border areas. It is more than likely that future meetings of Directors of National Malaria Services will consider, in addition, problems connected with resistant vectors; and

- c) A series of meetings was held at the end of the year in the several Zone Offices. These were attended by the staff of the Washington Malaria Eradication office and by the respective Zone Representatives, as well as field malaria eradication professional staff. The purpose of these meetings was to acquaint the new Chief of the Malaria Eradication office with the field staff, to review the development of each project, to review the reporting methods used by field project staff, and to discuss special technical and administrative problems.

## Training

### *Malaria Eradication Techniques*

From the inception of the hemisphere-wide malaria eradication campaign the Organization has been dedicating a large proportion of its efforts and resources to the promotion, establishment, and follow-up of an adequate system for training the large number of specialists required.

In 1957 and 1958 three *ad hoc* training courses were organized with the collaboration of the Governments of Guatemala, Colombia, and Haiti to supplement the courses for professional staff (medical officers, sanitary engineers, and entomologists) offered at various institutions in Venezuela; Mexico; Jamaica; and São Paulo, Brazil.

The Division of Malariology of the Venezuelan Ministry of Health, which has been offering regular courses in Maracay since 1944, has greatly assisted in the training program for malariologists and engineers by offering at each of their 15 courses held so far a number of places for foreign participants. PASB/WHO fellows as well as fellows sponsored by the Government of Venezuela have participated regularly in the courses. From 1949 through 1958, 72 physicians and 26 sanitary engineers have been trained at the International Center in Venezuela. The Center has also been the object of many visitors from all over the world in order to observe the eradication techniques being taught.

In addition to the various national centers which PASB/WHO field staff has been assisting routinely, by 1958 the

following international centers had been firmly established with the active collaboration of the national governments concerned:

- a) Training for Malaria Eradication, CNEP, Training Department, Mexico City;
- b) Training Center in Malaria Eradication Techniques, Kingston, Jamaica (operating jointly with the International Cooperation Administration of the U. S. Government and the Government of Jamaica); and
- c) School of Hygiene, São Paulo, Brazil.

The training programs in all these centers have been progressively improved as experience has been gained and appraisal made of new needs. It should be pointed out that the curricula given at courses organized at these centers have been especially designed for preparation, in the shortest possible time, of the various types of personnel needed. Thus, courses given on epidemiology, parasitology (malaria diagnosis), entomology, and statistics cover the application of these disciplines to the practical techniques used in malaria eradication rather than their theoretical aspects. Emphasis is placed on the theory and practice of residual insecticide application. This type of training made it possible to have participants with considerably different professional backgrounds and experience at the same course. At the same time they were being trained in teamwork, an essential requisite for malaria eradication personnel. The usual duration of each course is 16 to 18 weeks, including several weeks of field work. Sanitary inspectors were trained in similar courses of shorter duration to prepare them for the duties of chiefs of sectors (supervision of spraying and epidemiological operations).

Member of a malaria eradication zone office weighing and packaging wettable DDT powder, Villahermosa, State of Tabasco, Mexico



Table II gives the total number, with breakdown by profession and country of origin, of personnel trained at these centers since 1949.

The Jamaica Training Center has been receiving an increasing number of participants from other regions of the world. Since this type of training is rather unique and, because it is given in English, it is likely to receive even larger participation in the future from many countries in the world where eradication campaigns are being planned or are in progress.

#### Other Training Activities

Increasing needs for entomological work, particularly in testing vector susceptibility over large areas, and in keeping constant, up-to-date, information regarding the possible appearance of resistance to insecticides by anopheline populations, have compelled promoting the organization of special courses for auxiliary workers in malaria eradica-

tion entomology (AMRO-137). Again, the scope of these courses is limited to practical aspects of interest in malaria eradication programs. One such course was organized in 1958 with the assistance of the Government of Panama. It was attended by eight participants from Ecuador, Colombia, Paraguay, British Honduras, El Salvador, Honduras, and Nicaragua and concentrated particularly on susceptibility tests for mosquitoes and the use of the WHO standard kit. Other courses, broader in scope, were organized at the School of Hygiene of São Paulo; in addition to the national personnel, six auxiliary entomologists (from Argentina, Mexico, and Peru) attended under fellowships awarded by the Organization. National courses for auxiliary entomologists are routinely organized in Mexico.

To assist in overcoming many of the difficulties experienced by several countries in keeping an efficient motor transport system, three workshops on vehicle management and maintenance were organized in 1958 with the coopera-

TABLE II. NUMBER AND TYPE OF PASB/WHO FELLOWS TRAINED IN MALARIA ERADICATION TECHNIQUES AT FOUR INTERNATIONAL CENTERS, BY COUNTRY OF ORIGIN, 1949-1958

Country of Origin	Mexico			Venezuela <sup>a</sup>		Jamaica				Brazil		
	Physicians	Sanitary engineers	Sanitary inspectors	Physicians	Sanitary engineers	Physicians	Sanitary engineers	Sanitary inspectors	Others	Physicians	Sanitary engineers	Others
Total	32	36	77	72	26	15	14	23	4	1	2	1
Argentina	1	3	3	1	—	—	—	—	—	—	—	1
Bolivia	2	6	—	7	3	—	—	—	—	1	—	—
Brazil	14	11	3	1	1	1	—	—	—	—	—	—
Chile	—	1	1	—	—	—	—	—	—	—	—	—
Colombia	2	1	—	24	4	—	—	—	—	—	—	—
Costa Rica	1	1	4	2	—	—	—	—	—	—	—	—
Cuba	—	—	—	1	1	—	—	—	—	—	—	—
Dominican Republic	1	—	1	2	—	—	—	—	—	—	—	—
Ecuador	—	—	—	3	—	—	—	—	—	—	1	—
El Salvador	1	—	6	1	—	—	—	—	—	—	—	—
Guatemala	—	2	6	2	1	—	—	—	—	—	—	—
Haiti	—	—	16	4	—	—	—	—	—	—	—	—
Honduras	—	—	8	—	2	—	—	—	—	—	—	—
Mexico	—	2	1	14	10	—	—	—	—	—	—	—
Nicaragua	1	—	3	2	1	—	—	—	—	—	—	—
Panama	1	1	7	—	—	—	—	—	—	—	—	—
Paraguay	2	—	6	2	—	—	—	—	—	—	1	—
Peru	6	6	8	3	2	1	—	1	—	—	—	—
United States	—	2	1	—	—	—	7 <sup>b</sup>	8	—	—	—	—
Uruguay	—	—	1	1	—	—	—	—	—	—	—	—
British Honduras	—	—	1	—	—	—	—	2	—	—	—	—
Puerto Rico	—	—	1	—	1	—	—	12	—	—	—	—
Other Regions <sup>b</sup>	—	—	—	2	—	13 <sup>d</sup>	7 <sup>e</sup>	—	4 <sup>b</sup>	—	—	—

<sup>a</sup> Five sponsored by International Cooperation Administration. <sup>b</sup> Outside of the Americas. <sup>c</sup> Six sponsored by International Cooperation Administration.

<sup>d</sup> Two sponsored by International Cooperation Administration. <sup>e</sup> One sponsored by International Cooperation Administration. <sup>f</sup> Includes fellows sponsored by the Govt. of Venezuela.

tion of the Governments of Peru, Honduras, and the West Indies Federation. The three meetings were part of a program designed to improve the national transport services of the malaria eradication campaigns and to guarantee that the vehicles supplied for these campaigns would operate efficiently for the duration of the eradication program.

The countries and number of participants who took part in these meetings are shown in Table III. Persons attending the meetings were directors of national malaria services or their representatives, and the chiefs of the transport units in the national malaria eradication services (NMES).

Sound and rigorously applied administrative methods used in the organization, operation, and management of national malaria eradication campaigns have proved to be an essential element in achieving eradication. Though administrative patterns in all the malaria projects assisted by international agencies have been standardized to a great extent at the international level, it was necessary in each country to follow the respective legal and customary local practices for the administration of individual projects. On the other side, no previous experience existed on the type of administration best suited to an efficient, dynamic, and highly technical operation such as the eradication campaign. While suitable practices were enforced on the basis of experience gained it was thought necessary to instruct, in group meetings, the administrative officers in malaria eradication programs. The first course was held with the cooperation of the Government of Honduras, in Tegucigalpa in 1958, with the participation of two administrators each from Costa Rica, El Salvador, Guatemala, and Panama, one medical officer from British Honduras, and a group from Honduras.

In addition to all these group-training activities, the Organization has also awarded a number of fellowships to nationals of several countries for individual studies in

TABLE III. NUMBER OF PARTICIPANTS IN WORKSHOPS ON VEHICLE MANAGEMENT AND MAINTENANCE IN MALARIA ERADICATION PROGRAMS, BY COUNTRY OF ORIGIN, 1958

Lima, Peru, April 7-19		Tegucigalpa, Honduras, April 21-May 3		Port of Spain, Trinidad, August 11-23	
Area	Parti- cipants	Area	Parti- cipants	Area	Parti- cipants
Total	14	Total	11	Total	12
Argentina	2	Costa Rica	2	Br. Honduras	2
Bolivia	1	El Salvador	1	Grenada	2
Brazil	2	Guatemala	2	Jamaica	3
Colombia	2	Haiti	1	St. Lucia	2
Ecuador	2	Nicaragua	2	Surinam	3
Paraguay	2	Panama	3		
Venezuela	2				

special fields such as insecticide toxicology, malaria laboratory techniques, malaria entomology, and for study and observation of operation of malaria eradication campaigns in selected countries. More than 30 such individual fellowships were awarded in 1958.

The extent to which the Organization has been assisting in the over-all training program by the award of fellowships, with supplies and teaching equipment, provision of short-term lecturers and full-time teachers is reflected in Table IV.

TABLE IV. FUNDS BUDGETED FOR TRAINING OF MALARIA ERADICATION PERSONNEL, 1957-1959

Year	Total Budget	Budgeted for training	Per cent
1957	\$1,224,924	\$300,558	24.5
1958	2,095,106	396,550	18.9
1959	3,529,660	278,005	7.9

### Investigation, Field Tests, and Experiments Related to Resistance to Insecticides of Vector Species

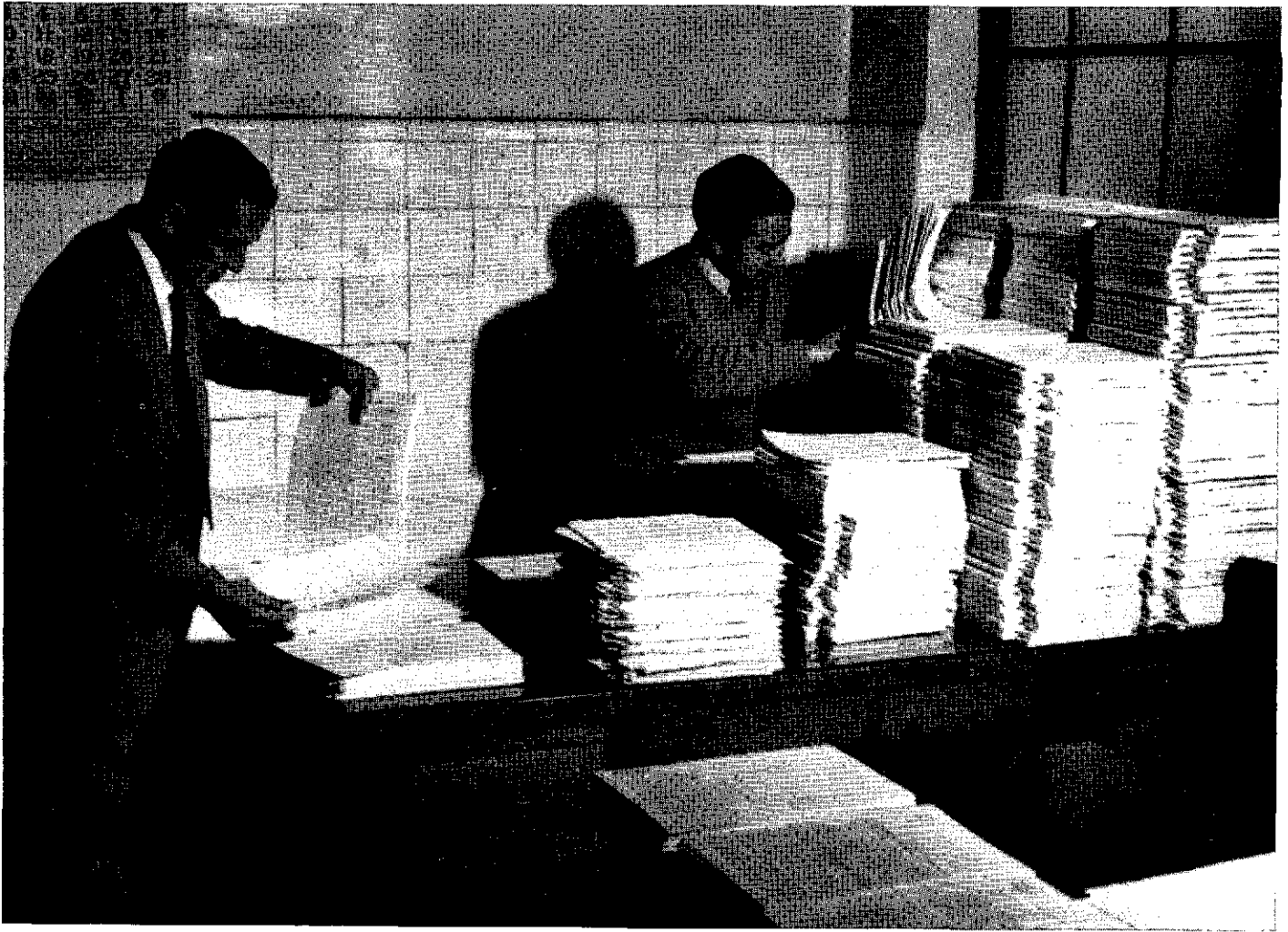
In August 1958 news reached the Washington Office that in several areas of El Salvador *A. albimanus* had shown resistance to dieldrin, and in some areas also to DDT. The information was based on findings by staff on the ME advisory team. It was only the first of a series in the detection of resistance to dieldrin by strains of *A. albimanus*, *A. pseudopunctipennis*, and *A. aquasalis* in other areas of Central America, Mexico, Trinidad, and Jamaica.

Early in 1957 a limited number of WHO standard kits for susceptibility tests had been distributed to the technical personnel in the field and tests conducted with these kits had been revealing a decrease of susceptibility to dieldrin of *A. albimanus* only in El Salvador. It was realized that insecticide resistance must have been present, though in small percentage, in Central America and that this percentage had been growing, possibly as a consequence of widespread use of agricultural insecticides, particularly dieldrin.

At the end of 1958 the information available in regard to insecticide physiological resistance involved El Salvador, Guatemala, Honduras, Nicaragua, Mexico, Trinidad, and Jamaica with *A. albimanus*, *A. pseudopunctipennis*, and *A. aquasalis* showing resistance, mainly to dieldrin in wide geographical areas.

The following gives the conclusions reached at the end of 1958 in each of the countries where numerous tests have been carried out:

a) El Salvador. In six of the localities where susceptibility tests have been conducted, *A. albimanus* is resistant to



Manuals of instructions for field operations of the Mexico malaria eradication program being assembled in Mexico City

dieldrin. Its susceptibility to DDT is normal in three of them; in the others resistance was revealed, its seriousness to be ascertained by further tests now in progress. It is hoped that the results of extensive tests now in progress will be known in the near future so that an assessment can be made in regard to the levels of resistance to both insecticides throughout the country.

b) Guatemala. Susceptibility tests carried out have been hampered by the temporary scarcity of mosquitoes. However, preliminary results show the existence of *A. albimanus* strains resistant to dieldrin in four localities. Intensive investigation of susceptibility levels to both dieldrin and DDT are now in progress.

c) Honduras. Preliminary tests show that *A. albimanus* is resistant in one locality to both dieldrin and DDT. The use of agricultural insecticides in nearby cotton-growing areas appears to have been introduced two or three years ago, while dieldrin for malaria operations in the area concerned was sprayed for the first time in September 1958.

d) Nicaragua. Resistance to dieldrin has been ascertained in six localities. Extensive use of insecticide has also been made in the country for agricultural purposes since 1948. Areas where *A. albimanus* has shown resistance to dieldrin coincide with cotton-growing regions.

e) Trinidad. Resistance to dieldrin by *A. aquasalis* has been detected in Barataria, near Port of Spain. Additional tests to assess the geographical extent of resistance are in progress.

f) Jamaica. Until the end of the year susceptibility tests made have indicated that *A. albimanus* was resistant to dieldrin in localities of three parishes (St. Catherine, Clarendon, and St. Andrew).

g) Mexico. Routine susceptible tests carried out by the Department of Epidemiology of the CNEP have confirmed that the *A. pseudopunctipennis* population in the Temixco area of Morelos has revealed resistance to dieldrin, along with certain abnormal behavioristic characteristics under laboratory experiments, and that they have an increased

longevity. Susceptibility to DDT seems normal, this being confirmed by absence of anophelines in houses in the Temixco area which had been sprayed in 1957 with this insecticide. Findings of *A. pseudopunctipennis* resistance to dieldrin have also been reported from five localities in the States of Morelos and Michoacan. Tests performed in numerous other localities of the States of Puebla, Michoacan, and Veracruz show, however, that the susceptibility to both insecticides remains normal there.

Susceptibility tests of local vectors were also initiated or routinely conducted in the majority of the remaining countries. The results confirmed that at the end of 1958 the susceptibility of malaria vectors to the insecticides used (DDT, dieldrin, or both) was normal.

Steps were taken however for the intensification of susceptibility tests wherever malaria eradication projects are operating, particularly in those where evaluation staff has detected signs of continued transmission of doubtful origin. Additional standard WHO Kits for testing larval and adult mosquito susceptibility were distributed to qualified personnel in the field, with instructions regarding prompt transmission of results.

The difficult situation which already exists in certain areas of El Salvador, where resistance of the vector has simultaneously appeared to both the principal insecticides used (DDT and dieldrin) calls, along with other emergency measures, for the use of other chemical insecticides having the two essential characteristics of high level efficacy against adult mosquitoes and long-lasting residual power. Since dieldrin resistance characteristically extends to BHC, chlordane, and other cyclodiene derivatives, the choice of an alternate insecticide had to be made within the group of organo phosphorus insecticides. Among them, preliminary experiments show malathion to be a very promising one. In fact, according to tests conducted by the Communicable Disease Center of the USPHS in 1957 and 1958, malathion alone or associated with DDT sprayed on walls in Mississippi at the rate of 200 mg of cumulative technical grade substance per square foot were fully effective, under experimental conditions, for over one year against dieldrin resistant *A. quadrimaculatus*.

On this basis the Government of El Salvador has agreed to perform a field experiment in a selective area of the country, with collaboration of the CDC experts. The plan anticipates treatment of houses in the Province of La Libertad, with varying rates of malathion alone, and with malathion and DDT. The results of the experiment, if successful, would indicate the most appropriate rate for spraying houses in areas of *A. albimanus* resistance to dieldrin and DDT.

Immediate steps have been taken to obtain the collaboration of universities and other scientific institutions to carry out laboratory research on the genetic factors governing development of insecticide resistance in the principal vector species in the Americas. Colonies of dieldrin resistant *A.*

*albimanus* and of *A. pseudopunctipennis* have been started in Central America and Mexico. In Trinidad a similar attempt is under way to colonize *A. aquasalis*.

### Field Studies of the Effect of Alterations of Sprayed Walls in the Interval between the Spray Operations

At every opportunity the Organization has stressed that to achieve malaria eradication on the basis of the application of residual insecticides it is imperative that total coverage be performed. This means that in addition to the need of spraying all habitable houses of the malarious area, no alteration be made on the sprayed surfaces between the intervals of the operations.

The extent of the alterations due to repapering, repainting, washing, repairing, substitution, etc., needs to be known in order to permit an accurate determination of the best cycle in which any insecticide has to be sprayed. Plans were made for a thorough field investigation which will start early in 1959 with the aim of determining how much alterations occur in houses sprayed after 3, 6, 9 and 12 months. It is expected that information will be collected from several countries of Central and South America in order to get a significant result.

### Dieldrin Study Project

The Pan American Sanitary Bureau and the Mexican Government in 1956 joined in a research project known as the Dieldrin Study Project. The chief purposes were: 1) to evaluate several formulations of dieldrin and also other pesticides when used as residual insecticides on the inside of the mud walls of the homes; and 2) to determine the susceptibility levels of the chief malaria vectors to the insecticides. These studies were terminated on December 31, 1958 and a report is in preparation.

### Developments by Country or Area

Argentina. The present plan for eradication by total coverage of the entire area where transmission occurs was prepared as recently as 1958, providing for spraying with DDT twice a year for four years (1959-1963) and for epidemiological surveillance of the areas where the disease is deemed already eradicated. It is expected that the agreement with PASB/WHO and UNICEF will be signed by the government in 1959.

The total area considered to be, or to have been, malarious is 270,000 sq. kilometers. Of this amount, 120,000 sq. kilometers, with some 80,330 houses, are expected to be subjected to total coverage spraying while 150,000 sq. kilometers will be subjected to epidemiological surveillance and emergency spraying as required. The population to be protected in the total areas of spraying and surveillance is estimated at 2,368,900.

Because of the relatively long history of antimalaria work in Argentina, and since both eradication and interruption of transmission have been achieved in some areas, evaluation and surveillance are most important to the program. The existing surveillance network will be strengthened and will include "fever case information posts" in urban and rural areas. The posts will be manned by volunteer collaborators, since the malaria evaluation personnel by themselves cannot gather enough information to assure results with certainty.

Bolivia. A four-year eradication program, including total coverage by residual spray operations, evaluation, and treatment of malaria cases, was begun on July 1, 1958, after an extensive investigation of the total malaria picture in the country had been carried out in 1956-57.

The malarious area constitutes 842,018 sq. kilometers of the total area of the country. This includes localities up to 2,500 meters in elevation in some areas.

A tripartite agreement, to run for the four-year period, was signed in July 1958 with a concomitant amendment providing for a transportation system. The agreement follows the basic plan of operations and provides for the use of drugs. Both dieldrin and DDT are to be used on an annual or six-month cycle, respectively, and in accordance with the epidemiological situation in the several provinces.

The population directly protected during 1958 amounted to 887,708, with an additional 228,220 indirectly protected. Approximately 181,166 houses were sprayed in 1958.

Evaluation operations are carried out through volunteer collaborators and by personnel of the service. The plan provides for registration and investigation of malaria cases and deaths, and parasitological confirmation. Operations are proceeding as planned.

Brazil. The malaria eradication program, to be commenced on a nationwide basis in 1959, constitutes a tremendous challenge to the people of Brazil and to the cooperating international agencies. Considering the vast territorial expanse, the population exposed, and the financial requirements for such a program, a plan was drawn up in 1957 to provide for eradication in successive stages within six principal areas.

With the exception of the State of São Paulo, all states and territories of the country will be the responsibility of the malaria eradication campaign of the National Department of Rural Endemic Diseases. An agreement between the government and PASB/WHO for the national program was signed in March 1958. The campaign, in collaboration with PASB/WHO and ICA, has begun with geographical reconnaissance and pre-operational activities in two of the six areas. Each of the areas in the country presents differing epidemiological problems and calls for individual plans of eradication. The present scheme envisages a program through which malaria will be eradicated from all of the country by 1965.

Large scale experiments in "universal" administration of

antimalarial drugs, by inclusion in the total available supply of common salt, have been undertaken in the Amazon region, one of the principal epidemiological areas. As a method of eradication, and possibly the only feasible method for some other areas of the world, this interesting development is being closely watched.

For the year 1959, in which chloroquinized salt will be used in the Amazon area and residual spraying in two other areas, it is estimated that some 1,669,000 houses will be sprayed, 15,000 tons of chloroquinized salt will be distributed, and 7,974,120 persons thereby protected.

The State of São Paulo will finance its malaria eradication program independently of the Federal program. Again, in collaboration with PASB/WHO and ICA, a complete plan of eradication was drawn up and approved in March 1958, and total coverage by spraying operations will commence in 191 municipalities in 1959.

In all areas in which operations begin provision is made for simultaneous activities of evaluation throughout the years of the program. These evaluation activities include the services of both volunteer collaborators and the campaign personnel.

Colombia. A plan of eradication was prepared in conjunction with PASB/WHO personnel in 1957. A tripartite agreement between Colombia, PASB/WHO, and UNICEF, incorporating the basic features of the plan, was signed in July 1958. ICA is also providing assistance. Spraying operations began in September 1958 and will continue until 1962.

The malarious area is 1,026,433 sq. kilometers or 90 per cent of the total area of the country up to an elevation of 1,600 meters. The number of persons to be protected directly through spraying operations is 8,820,897, and indirectly, 965,799, or approximately 72 per cent of the total population. This will require spraying 1,444,384 houses (and barrier protection for an additional 127,535 houses) twice-yearly with the insecticide specified—DDT.

The plan of evaluation contemplates intensive efforts to establish a wide and productive reporting network with the assistance of volunteer collaborators.

Costa Rica. An eradication plan was drawn up in 1959 with the assistance of PASB/WHO personnel. The elements of the plan, which calls for total coverage spraying from August 1, 1957 to January 31, 1961, have been subsequently incorporated in a tripartite agreement signed in May 1958. The customary assistance is to be provided by PASB/WHO and UNICEF. In accordance with the eradication law, houses on large company plantations must be sprayed by the company under the supervision of the National Malaria Eradication Service.

The malarious area is 31,526 square kilometers. The first year of total coverage with DDT was completed in August 1958. In the first cycle 58,408 houses were sprayed; in the second six-month cycle, 58,624 houses. The population directly protected was 287,535. In addition, there were ap-



Collecting blood samples, malaria eradication program, Cali, Colombia

proximately 8,000 houses protected during each cycle by private companies on plantations.

Evaluation operations will be undertaken throughout all malarious areas with parasitological confirmation of all cases registered in the central office. Commencing in July 1959 individual cases will be investigated. Entomological investigations will be conducted routinely.

Cuba. No malaria eradication activities were carried out in Cuba in 1958. The Organization expects to collaborate with the government during 1959 in a malaria survey and pre-operational activities, including training of personnel.

Dominican Republic. In 1955 consideration was given to the possibility of separating the malaria services from other health work and initiating a campaign for the eradication of the disease. Preparatory steps for the conversion into an eradication program were taken in March 1957 and a Tripartite Plan of Operations among the government, PASB/WHO, and UNICEF was studied.

In June 1958 the campaign for total coverage of malaria areas with dieldrin-indoor-residual spraying once a year began. The number of houses to be sprayed in the first year of operation is estimated at 406,441. The setting up of an adequate system of epidemiological evaluation is in progress.

Ecuador. In 1955 the government with assistance of PASB/WHO prepared a plan for the eradication of malaria. It included a complete geographical reconnaissance of the malarious area in addition to entomological and blood surveys to determine accurately the area to be covered. In 1956 a Tripartite Plan of Operations was signed and in March 1957 the first year of total coverage commenced. In 1958 the government requested and obtained additional support from ICA.

An amendment to the 1956 tripartite plan provides for

use of antimalarial drugs. Another amendment provides for operation of a transport service within the National Malaria Eradication Service.

The malarious area of the country covers 150,000 square kilometers, including areas from sea level up to 2,000 meters elevation. Both dieldrin and DDT are used in the campaign. For the first year of total coverage, which ended in March 1958, 300,318 houses were sprayed, providing direct protection to 1,777,566 persons. Dieldrin was used for approximately 80 per cent of these houses.

Evaluation efforts were being strengthened during the second year of the campaign by the addition of a network of 1,545 volunteer collaborators at the end of 1958 whose functions will include reporting of cases and taking of slides. It is expected that the number of slides to be sent in for examination will double the original program estimates.

El Salvador. Total coverage by intradomiciliary spraying was undertaken in July 1956, in accordance with the eradication plan drawn up the preceding year. This national eradication plan formed the basis for a Tripartite Plan of Operations entered into by the government, PASB/WHO and UNICEF late in 1957. The TPO was amended in 1958 to provide for use of drugs.

The 91 per cent of the area of the country considered to be malarious comprises some 19,300 sq. kilometers from sea level up to elevations of 900 meters. By July 1958, two complete years of total coverage with insecticides had been achieved in El Salvador. In the second year of coverage, from August 1957 to July 1958, a total of 314,995 houses were sprayed; of these, 202,728 were protected once with dieldrin, and 112,267 twice with DDT.

By August 1958, evaluation activities, through a network of voluntary collaborators, had developed throughout the country. These routine activities demonstrated that trans-

Staining blood smears, malaria eradication program, Surinam



mission of malaria had not been interrupted completely. Tests carried out by personnel of the government and the Organization demonstrated that *A. albimanus* was resistant to dieldrin in a number of localities, and to both dieldrin and DDT in four.

In the fact of dieldrin resistance the third year of total coverage, initiated in August 1958, provides for twice-yearly application of DDT in areas where no resistance to this insecticide has been found. In areas in which *albimanus* is resistant to both insecticides, mass chemoprophylaxis is to be installed.

The government, in collaboration with the Organization and the United States Public Health Service, began a study of the practicability of use of malathion in El Salvador.

Evaluation activities continue to increase, particularly in areas in which transmission has persisted.

Guatemala. An eradication plan, involving assistance from PASB/WHO and UNICEF, was undertaken with first-year total coverage of dieldrin commencing in August 1956. The third year of total coverage began on October 15, 1958 but with a complete changeover of insecticide from dieldrin to DDT—undertaken in face of *A. albimanus* resistance to dieldrin. A Tripartite Plan of Operations, formalizing the plan of eradication, was approved in October 1957. An amendment thereto, providing for use of drugs, was signed in February 1958. In June administration of the National Malaria Eradication Service was vested in SCISP.

Seventy-four per cent of the nation's area, or 80,380 sq. kilometers, is defined as malarious. Within this area at the end of the second year of operation, 331,090 houses were sprayed by national program personnel and an additional 8,500 by personnel of private enterprises. Protection was thus provided to possibly 1,477,675 out of the nation's total of 3,500,000 inhabitants.

Evaluation in Guatemala is focused on the problems occasioned by vector resistance equally as much as the epidemiology of persistent transmissions.

Haiti. The National Service for Malaria Eradication is an integral part of the Department of Health, itself under the Division of Public Health. A Malaria Commission in turn has a sub-committee on malaria with the Director of the Division of Public Health as chairman. At the request of the government the PASB/WHO assumed the responsibility for executing this program in 1957. Implementing these organizations is the SEM (Service for Eradication of Malaria) with central and field organization.

For spraying and evaluation purposes the country has been divided into three zones of 15 sectors, covered in all by 74 spraying brigades. The number of houses to be sprayed and the population to be protected in spraying activities were calculated as follows: 771,000 houses; 3,016,277 inhabitants.

The insecticide used was 50 per cent dieldrin water-dispersible powder, sprayed once a year.

Pilot sprayings were begun in September 1958 on a small

scale to familiarize the workers with the techniques required for work with the insecticides, and to provide all personnel with in-service training.

Evaluation operations in the whole country will be carried out by rural dispensaries, government hospitals, and public health centers as well as evaluators. A network of volunteer collaborators will be installed.

During December 1958 the Government of Haiti requested the temporary suspension of the program due to grave economic difficulties. PASB/WHO personnel are being posted to other ME programs within the Region.

Honduras. The plan for eradication of malaria was implemented February 1, 1956 with total coverage by means of residual spraying operations to commence January 1, 1957. Although both DDT and dieldrin were used during the conversion period, the use of dieldrin, in either 50 per cent water-dispersible powder or 18.2 per cent emulsion, was planned on an annual cycle up to and including 1960. Total coverage is expected to be discontinued upon completion of the final cycle except for residual foci made apparent through surveillance operations.

The malarious area of the country includes all provinces except those areas at elevations greater than 1,000 meters. This total of 87,389 sq. kilometers (78 per cent of the country) included 213,615 houses and a population of 1,069,074—protected by residual spraying during 1958.

A tripartite agreement, between the government, PASB/WHO, and UNICEF was concluded in January 1958. An amendment to this agreement for the purpose of establishing a plan for use of drugs in the eradication program was signed concomitantly. The agreement reflects a revision in time scheduling (the four-year stage of total coverage is to date from December 1957) and the fact that the NMES will be administered by SCISP.

Evaluation operations are planned to cover the normal objectives, including systematic determination of vector susceptibility to the insecticide used. Malaria cases are to be registered and tabulated in a central office.

During 1958 resistance of *A. albimanus* to dieldrin was recorded in Choluteca and to dieldrin and DDT in Comayagua. A revision of the program is being carried out involving a change of insecticides.

Mexico. The Mexican plan of eradication is both extensive and exhaustive. A Tripartite Plan of Operations, between the government, PASB/WHO and UNICEF, and incorporating the salient features of the plan, was signed in December 1955. Total coverage by residual spray operations was commenced in 1957. An additional supplementary agreement exists between the Ministry of Public Health and Welfare of Mexico and the Pan American Sanitary Bureau to study the toxicological aspects of dieldrin in the malaria eradication program.

The areas known to be malarious contain a total of 3,016,730 houses which provide shelter for 13,406,707 inhabitants (of the country total aggregating 32,078,785).





Entomologist looks for mosquitoes as a check on house-spraying efficiency and possible resistance, malaria eradication program, Tierra Colorada, Tabasco, Mexico

This number of houses was actually sprayed, either once with dieldrin (22.5 per cent of the total number) or twice with DDT, during 1957, the first year of "total coverage". Figures for the first six months of 1958 show 2,103,570 sprayed with DDT, and 685,814 sprayed with dieldrin.

Anopheline resistance to dieldrin, encountered in limited areas in August-September 1958, occasioned an immediate change to spraying houses in the affected areas with DDT instead of dieldrin. It is to be noted that this discovery of resistance was a direct result of a susceptibility testing

program and not the occurrence of unpredicted or uncontrolled cases of malaria.

Emphasis continues to be placed on evaluation, and very vigorous action has been taken to increase entomological and other epidemiological personnel. Activities are also under way to increase the number of volunteer collaborators. The decline in malaria cases produced by *P. falciparum* is encouraging.

Nicaragua. In May 1956, a "Plan for the Eradication of Malaria in Nicaragua" was presented by the Ministry of

Health, with the cooperation of PASB/WHO, to the government. Special legislation became effective October 1956.

The Tripartite Plan of Operations for malaria eradication in Nicaragua was signed by the government, PASB/WHO, and UNICEF in May and June 1957.

A special amendment concerning the use of antimalarial drugs was signed by the three parties in the latter part of 1957 and the early part of 1958.

The tripartite plan was organized as follows: 1) the evaluation of the malarious area; 2) the actual conversion into operation practices (1956); and 3) four years devoted to actual total coverage of the malarious areas (1957-1960 inclusive). This was to be followed, if necessary, by emergency spraying and eventually by a final evaluation of the program.

The government estimated a figure of 198,757 houses would be sprayed and 1,152,803 persons scheduled for protection in 1959. The program is conducted by the National Malaria Eradication Service which functions as a part of SCISP under the direction of the Ministry of Public Health.

A special report submitted in August 1958, after a review of the malaria program in Nicaragua, gave information and suggested remedial treatment in phases of the program that were not following the suggested lines of the TPO agreement.

Total coverage with insecticides began in November. A modification of the original program was necessary, due to the configuration of resistance by *A. albimanus* to dieldrin. DDT is now being employed. Due to postponement of total coverage, spraying will continue through 1962.

Panama. The plan to transform the old control program to one of eradication was adopted in the second half of 1956. Total coverage was initiated in August 1957. A Tripartite Plan of Operations, to remain in effect for a period of five years, was drawn up for signature in October 1957. Amendment No. I to this plan provides for use of drugs.

An area of 68,497 sq. kilometers, the equivalent of 92 per cent of the total area of the country, is malarious. Ninety-six per cent of the total population is found within this area including a preponderance at elevations less than 700 meters. Localities up to 1,000 meters are considered malarious. The count of 161,006 houses within the malarious area does not include certain jungle areas inhabited by hostile Indians.

Dieldrin is used exclusively for interdomiliary spraying once each year. During the first year, to total coverage, completed in August 1958, 155,963 houses were sprayed, and a total of slightly over one million persons protected. Data of the national eradication program do not include some 6,735 house sprayings accomplished by the Chiriqui Land Company.

Considerable progress has been made with regard to case notifications, parasitological examination, entomological investigation, distribution of drugs, and recording of information. Evaluation activities are being intensified.

Paraguay. The present eradication plan was completed in June 1956. Total coverage commenced in August 1957. The tripartite agreement, providing for assistance from PASB/WHO and UNICEF, was signed in July 1957. In 1958 two amendments were signed to cover the provision of drugs by the Organization and to incorporate a transport section in the Malaria Eradication Service.

The malarious area of the country covers a total of 42,286 sq. kilometers. During the first year of total coverage, which ended in November 1958, 147,809 houses were sprayed once with dieldrin, protecting a population of 759,542.

Evaluation operations are carried out simultaneously in all zones by technical personnel specifically assigned for the purpose and with collaboration of other government departments and private sources.

Peru. The plan for eradication, was approved in 1957. A Tripartite Plan of Operations, providing for participation of the government, PASB/WHO, and UNICEF, was signed in August of that year, and total coverage was commenced in November. Amendments to the tripartite agreement provide for incorporation of a transport section within the National Malaria Eradication Service and for use of drugs to be furnished by PASB.

Approximately two-thirds of the total area of the country is considered malarious. This amounts to 862,435 sq. kilometers. During 1958, according to plan; the entire coastal area was sprayed, but only partial operations could be carried out in the eastern part of the country. A total of 478,696 houses were sprayed, protecting 1,807,208 persons.

On the western slopes and in the coastal plain some of the houses are sprayed with DDT only once a year since the period of transmission is short and not very intense. Dieldrin is used in the upper parts of the Andean valleys, where the transmission period is longer, and in the east.

Five courses for field evaluation were organized in 1958. By November 2,377 notification posts were operating and 62 evaluators were in the field establishing additional posts. These activities will continue to increase.

Venezuela. Venezuela is, among the countries of the American tropics, the one which has the largest area from which malaria has been eradicated, and with more than three years without an autochthonous case. The area is 372,000 square kilometers.

Venezuela began its program of total coverage with residual insecticides in 1950. In 1958, of the 545 municipios included in the originally malarious area, 76, with a total area of 190,000 square kilometers, were still infested. An intensified program of residual house spraying is in full operation, using DDT and dieldrin. The latter insecticide is employed in areas where Chagas' disease superimposes malaria.

In spite of the great progress achieved some special problems have hampered the complete disappearance of the disease in certain areas.

Of the 190,000 square kilometers still with malaria, 83

per cent of the area is inhabited by Indian tribes with very characteristic nomadic habits. In this part of the country all houses are being sprayed as they are located, and, in addition, a very active case-finding service is at work to give immediate treatment to all malaria cases. The health authorities are considering the possibility of using medicated salt for this territory.

The other 17 per cent of the still malarious area is represented by regions in which malaria is transmitted either inside houses by vectors which do not rest indoors after feeding, or outside houses. In these areas an intensive and carefully organized program of mass treatment with drugs is in operation.

British Guiana. Malaria has been eradicated from the densely populated coastland along which 90 per cent of the total population (515,000) is located. *A. darlingi* has been eradicated from the coastal area as well as from the main inhabited localities of the interior. *A. bellator* remains fairly prevalent in the interior.

Spraying operations were totally suspended in all coastal localities in 1952. Spraying has been continued, however, along the lower course of the large rivers which are regarded as the only possible avenues of re-invasion of *A. darlingi* from the interior.

During January 1 to October 31, 1958 a total of 110 confirmed malaria cases were reported from the interior. All three species of plasmodia were identified. By and large, it is judged that the population in the interior is without protection except some in large mining centers where spraying has been continued by the companies.

In the interior, the Indian population is very nomadic. The peoples sleep mostly in leaf shelters or temporary camps. Under these conditions spraying is not feasible and the distribution of drugs in proper dosages and at proper intervals is not practicable. Transportation is extremely difficult and expensive. The Government of British Guiana is planning, with the collaboration of the Organization, to apply the medicated salt technique to the entire population in the interior beginning early in 1959.

British Honduras. The plan for the eradication of malaria was prepared by the government with the assistance of PASB/WHO during 1956, to be implemented during the early part of 1957. Conversion from control to eradication began in 1956 with the reorganization of the existing control program and training of the units in eradication methods. A Tripartite Plan of Operations, which includes the use of drugs, was agreed to by the government, PASB/WHO, and UNICEF. The first cycle of total coverage started in February 1957.

For the purpose of eradication the malarious area comprises a total population of 82,400 inhabitants living in an area of 22,965 sq. kilometers. In 1957, 17,082 houses were sprayed with dieldrin. In 1958, 19,343 sprayings were made.

The evaluation operations in the whole country are

carried out by rural dispensaries, mission dispensaries, and government hospitals, where blood smears are taken.

Dominica. The plan for the eradication of malaria was prepared by the government with the help of PASB/WHO in 1958, to be implanted during the early part of 1959. The conversion phase began during the year with the reorganization of the existing insect control program, training of the units in eradication methods, and a geographical reconnaissance prior to the commencement of spraying operations.

Geographical reconnaissance will include not only the houses in the malarious area, but also those in the rest of the island, as the mapping and numbering of houses are necessary for emergency spraying operations as well as for surveillance.

For the purpose of eradication the malarious area comprises a total of 2,786 houses with an estimated population of 12,700. This corresponds to the area of the medical district of Portsmouth—or 20 per cent of the total population of the island. Total coverage will be made twice a year at the dosage of two grams technical DDT per square meter, for three years. After two complete cycles of spraying coverage, the status of malaria transmission will be reviewed.

Evaluation operations in the whole island will be carried out by the medical stations which will take blood smears from all outpatients with fever or with recent history of fever. This will also be done by evaluation personnel of the service.

French Guiana. Malaria in the coastal areas has been eradicated, but there may still be transmission in the interior, particularly in the area bordering Surinam and Brazil. The entire population is reported to be under malaria surveillance, but DDT residual spraying is still being continued.

No international participation is included in the anti-malarial services of French Guiana. The program is considered to be in the advanced stage.

Grenada and Carriacou. The plan for the eradication of malaria was prepared by the government, with the help of PASB/WHO during 1955, to be implemented in February 1957. Field work in the form of conversion was initiated in July 1956.

For the purpose of eradication, the malarious area comprises a total of 8,200 houses with an estimated population of 26,000 covering about 160 sq. kilometers. This represents 30 per cent of the total area of the island.

A Tripartite Plan of Operations, agreed to by the government, PASB/WHO, and UNICEF, followed the Plan for Malaria Eradication which includes the use of drugs. The basis of the plan is the over-all coverage, by spraying, of all the malarious zones in six monthly cycles, using DDT. A two-week training course for spraying personnel is given between cycles of spraying.

For the evaluation of the project, blood smears are being collected from persons with fever or with history of fever,

by: district medical officers; physicians at hospitals; evaluators of the service; and district nurses at visiting stations. During 1958 (April-June) the evaluation team of PASB/WHO made a survey on Carriacou, taking 1,632 blood smears from non-selective school children, all the pre-school children encountered during the house-to-house survey, and fever and recent fever cases. No positive slides were found. Consequently, discontinuation of spraying and beginning of surveillance operations were recommended to the government. The application of any emergency measures following confirmation of a case of malaria will depend upon the investigation of the case.

Guadeloupe. Malaria was found to be fairly prevalent in 1950 in Guadeloupe. Parasite rates among 2,810 school children examined that year in 35 villages were found to be between 2.0-50.0 per cent. Residual house spraying with DDT has been conducted since 1950 and is still continued. Eighty per cent of the original malarious population is now free of infection and has been placed under surveillance.

In 1955 there were 12 cases of malaria confirmed by laboratory examination and in 1957 there were three positive cases found among 2,559 slides examined. In 1958, up to 31 October, only one case of malaria was reported.

No international assistance is being provided to this program.

Jamaica. The plan for the eradication of malaria was prepared by the government with the assistance of PASB/WHO during 1956. It was implemented in 1957, when the conversion phase was initiated by reorganizing the existing Insect Control Service, training of personnel in the different levels and the units of spraymen on eradication methods, and a geographical reconnaissance prior to the commencement of spraying operations.

For the purpose of eradication, the malarious area comprises a total of 298,413 houses with an estimated population of 1,342,860 inhabitants to an area of 10,050 square kilometers.

A Tripartite Plan of Operations, which includes the use of drugs, was agreed to by the government, PASB/WHO, and UNICEF. The first cycle of total coverage with dieldrin started January 1958; during the first eight months 234,378 houses were sprayed. Also during this year preliminary tests have shown that *A. albimanus* is resistant to dieldrin in four parishes on the south coast, and an intensive study is continuing. In two of the southwestern parishes *A. aquasalis* were tested showing susceptibility to dieldrin. The evaluation operations will be carried out by medical stations, hospitals, voluntary collaborators and evaluators who will take blood smears from all outpatients with fever or with recent history of fever. The evaluation personnel of the service will also carry out surveys.

Canal Zone. Spraying operations within the Canal Zone, while being carried on, are limited to a certain number of habitations occupied by agricultural workers removed from the ordinary population centers. Dieldrin is used for this



Fighting malaria along the rivers of Surinam

purpose. Houses of Canal Zone employees are not sprayed. Constant effort is made to control the breeding places of all types of mosquitoes by periodic cleaning and use of larvicides.

Routine investigation, including the taking of slides, is made of all suspected malaria cases among the outlying population of the Canal Zone. For the balance of the population no routine investigation is made. Available information is obtained from the Gorgas and Coco Solo Hospitals. From January to September 1958, 20 positives were found among 622 slides (3.2 per cent) taken from the rural population. Medical establishments reported 247 positives from 14,828 slides taken (1.6 per cent) during the same period.

St. Lucia. The eradication plan, providing for residual spraying during 1956, 1957, and 1958, was incorporated into a Tripartite Plan of Operations in July 1956. The tripartite agreement was amended in 1958 to provide for use of drugs furnished by PASB/WHO.

Spraying is done of all houses in areas having endemic malaria and in those areas in which conditions of potential endemicity exist. These number 13,720, to be sprayed twice-yearly with DDT. The number actually sprayed in the first six months of 1958 was 15,817, which considerably exceeded the estimate due to the addition of areas along the eastern coast of the island previously considered non-malarious. A focus of infection, disclosed early in 1958, was sprayed at once. Since April there has been no case found in this area. A total of 62,953 persons are considered to be directly protected.

Three evaluators have been employed since the beginning of the eradication program. In the first nine months of 1958, 38 positive cases were found out of 5,764 slides examined from all sources.

Surinam. In 1958 a tripartite agreement was signed between the government, PASB/WHO, and UNICEF which included the use of drugs in the program. The total coverage

was begun in May; through October 33,387 houses were sprayed (30,853 in the first six months cycle of DDT and 2,534 with dieldrin), of an estimated 39,011 in the malarious area.

Evaluation operations began simultaneously with spraying. Malaria cases were registered regularly.

Trinidad and Tobago. For the purposes of this summary, Tobago presents no malarial problem as the only two cases reported there since 1955 were found to be non-indigenous.

In June 1957 a tripartite malaria eradication program was drafted and agreed upon in principle by the government, PASB/WHO, and UNICEF to cover a period of one year. At the conclusion of this time studies resulting from the 12 months' operation would determine the course to be followed. The plan went into operation in January 1958.

Through October, 109,050 houses had been sprayed with dieldrin, protecting a population of 592,598.

The Malaria Eradication Service is operated by the Malaria Division under the Department of Medical Services of the Trinidad and Tobago Governments. Evaluation operations are under the auspices of the Malaria Division. Hospitals and clinics take blood smears from fever and post-fever cases and regular house-to-house fever surveys are made in the *A. bellator* areas. Drugs are distributed in the latter areas also. Studies and complete histories are obtained on all positive cases.

*A. aquasalis* was shown to be resistant to dieldrin in one locality at the end of 1958. Further tests are being carried out.

## Yellow Fever and *Aedes aegypti* Eradication

One of the major concerns of the Pan American Sanitary Bureau has been to stimulate efforts to eradicate the *Aedes aegypti* mosquito, urban vector of yellow fever. A resolution passed at the I Meeting of the Directing Council (Buenos Aires, 1947) entrusted the Bureau with the coordination of a continent-wide campaign against *aegypti*.

Over the past 10 years many difficulties connected with this campaign have been met and overcome, and encouraging progress has been achieved. Reports presented to the XV Pan American Sanitary Conference (San Juan, Puerto Rico, September 21 to October 3, 1958) on the status of the eradication of *Aedes aegypti* show that Bolivia, Brazil, British Honduras, the Canal Zone, Ecuador, French Guiana, Nicaragua, Panama, Paraguay, Peru, and Uruguay are free from the mosquito—these areas having fulfilled the criteria of eradication established by the Bureau.

The XV Conference appealed to countries and territories still infested to intensify their anti-*aegypti* activities under the terms of the resolution approved at the XI Pan American Sanitary Conference in Rio de Janeiro, 1942.

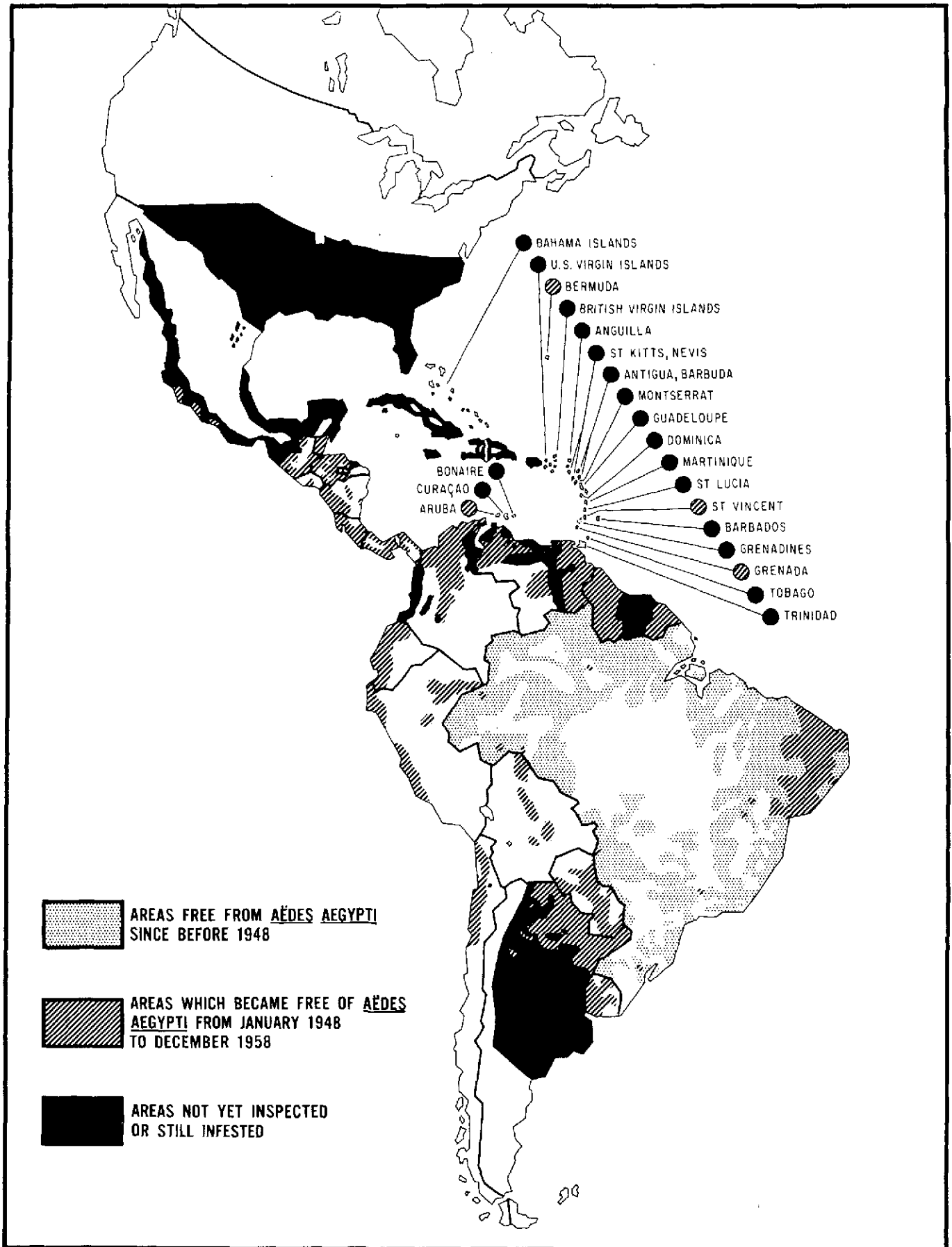
The map on page 30 indicates the degree to which the problem has been reduced since the initiation of the campaign. If one were to measure the problem throughout the Americas in terms of 100 points, it can be considered that at least 80 have already been covered.

In addition to those already mentioned, countries or areas free or practically free of the mosquito now include Chile, Costa Rica, Guatemala, Honduras, Aruba, Bermuda, British Guiana, Grenada, Bonaire, Nevis, Saint Croix, and Saint Vincent. These more recent successes are due in large measure to work conducted since 1932 in Bolivia, Brazil, and Peru under the sponsorship of the Rockefeller Foundation. Beginning in 1948 the Pan American Sanitary Bureau took on the responsibility for expansion of this collaboration to almost all the other countries and for establishing a coordinated campaign based on the systematic application of DDT to all collections of water capable of breeding *aegypti*.

### Criteria for Eradication

The criteria of eradication, established in the "Manual of Operations for an *Aedes aegypti* Eradication Service," have been strictly followed. In addition to three consecutive negative verifications for urban areas and two consecutive negative verifications for rural areas, adult mosquito capture was done in one-third of the houses in urban areas, together with search for larvae in all houses in rural areas, when the final verification was made with the cooperation of PASB technical staff.

STATUS OF *AÈDES AEGYPTI* ERADICATION CAMPAIGN - 31 DECEMBER 1958



## An Arduous Task

The aegypti eradication campaign in the Americas has been an arduous task, since there is no imminent danger of yellow fever in some countries, and thus an indifference exists toward making the concerted, decisive effort necessary to assure success of the campaign. Though in many countries yellow fever still constitutes a serious problem—one that causes great concern and absorbs much time, effort, and money—in others the problem is not so evident. In some, the disease, which formerly made violent incursions in port cities, has become almost solely a memory of the past.

From the epidemiological point of view, the problem will affect all the Americas as long as the urban vector exists. Although many areas are now free of the mosquito, reinfestation can easily occur. Such was the case recently in Cúcuta, Colombia, near the Venezuelan border, and in Key West, Florida. The urban vector can and should be eliminated from the entire Hemisphere.

There is no possibility of blocking off the virus in the forest areas of Central and South America, owing to the vastness of those areas and the role played by insects, monkeys, and perhaps other animals in spreading the virus. It is essential to immunize all persons coming into contact with the infected jungle. To do this it is necessary to have a permanent yellow fever vaccination service.

## Localized Resistance to DDT

The greatest technical obstacle thus far encountered in the campaign has arisen in the Caribbean area as a result of resistance of aegypti to DDT. But the observation of DDT resistance in several places in the Caribbean is no reason to abandon its use in the vast areas where it is completely effective. Other insecticides, such as BHC and dieldrin, are being used where the aegypti is resistant to DDT. Good organization and supervision of activities are the most important factors in the campaign against *A. aegypti*.

## Search for Economic Methods

There are extensive areas in Argentina and the United States infested with aegypti, but low winter temperatures prevent breeding during half the year. In those two countries every attempt should be made to find vulnerable points in the life history of the mosquito so that the cost of eradication can be reduced to a minimum.

One of the most pressing problems in the hemisphere-wide eradication campaign is financing operations where local resources are not equal to the demands of an eradication campaign.

The Bureau has made every effort, within its budgetary limitations, to meet the needs of all programs in which it participates, by providing international consultants and vehicles and other material not easily obtained in the

particular country, such as insecticides, flashlights, batteries, and spray pumps. Additional PASB contributions will undoubtedly unlock further resources in the several countries. Maximum efforts now and in the next few years could bring about the final extinction of this vector from all the Americas by the time of the XVI Pan American Sanitary Conference in 1962.

The status of the aegypti campaign in the Americas is presented by countries and areas below.

Argentina. Of the 2,123 localities inspected, 145 were found to be aegypti-infested. Among the latter, elimination of the mosquito has been confirmed in 113 of 114 localities examined after treatment was applied. The results thus far show that infestation in the tropical and subtropical areas of Argentina is low, though widely dispersed, a fact indicating that railroads have played the key role in spreading the infestation. Few investigations have been made in the temperate zone, where Buenos Aires is located, but two areas outside the city limits were found to be infested, and this fact indicated the degree to which the vector has penetrated. The eradication campaign, undertaken on an intensive scale only since 1955, shows promise of achieving conclusive results in the next few years.

Bolivia. *A. aegypti* is considered to have been eradicated from Bolivia since 1948, according to the standards established for the campaign.

Brazil. Final verification, made with the cooperation of PASB technical personnel in what were previously the most highly infested areas, showed that in August 1958 the *A. aegypti* mosquito had been eradicated from Brazil.

Chile. All of the 44 previously infested localities showed negative results in the checks made from 1954 to 1955. In a check made in May 1958, with the cooperation of PASB staff, one locality was found to be positive in the area where aegypti eradication operations proved to be the most difficult.

Colombia. The campaign in Colombia is nearing completion. All of the areas bordering on the Caribbean and along the Magdalena River Valley are considered to be free of *A. aegypti*. Checks are being made in a sector of the Cauca highlands, a sparsely populated eastern region, and in the Pacific coastal area.

Costa Rica. The campaign has been in its final phase since 1952. Only final verification remains to be made; this will be done in 1959 with the cooperation of PASB personnel.

Cuba. The nationwide campaign, initiated in March 1954, could not be carried through as foreseen because of the shortage of funds. All available personnel were concentrated in Havana in the expectation that within a short time the campaign could be extended to the entire island—at present one of the major aegypti strongholds in the Americas.

Dominican Republic. Anti-aegypti activities have been carried on since 1952 under the direction of the antimalaria

campaign. The results have not been satisfactory because operations in the urban areas were conducted only irregularly, and, in addition, *aegypti* showed a certain resistance to DDT. Measures were taken to re-define the campaign and to replace DDT with another residual-action insecticide.

Ecuador. Ecuador has been considered to be free of *A. aegypti* since 1953, when the last focus was discovered. Final verification, in May–August 1958, was carried out with cooperation of PASB technical personnel. The urban vector of yellow fever was officially declared eradicated.

El Salvador. The capital of the country was the only point found to be positive in the checks made in 1956. The 190 localities previously infested continue to be negative. Areas not previously investigated have been found to be negative. Verification is now being made, with the collaboration of PASB technical staff, in all localities where *aegypti* could possibly be present so that the campaign may be terminated by mid-1959.

Guatemala. Final verification will be completed in January 1959.

Haiti. Of the 2,379 localities inspected, 605 were found to be positive. In the latter, negative results have been obtained in 408 of 435 localities examined after treatment was applied. By the end of the year the campaign was paralyzed because of economic reasons.

Honduras. The anti-*aegypti* campaign, interrupted in 1955 when all 53 previously infested localities were already negative, has now been resumed. Campaign operations are being extended to the areas not yet investigated. Final verification is being carried on in the urban zones, with the cooperation of PASB technical staff, in order to confirm eradication of *A. aegypti* by mid-1959.

Mexico. When the campaign was interrupted for the second time in August 1955, among the 482 localities initially positive there were 223 in which negative results had still to be obtained or confirmed. It is expected that spraying operations of the antimalaria campaign, started in 1956, will considerably reduce *aegypti*-infestation in rural areas and that the problem will be confined to the large cities of the Yucatán Peninsula and along the seacoast.

Nicaragua. Final verification completed in 1957 with the collaboration of PASB technical staff confirmed the eradication of *A. aegypti* in the 18 areas previously infested in the country.

Panama. *A. aegypti* eradication was confirmed in Panama in the final verification made in June 1958 with the collaboration of PASB technical personnel.

Paraguay. *A. aegypti* eradication was confirmed in Paraguay in 1955, through final verification made with assistance of PASB technical staff.

Peru. The 191 localities previously infested are considered to be free of *A. aegypti*. Final verification with the cooperation of PASB technical personnel has confirmed the eradication of this mosquito from the country.

United States. The most recent information indicates that of 15 cities in the south of the country, which had indices of from one to 21 per cent during World War II, 10 were still positive in 1952, when inspections in 32 cities revealed, in 21 of them, indices ranging from 0.5 to 50.0 per cent. In surveys made in July 1956 and in 1957 in San Antonio, Texas, indices of 4.5 and 13.0 per cent, respectively, were found. Of the 38 cities inspected during 1957 in the states of Florida, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Texas, North Carolina, Tennessee, Arkansas, Oklahoma, Virginia, Kentucky, Missouri, and Kansas, 17 were found positive, with indices ranging from one to 52 per cent. The United States Government, greatly interested in solving the problem, has installed a pilot project in Pensacola, Florida, in order to establish a plan of operations covering all regions of the country where *A. aegypti* may possibly exist.

Uruguay. The verification made in Montevideo with the cooperation of PASB technical staff again produced negative results in 1958. This was the last test made prior to considering this country free of *A. aegypti*, for the mosquito has been eradicated since 1955 in all the 132 previously infested localities in the interior of the country.

Venezuela. The emergency campaign carried out in Caracas and other cities as a protective measure against the 1954 yellow fever outbreak appears to have produced good results, though some important cities, including the capital, continue to be positive. In certain areas *A. aegypti* has shown resistance to DDT, and it is therefore imperative that the latter be replaced by another residual-action insecticide. The government has made an important budgetary provision for the fiscal year 1958–59, and PASB has already provided consultants to help government planning of the eradication campaign.

#### Other Areas

Antigua and Barbuda. Of the 47 localities found to be infested when the campaign was initiated, all have become negative.

Bahamas. Anti-*aegypti* activities are limited to the island of New Providence, where only three of the 11 localities originally positive continue to be infested. The situation in the remaining 20 inhabited islands of the archipelago has yet to be determined.

Barbados. Of the 95 localities initially infested, 19 continue to be positive for *aegypti*.

Bermuda. After repeated applications of DDT, this island is considered to be free of *aegypti*.

British Guiana. After elimination of the reinfestation in Georgetown it appears that the results in the other localities previously infested continue to be negative. Final verification will be made as soon as possible.

British Honduras. Final verification made late in 1956 with the collaboration of PASB personnel confirmed the absence of *A. aegypti*.



Canal Zone. This Zone was found free of *A. aegypti*.  
Dominica. Of the 66 localities originally infested, 16 continued to be positive in October 1956, the last month under report.

French Guiana. French Guiana is considered to be free of *A. aegypti*, inasmuch as all the 55 originally infested localities continue to be negative.

Grenada and Grenadines. All the 13 previously infested localities, except the island of Carriacou, are now negative.

Guadeloupe and Dependencies. In Guadeloupe 25 localities were found to be infested, and 14 of these continue to be positive. Désirade and Marie-Galante have not as yet been investigated. *A. aegypti* were found in the islands of Saint-Barthélemy, Les Saintes, and Saint Martin (northern part), but an eradication program has not yet been started.

Jamaica. *A. aegypti* were found in 42 of the 63 localities inspected. Only 14 of these have shown negative results.

Martinique. Of the 34 localities found to be positive on this island, 27 were still infested as of the end of March 1958.

Montserrat. Of the 33 localities inspected after treatment was applied, one is still positive at the end of 1958.

Netherlands Antilles. In Aruba, after one application of dieldrin, all of the nine previously infested localities continue to be negative. In Bonaire, all the six localities were still positive in January 1958. Of the 155 Zones originally infested in Curaçao, 24 continue to be positive. Progress was made in the still infested islands of Saba, Saint Eustatius, and Saint Martin (southern part).

Puerto Rico. As of June 1958, 114 of the 248 originally infested localities, including San Juan, continued to be positive.

Saint Kitts-Nevis-Anguilla. Of 33 localities found initially to be infested, 21 are still positive. In Nevis negativity was maintained.

Saint Lucia. Of 50 localities found to be infested, 46 are now negative.

Saint Vincent. All eight of the previously infested localities were found to be free of *A. aegypti* in 1958.

Surinam. This area is considered infested, and it is hoped to put a plan of eradication into effect in 1959.

Trinidad and Tobago. Improvement was seen in the campaign after its reorganization and after DDT was replaced by BHC applied in short cycles. Of the 122 previously positive localities, 14 continue to have *aegypti*.

Virgin Islands (U.K.). These islands (Anegada, Virgin Gorda, Tortola, and Jost Van Dyke) continue to be infested.

Virgin Islands (USA). According to the local health authorities, *A. aegypti* has been eradicated from the island of Saint Croix. The others (Saint Thomas and Saint John) continue to be infested.

## Yellow Fever

The number of reported cases of yellow fever for the year was 64. All were of the jungle type and occurred in five South American countries. No human cases were reported in Central America, nor were there any isolations of yellow fever virus from mosquitoes. Though the virus has apparently been quiescent, it is too soon to conclude that it has not been meandering through the dense tropical rain forests of the Caribbean slopes of western Panama.

Studies of jungle yellow fever continued. Results were made available of a study of antibodies to yellow fever and other arboviruses in the sera of a group of howler (*Alouatta sp.*) monkeys that were collected in northern Honduras late in 1957 by the PASB yellow fever consultant and examined in the Rockefeller Foundation Virus Laboratories in New York. The sera were collected in coastal areas (where the only *Haemagogus* mosquito present is *H. equinus*), in order to study the possibility that yellow fever virus might be "smoldering"—i.e. maintaining itself in a low grade enzootic form—in the howler monkeys and *Haemagogus* mosquitoes.

Much to the surprise of all concerned the tests were negative for yellow fever, but did reveal that many of the monkeys had high titers of antibody to Venezuelan equine encephalitis, indicating that the virus had infected the monkeys. This represents a very considerable northward extension of the known range of that virus.

In addition to its long-term program of manufacturing 17 D yellow fever vaccine and making widely assorted epidemiological studies of yellow fever and other arbovirus

REPORTED CASES OF YELLOW FEVER IN THE AMERICAS, BY MAJOR POLITICAL DIVISIONS OF EACH COUNTRY, 1958

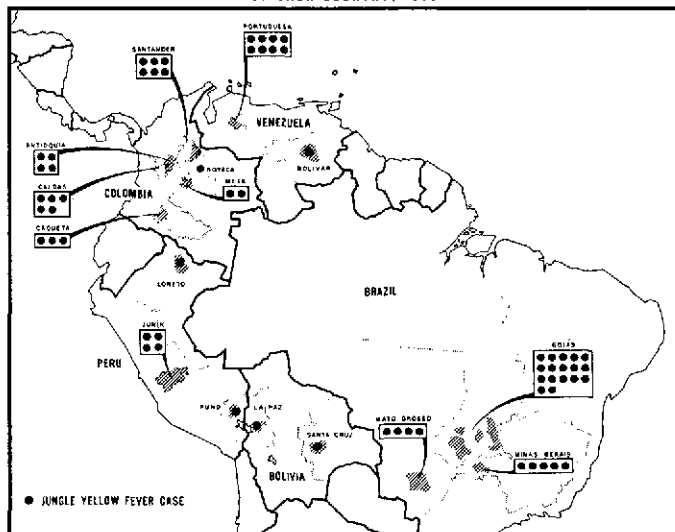


TABLE V. REPORTED CASES OF YELLOW FEVER<sup>a</sup> IN THE AMERICAS, 1949-1958

Area	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Bolivia	156	354	3	1	18	—	4	6	19	2
Brazil <sup>b</sup>	6	4	50	221	39	9	8	2	10	26
Colombia <sup>b</sup>	3	12	26	16	11	12	22	16	35	21
Costa Rica	—	—	180	93	5	—	—	—	—	—
Ecuador	1	—	42	—	—	—	—	—	—	—
Guatemala	—	—	—	—	—	—	—	—	3	—
Honduras <sup>b</sup>	—	—	—	—	—	1	—	—	—	—
Nicaragua <sup>b</sup>	—	—	—	7	8	—	—	—	—	—
Panama	4	2	3	1	—	—	—	1	4	—
Peru	4	16	4	1	—	26	—	—	3	6
Venezuela <sup>b</sup>	—	3	4	1	8	29	5	3	6	9
British Honduras	—	—	—	—	—	—	—	—	—	—
Trinidad and Tobago <sup>b</sup>	—	—	—	—	—	18	—	—	—	—

—No case. <sup>a</sup> Jungle yellow fever, with the exception of three cases in Trinidad in 1954. <sup>b</sup> All cases with laboratory confirmation. <sup>c</sup> Evidence of activity of the virus of yellow fever in vertebrates other than man.

infections, the staff of the Carlos Finlay Institute in Bogota, to which the PASB makes both financial and technical contributions, has been engaged since 1957 in very interesting studies of the administration of 17 D vaccine by cutaneous scarification, instead of by the usual method of subcutaneous inoculation.

The studies are necessarily time-consuming because of the rather large number of factors to be considered. So far the results have been only about 85 per cent successful; 100 per cent success is of course the target. Using the gentle

techniques that are the preferred ones for administering smallpox vaccine, two interesting things have been observed: 1) the avirulent 17 D virus can act as a "booster" of yellow fever immunity in persons with yellow fever neutralizing antibody in the blood at the time of vaccination by cutaneous scarification; while 2) on the other hand there are a few outright failures to produce any antibody at all in persons who have no traces of yellow fever antibody in their blood at the time of vaccination. The studies are continuing, with a view to setting up a field vaccination service that could reach anybody in Colombia, no matter how far he lived from an inexpensive supply of ice, and immunize him against yellow fever. A moderate increase in the cost of administering each dose of vaccine would be justified provided the vaccine were thereby delivered to the persons who were most exposed to jungle yellow fever. This objective is rather different from that in certain areas in Africa where the main objective of the cutaneous scarification technique is to reduce the cost of manufacturing and administer the yellow fever vaccine.

During the year, the Institute prepared 1,593,466 doses of vaccine and distributed 1,025,708 doses to various countries in the Hemisphere.

Yellow fever vaccine production and distribution during the year (up to November 20) under the project Brazil-51 amounted to 3,965,600 doses prepared and 3,403,400 distributed. Peru received 150,000 doses; Bolivia, 50,000; and Venezuela, 180,000.

In addition the Yellow Fever Research Laboratory at the Oswaldo Cruz Institute conducted 411 Protection Tests during 1958.

## Smallpox

Smallpox continues to be a problem of serious concern to various countries of the Americas, as indicated by the high incidence of the disease. Available data show that in 15 countries and other areas 103,211 cases of the disease were reported in the 10-year period 1949-58, with at least 16,000 deaths. In the same period, no cases were reported by seven countries (Canada, Costa Rica, Dominican Republic, El

Salvador, Haiti, Honduras, Nicaragua) and 17 other areas (Alaska, Bahamas, Barbados, Bermuda, British Honduras, Canal Zone, Falkland Islands, French Guiana, Guadeloupe, Hawaii, Jamaica, Leeward Islands, Puerto Rico, Saint Pierre and Miquelon, Surinam, Virgin Islands, Windward Islands).

TABLE VI. REPORTED CASES OF SMALLPOX IN THE AMERICAS, BY COUNTRY, 1949-1958

Area	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Total	18,352	20,815	9,221	9,301	8,930	11,979	8,348	6,371	5,724	3,214
Argentina	1,609	4,788	1,404	982	309	256	55	86	335	22
Bolivia	805	594	728	432	429	624	372	481	1,310	183
Brazil <sup>a</sup>	670	706	1,190	1,668	923	1,035	2,580	2,385	905 <sup>b</sup>	445 <sup>b</sup>
Chile	4	2,744	47	15	9	—	—	—	—	—
Colombia	3,040	4,818	3,844	3,235	5,526	7,203	3,404	2,572	2,145	1,666
Cuba	3	—	—	—	—	—	—	—	—	—
Ecuador	664	251	174	665	708	2,516	1,831	669	923	869
Guatemala	4	10	3	1	1	—	—	—	—	—
Mexico	1,060	762	27	—	—	—	—	—	—	—
Panama	—	—	—	—	—	—	—	—	—	8 <sup>c</sup>
Paraguay	179	304	282	797	770	207	57	132	103	21
Peru	6,305	3,612	1,218	1,360	172	115	—	—	—	—
United States	49	39	11	21	4	9 <sup>d</sup>	2 <sup>d</sup>	—	1 <sup>d</sup>	—
Uruguay	9	3	—	16	7	1	45	42	2	—
Venezuela	3,951	2,181	280	109	72	13	2	4 <sup>e</sup>	—	—
British Guiana	—	—	11	—	—	—	—	—	—	—
Martinique	—	—	1	—	—	—	—	—	—	—
Netherlands Antilles	—	3	1	—	—	—	—	—	—	—

<sup>a</sup> Data for the Federal District and State Capitals, excluding: Salvador 1953 and 1954; Niteroi 1955. <sup>b</sup> Information incomplete. <sup>c</sup> Including 4 imported cases. <sup>d</sup> These cases do not fulfill the generally accepted criteria for a diagnosis of smallpox. <sup>e</sup> Clinical diagnosis not supported by epidemiological evidence.

Table VI shows the geographical distribution of smallpox cases reported to the Bureau in the period 1949-58, by years.

The table indicates that some countries, such as Chile, Mexico, Peru, and Venezuela, which had a high incidence of smallpox, have eradicated the disease. Others, such as Colombia, where the incidence is falling as the result of an eradication campaign, and Argentina, Brazil, and Ecuador, constitute important foci of the disease. As can be seen, most of the Central American and the Caribbean regions have reported no cases of smallpox in the last 10-year period, with the exception of Panama, where an outbreak of eight cases occurred in 1958 in a town bordering on Colombia. However, since in many of those regions the number of vaccinations performed is relatively small, a great majority of the population is susceptible to the disease.

During the year the Organization continued its continental program with a view to stimulating interest in the countries of the Americas and cooperating with them in planning smallpox eradication programs through vaccination campaigns to be incorporated later in the general structure of the countries' public health services, having in mind the attaining of eradication of the disease in the Western Hemisphere.

To assist the countries in planning, organizing, and conducting eradication campaigns, the Organization provided them with technical advice in smallpox vaccination and dried vaccine production. It supplied various countries with equipment for the production of dried smallpox vaccine, as well as with a certain amount of vaccine. The Organization also provided several countries with the services of consultants specialized in the organization and development of vaccination campaigns, fellowships for the training of national personnel, or a small amount of equipment.

The smallpox eradication campaign in the Americas has been advancing at a slower rate than had been anticipated. Despite the excellent results obtained by several countries that have completed the eradication of the disease, or that are gradually reducing the smallpox incidence, the disease is still an important public health problem in the Americas. In order to achieve its eradication throughout the Hemisphere, concentrated efforts on the part of the countries concerned are required, both for the protection of their own inhabitants and for the safety of such countries that have taken the necessary steps to eradicate the disease. It is known that such delay in many countries has been due to administrative and financial difficulties. Among the principal administrative problems are the prompt acquisition



House-to-house smallpox vaccination campaign in Vereda Ciravita, Department of Boyacá, Colombia

of supplies and equipment and the recruitment of a sufficient number of trained and adequately paid personnel. It is also necessary to overcome obstacles derived from inadequate transport facilities and the poor systems of paying travel costs to field personnel.

Expenditures that must be made to complete the continental smallpox eradication campaign are relatively low in comparison with the enormous costs of campaigns for the eradication of other important diseases. It is hoped that the governments will be in a position to ensure the necessary allotments in their national budgets to pursue the eradication activities.

For many years an effective weapon against this disease has been available. Duly organized and systematic campaigns for the administration of smallpox vaccine are sufficient to ensure complete protection against the disease. With such measures the eradication of smallpox in the Americas is possible and should be achieved.

Therefore, emphasis must be placed on the need for coun-

tries to make the necessary efforts to overcome all administrative and financial difficulties that may have delayed the anti-smallpox activities, and to give to the smallpox eradication program the importance and priority it merits from both the national and international health point of view.

The Eleventh World Health Assembly in its Resolution WHA11.54 requested the Director-General to study and report to the Executive Board at its twenty-third session on the financial, administrative, and technical implications of a program having as its objective the worldwide eradication of smallpox. This resolution also recommended to all governments: a) that during 1959-60 the population be vaccinated in countries in which principal endemic foci of smallpox exist; b) that during 1961-62 additional vaccination of the population should be carried out in foci where the disease persists, and that subsequently revaccinations be given to the extent it becomes necessary in accordance with the experience acquired in each country; and c) that all countries in which smallpox vaccination is compulsory continue to give smallpox vaccinations during the eradication of this disease throughout the world.

The XV Pan American Sanitary Conference, considering that it is essential to eradicate smallpox in all countries, and taking into account the resolutions on this subject adopted by the Governing Bodies of the Pan American Health Organization and the World Health Organization, especially Resolution WHA11.54 of the Eleventh World Health Assembly, resolved:

1) To declare the eradication of smallpox to be a public health necessity that urgently requires the attention of all countries of the Americas;

2) To urge that the governments of the countries where smallpox still exists carry out nationwide plans for the eradication of this disease;

3) To request the cooperation of the Member Governments in supplying smallpox vaccine and technical advice, with a view to achieving eradication on a continent-wide scale;

4) To recommend that the Pan American Sanitary Bureau take all necessary measures to reach this goal, including collaboration in the production of vaccine, advice in the organization of nationwide campaigns, and the holding of intercountry meetings for the purpose of coordinating activities in this field; and

5) To request the Pan American Sanitary Bureau to undertake the necessary studies to establish a definition of eradication suitable for uniform application in the different countries.

The above resolutions confirm the importance given to the problem of smallpox by the Governing Bodies of the WHO and the PASB.

There follows a summary statement on the status of vaccination work in individual countries, with an indication of the difficulties that have prevented some of them from achieving early completion of the campaign.

## Developments by Country

In Argentina plans are being made to expand the smallpox vaccination campaign throughout the entire country; mass vaccination activities have been initiated in some of the northern provinces. The glycerinated vaccine at present produced in the country is of good quality and sufficient in quantity (10,000,000 doses in 1958) to cover the national needs. The production of dried smallpox vaccine is still small (155,000 doses in 1958).

In Bolivia during 1957 several smallpox outbreaks occurred in Cochabamba and in the Department of La Paz, and to combat them emergency vaccination campaigns were conducted using dried vaccine obtained from Chile and Peru. At the same time plans were made for a nationwide campaign. The attack phase was organized to vaccinate as a minimum 80 per cent of the population. It was estimated that, of the 3,000,000 inhabitants, 2,500,000 would be reached during the attack phase as of the end of 1958. Only lyophilized vaccine was used during the campaign. The vaccine was provided by the Vaccine Institute of Paris and by the National Institute of Health of Peru. The house-to-house method was used in applying the vaccinations, and in certain cases, series of vaccinations were applied in a temporary center to persons who had not received them at home. Everyone was vaccinated, without distinction as to age, sex, previous history of vaccination or smallpox, with the exception of children under four weeks old and persons who were seriously sick or suffering from eczema. The campaign is entering its phase of consolidation, as 2,453,031 persons were vaccinated in 1958. The virtual cessation of transmission of the infection achieved during the attack phase is being consolidated by extending the vaccination work to certain sparsely populated areas that were not reached during the attack phase. Services are being established to maintain a high level of immunity through urban vaccination centers and mobile rural equipment. The International Cooperation Administration of the United States is collaborating actively in this program. The dried vaccine production laboratory, whose equipment was provided by the Organization, is in operation and apparently is producing satisfactory vaccine.

In Brazil a plan for the eradication of smallpox within seven years on a nationwide basis has been approved by the government, and the activities have been started in the States of Maranhão, Alagoas, Rio de Janeiro, Paraná, Rio Grande do Sul, and Goiás, and will be extended later to the rest of the country. The Organization has shipped equipment for the production of dried vaccine to the laboratories in the States of Rio Grande do Sul and Pernambuco.

The laboratory for the production of dried smallpox vaccine in Pernambuco is being installed. The opening of the laboratory in Rio Grande do Sul was postponed because the construction on the new building was not completed. It is expected that both laboratories will be in operation

early in 1959 and that substantial amounts of dried vaccine will be available.

In Chile no smallpox cases have been recorded since 1953. The vaccination campaign, which was executed largely by the general local health services, has already covered the entire country. Activities to maintain the protection level in the population have been intensified, particularly in the rural areas, where smallpox vaccination is performed in conjunction with BCG immunization. During 1958, 21,100,000 doses of glycerinated and 797,500 doses of dried vaccine were produced. Measures are also being taken to increase the production of dried smallpox vaccine in the country. For this purpose the Organization provided additional equipment in 1958.

In Colombia the nationwide campaign was initiated in October 1955 with the aim of vaccinating 80 per cent of the population, or a total of 9,600,000 vaccinations, over a period of five years. The object of the plan is to incorporate the smallpox vaccination activities in the local public health services in a reasonable and well thought-out way, so that the immunity of the population will be kept on a permanent basis. The Organization has cooperated in this program by providing the services of a consultant to work with the national authorities in developing the program, providing the services of a consultant in the production of dried smallpox vaccine, awarding fellowships to three Colombian experts for studies abroad in the production of dried vaccine, and the organizing and developing of a smallpox vaccination campaign. UNICEF furnished the equipment for the production of dried vaccine. A systematic house-to-house vaccination campaign has been conducted in the Departments of Santander del Norte, Santander, Boyacá, and Cundinamarca, including the Federal Depart-

One of the 70 smallpox vaccinators working in Bogota, Colombia, vaccinating the population living on the outskirts of the city





Public Health nurse begins her daily rounds by showing a poster which reads, "Smallpox is a serious disease—avoid it by getting yourself vaccinated," Bogota, Colombia

ment of Bogota. At present the work is being performed in the Departments of Caldas, Valle, and Antioquia. From the beginning of the program to November 30, 1958, 4,652,615 vaccinations had been applied. (It should be pointed out that in the first 11 months of 1958, 2,375,473 persons were vaccinated, or a greater number than those vaccinated during the first two years of the project.) This was made possible through agreements reached for the financial collaboration of the departmental and municipal public health services. In 1958 the Samper Martínez Institute started to prepare dried vaccine regularly and in sufficient quantities to meet the needs of the campaign. As of August its production had reached 500,000 doses per month, and its production figures are expected to be higher in 1959. During 1958, 5,086,300 doses of dried vaccine, and 1,885,100 doses of glycerinated vaccine were produced.

In Cuba, glycerinated vaccine of good quality is produced in sufficient quantities for its requirements. Dried smallpox vaccine is not being produced at present, although the Organization has provided the necessary equipment for that purpose. The Government of Cuba has made available to the Organization 500,000 doses of glycerinated vaccine for the regional programs and has announced a contribution of 2,000,000 doses to the World Health Organization.

In Ecuador, plans have been completed for the nationwide vaccination campaign, which has in view the vaccination of at least 80 per cent of the country's population within a five-year period. Because of limited funds the vaccination activities have been carried out only in Quito and in the Province of Pichincha. In 1958 a total of 321,875 vaccinations were applied. The Organization provided the services of a consultant for a period of three months to develop the campaign plans, and in 1959 the services of a consultant will be provided to the program. The national laboratory is producing dried smallpox vaccine in sufficient quantity to meet the needs of the campaign. In 1958 the National Institute of Hygiene produced 30,010 doses of glycerinated vaccine and 1,342,050 doses of dried vaccine.

In Haiti the government has taken advantage of the surveillance phase of the yaws campaign in order to implement a smallpox vaccination campaign, which began in the principal cities of the country in 1957. Unfortunately, because of conditions of an administrative nature, it has not been possible to continue the vaccination work in rural areas. The Ministry of Public Health expects to accomplish this work, through its Division of Rural Health, with the collaboration of the Organization and UNICEF, as the first phase of a broader rural health program. As of the end of 1958 the number of persons vaccinated was approximately 503,000. The vaccine used was provided free of charge by Cuba, Mexico, Peru, and Venezuela.

In Mexico, as a result of a very active vaccination campaign started in 1950, covering the entire national territory, smallpox has been eradicated. No smallpox cases have been reported since 1951. Adequate levels of immunity are being maintained through vaccination as a regular practice of the local health services. The Organization has provided equipment for the production of dried vaccine. This vaccine is not yet being produced routinely, but Mexico has large quantities of glycerinated vaccine on hand (12,000,000 doses were produced in 1958). Five-million doses were made available to the Organization for the regional programs. In 1958, 8,000,000 persons were vaccinated.

In Paraguay, the vaccination campaign was started in September 1957 with the cooperation of the Organization. As of October 31, 1958 a total of 594,426 persons had been vaccinated, representing 48.3 per cent of the campaign's total objective, i.e., to vaccinate at least 80 per cent of the country's population within a three-year period. During the entire campaign, high-quality glycerinated vaccine received from Uruguay has been used.

In Peru the eradication campaign, started in October 1950 with the cooperation of the Organization, has covered 7,672,892 persons, or 87 per cent of the country's population. The success of this well-organized campaign is demonstrated by the fact that no cases of smallpox have been reported from Peru since December 1954. The dried vaccine produced by the National Institute of Hygiene, with equipment provided by the Organization, has been of good

quality. In 1958, 924,000 doses of glycerinated vaccine and 3,451,720 doses of dried vaccine were produced.

In Uruguay a vaccination campaign was organized in the area bordering Brazil. Plans are being made to expand these activities to cover the entire country. The laboratory of the Municipality of Montevideo produces vaccine in sufficient quantity to meet the needs of the campaign. During 1958, 2,100,000 doses of glycerinated and 100,000 doses of dried vaccine were produced. Uruguay has supplied glycerinated vaccine free of charge to the eradication campaign in Paraguay.

In Venezuela the campaign has been completed successfully throughout the national territory. Among the measures to be taken to consolidate the results are plans to increase the production of dried smallpox vaccine (the Organization has provided the necessary equipment) and to integrate smallpox vaccination as a routine activity in the local health services. In 1958, 844,727 persons were vac-

inated, and 6,000,000 doses of glycerinated vaccine and 50,000 doses of dried vaccine were produced. Venezuela has supplied glycerinated vaccine free of charge for the regional campaign.

In the Lesser Antilles, during 1958, smallpox cases were reported on the basis of clinical diagnosis only, one in Saint Vincent and two secondary cases in Anguilla. Subsequently, those cases were verified as chickenpox cases. However, the effect of such reporting has been very wholesome. Replies to requests made for information to the Zone I Office early in the year on the percentage of protected inhabitants show that in very few cases have the routine vaccination programs been effective with respect to maintaining a sufficiently high level of protection to prevent the appearance of an epidemic in the event the disease should be present. Active mass campaigns were carried out promptly in the neighboring islands, using vaccine provided free of charge by the National Institute of Hygiene of Venezuela.

## Rabies

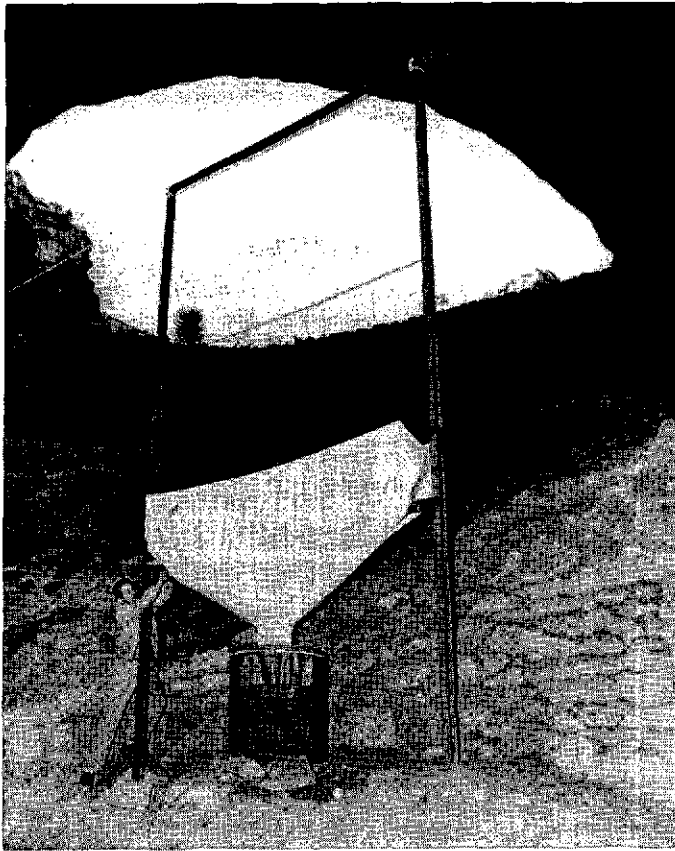
Rabies is one of the most fearsome public health problems that any health officer can face. Human disease invariably terminates fatally, so that when rabies is present in a community, practically any and every dog or cat bite results in the Pasteur treatment. Many persons receive the treatment each year regardless of the biting animal's rabies state because often the animals involved are not captured and adequately quarantined. In the Americas, all countries except Uruguay have a rabies problem; each year many preventable deaths occur, and thousands of persons are submitted to the Pasteur treatment of 14 injections of vaccine. These injections, many of which are not needed, are not without discomfort and a certain element of danger.

In most areas rabies as a public health problem would greatly diminish or disappear if the disease in animals, particularly the dog, could be brought under control. Thus to the health officer the greatest problem in the anti-rabies campaign is the matter of dog control and vaccination.

It has been in the canine rabies aspect of the problem that the Organization has provided most of its assistance. In addition, help has been provided in the important aspects of reliable laboratory tests and in the production and testing of hyperimmune serum and of vaccines, both human and animal.

Bat rabies has received increased attention, although in general rabies transmitted by bats is more an economic rather than a public health problem. It is cattle, horses, and other farm animals that receive most of the rabid bat attacks, particularly those of vampires. While economic losses can be great, the disease is seldom passed on to man or other animals by a rabid farm animal. But bat rabies does have public health significance because attacks on humans, while not frequent, still are not rare and some human fatal cases are reported (e.g., one proven case in the USA and 16 in Mexico during 1958). In addition, the bat/cattle complex represents a reservoir of rabies virus in a country. Ecological studies of bats have increased during the last few years.

During 1958 consultation in rabies was provided to the countries by the field staff, particularly the Veterinary Public Health Advisers in the Zone Offices. Technical materials such as vaccine production strains of rabies virus and standard vaccine have been provided (AMRO-45), and check-testing of nationally produced vaccines has been done (AMRO-76). Specific advice on rabies problems has been given by a consultant to the countries of Central America and Panama (AMRO-61), and by short-term consultants to the US-Mexico border area, Argentina, Brazil, Chile, Peru, and Panama (AMRO-61). More detailed



Carlsbad Caverns, New Mexico—Part of the ecological studies of bats, fundamental in solving the problem of bat rabies, is this trap, developed by the Communicable Diseases Center, USPHS. PASB/WHO is assisting and coordinating the studies

information on the rabies situation in the different countries and on the assistance provided may be found in the following descriptions by country.

### US-Mexico Border Area

As in most countries of the Americas, rabies is assuming a character of great concern not only to agricultural and public health authorities, but to the great numbers of population along the entire US-Mexico border. The dissemination of knowledge of rabies has quickened public interest in the problem, and consequently has increased the frequency of reports of bites by animals, both domestic and wildlife, involving increasing expenditure in both manpower and finance in the investigation of suspected cases. As a corollary, there now appears a burden of promiscuous Pasteur treatment, increasing the ultimate cost to the communities involved, with a consequent loss of productivity on the part of the patient during the course of treatment and an increase in the probable total of neuro-paralytic accident.

Requests for consultant services were made by the US-Mexico Border Public Health Association to the PASB, and in June 1958 a consultant in rabies was assigned to the Field Office, El Paso. The objectives of the appointment were: a) To study the rabies situation along the border; b) To make an assessment of need for assistance; c) To make proposals on long-term planning for rabies control by the relevant border communities; and d) To investigate, in the circumstances, the possible assistance which the Bureau might be able to furnish.

A study of the rabies situation along the entire border reveals that few communities undertake their obligations in control measures either seriously or with promise of continuity. In most cases this is due to lack of sufficient stimulus from higher authority, and from lack of coordination between border towns. In all border areas, with the exception of San Diego and El Centro, no facilities exist for authorized diagnosis. The apparent lack of reports from many communities along the border stems only from the lack of diagnostic facilities. Information on rabies activities on either side of the border should be more widely disseminated to the authorities concerned, and it is intended that this should be a function of the Field Office, El Paso.

Personnel previously trained in rabies diagnosis by a PASB consultant in 1954 have long since been moved and been replaced by presently untrained personnel. Education in simple matters of canine vaccine storage and even of vaccine administration is urgently required along the whole border. Of prime importance is the fact that no serious stray dog control programs have been attempted in any US-Mexico border area in recent years.

The consultant, in fulfilling the objectives of the assignment, visited each and every area on either side of the US-Mexico border area, holding discussions with state and municipal authorities concerned and seeking a solution for the particular area involved. The greatest need along the border is the vigilance and interest of the Bureau in the activity of each community. The second need is for the physical presence of the consultant at the place where control programs are anticipated, and thirdly, for training in methods and techniques of rabies diagnosis. In Tijuana, Nogales (Sonora), Ciudad Juárez, Reynosa, and Matamoros, such services are both necessary and welcome. In El Paso, Yuma, San Diego, Laredo, and Brownsville, work is necessary in the field of promotion of adequate legislation and in increased use of presently excellent facilities for rabies control programs.

Rabies in wild life along the border appears to be limited mostly to skunk and fox. The situation in California, where most work has been done in evaluating the extent of this problem, shows that wild-life rabies (one per cent in 1922-49) constituted 62 per cent of all cases of rabies in 1955, and from 1956, accounted for 76 per cent of the total number of cases. This now appears as a reflection in differences of vector efficiencies, the skunk now replacing the coyote. It



appears therefore that with this, an extension of rabies into an extensive skunk population has occurred. In El Paso, no less than 94 dogs were found positive in 1957 and a total of 37 dogs in 1958. During 1958, no less than 935 Pasteur treatments were furnished the people of Texas following histories of suspected exposure to rabies.

Production of low cost vaccine, especially for use along the Mexican side of the border area, is adequately furnished by the Instituto de Investigaciones Pecuarias, Palto Alto, Mexico, and arrangements are now made for vaccine to be supplied at a very low cost of two pesos per dose to Mexican border authorities.

Provision is made for the further use of consultant services, in areas where little or no work has been done in rabies control since 1952. Such use of PASB services appears to be fruitful especially in Tijuana and Ciudad Juárez.

The proposed appointment of a public health veterinarian to the El Paso Health Department will do much to ensure both adequate diagnosis and supervision over future stray dog control programs. Elsewhere along the border, assistance in rabies control will be offered as opportunity arises.

The study of the situation along the border area indicates that a need exists for stimulating the interest of both the U.S. and Mexican border authorities in the planning and operation of rabies control programs, and that such coordination can be provided effectively only from the international level, such as the El Paso Office of PASB/WHO.

### Cuba, the Dominican Republic, Haiti, and Mexico

Historical evidence indicates that vampire bat rabies existed in America in pre-Columbian times. Recent investigations have proved that rabies in bats is widespread in both continents. In tropical America vampire bat rabies is believed to be causing losses in cattle estimated at over 18 million dollars in recent years. High-egg passage Flury-type vaccine developed in Mexico has proved to be the only effective control measure. All efforts directed to reduce the vampire bat population have proved costly and unsuccessful. Mass vaccination of cattle has served to reduce the incidence of the disease to only sporadic cases in the enzootic areas where formerly in certain localities an 80 per cent mortality occurred.

The PASB office located in Mexico collaborated with the United States Public Health Service as well as with the Johns Hopkins University in the study of the population dynamics of the free-tail bat (*Tadarida brasiliensis mexicana*). In this connection the Bureau has been able to demonstrate the true migratory nature of this species, having recorded flights of over 100 miles. The Organization has collaborated with Cornell University in the study of the physiology of the reproduction of the common vampire bat (*Desmodus rotundus*) and with Yale University in the collection of live tropical bats to determine the physiological mechanism

of the echo location and the effects of interfering noise in their normal flight.

All countries have organized national public health programs for rabies control. In general, better laboratory diagnostic facilities have been developed; in Mexico and Cuba reliable rabies vaccine and hyperimmune serum are being produced; the indiscriminating use of the Pasteur treatment has been discontinued and criteria for prophylactic treatment follow the recommendations of the WHO Expert Committee on Rabies. Notwithstanding, the incidence of rabies in dogs is still high and efforts are being made to implement programs on a permanent and continuous basis for mass immunization of dogs and elimination of strays.

Another important phase of rabies control in Mexico has been the demonstration, with the collaboration of the U.S. Fish and Wild Life Service, of measures for the control of wolves and coyotes along the international border with the USA. A selective poisoning with strychnine tablets and sodium fluoroacetate (Compound 1080) has proved both economical and effective. Since this program was initiated by PASB/WHO in 1951, the State of New Mexico has not reported the presence of wolves that formerly were noted by their predatory activities. The use of aureomycin hydrochloride as a preservative of the poisoned meat indicates the possibility of using Compound 1080 to advantage in warmer countries for the control of foxes and coyotes.

Rabies vaccine being administered to child



## Central America and Panama

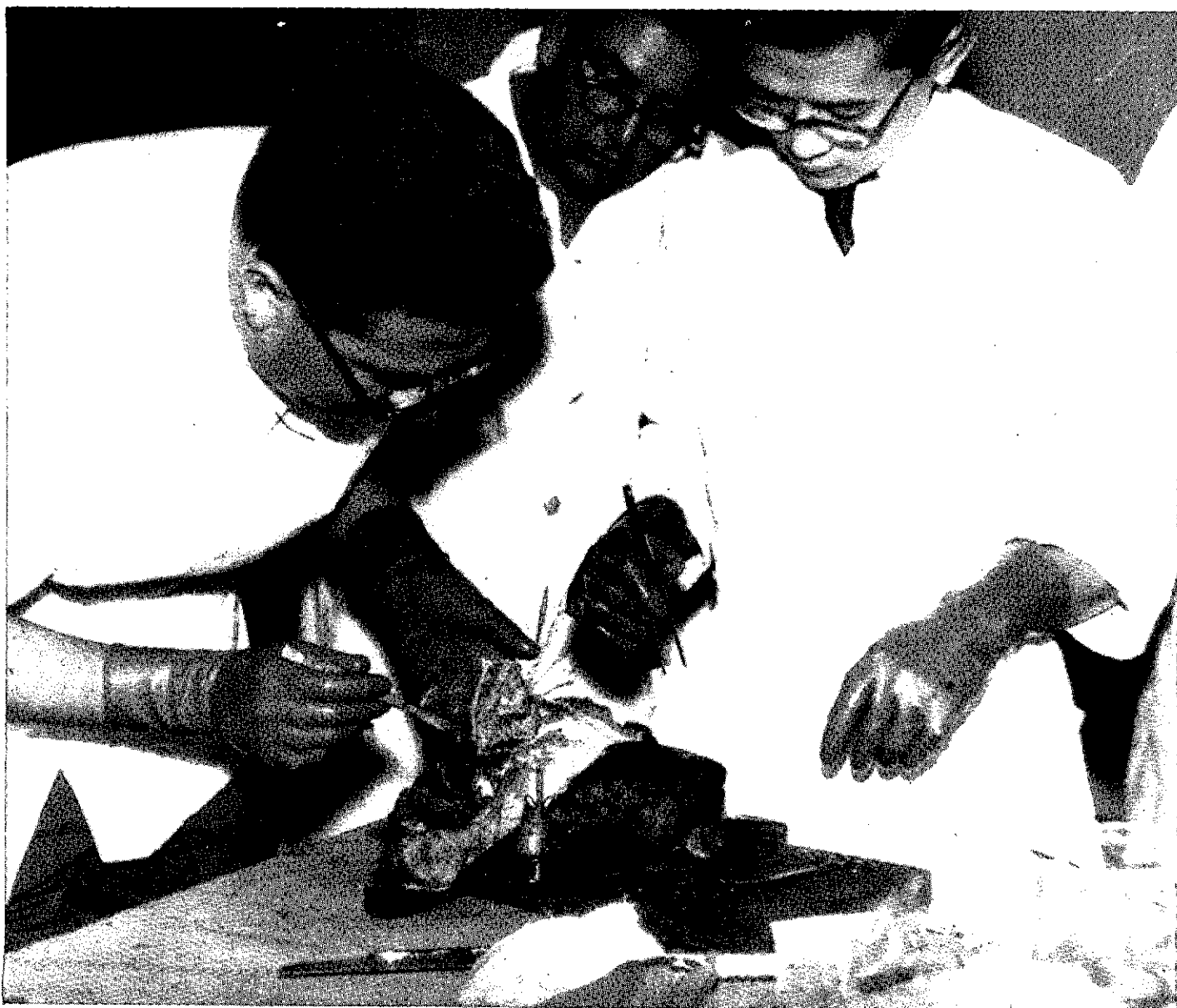
In September 1957, at the request of the Governments of the Central American countries and Panama, the Bureau assigned to Zone III a rabies consultant to organize and coordinate rabies-control work and facilitate the training of personnel. One of the consultant's first functions was to study the epidemiological status of rabies in these countries. On the basis of the findings, a proposal was drawn up for a zone control plan, which was presented and approved at the II Meeting of Public Health Ministers of Central America and Panama, (San José, Costa Rica, February 26-March 4, 1958). This zone project has been initiated in Panama,

Guatemala, Costa Rica, and Nicaragua. El Salvador and Honduras have approved programs and budgets for their anti-rabies work, to begin in January 1959.

The work undertaken can be summarized as follows:

(a) Canine-Rabies Control. Advisory services were furnished for the preparation of a detailed plan of operations and budget for the anti-rabies program of each country. Special attention was given to effective control of stray dogs, to legislation, to intensive and periodic vaccination of dogs, and to health education of the public, stress being laid on the importance of these activities as the bases of a control program. One example of the work done is the rabies prevention program in Panama, where from February to

PASB/WHO consultant shows technique of brain extraction from dog's cranial vault to students of Rabies Training Course at University of San Carlos, Guatemala





Studying characteristics of Negri bodies in rabies laboratory at University of San Carlos, Guatemala

August, 1958 some 15,000 dogs were vaccinated in the area bordering Costa Rica.

Diagnostic activities have been intensified in all the countries, and as a result of these measures the incidence dropped from 112 cases in 1957 to 60 in 1958. Anti-rabies vaccine for these programs was obtained through the Bureau from laboratories in Mexico and the United States.

(b) Sylvatic-Rabies Control. During 1957-1958 programs for the control of bat-transmitted bovine rabies were begun in El Salvador and Panama, and bovine vaccinations were intensified in the programs of Costa Rica, Guatemala, Honduras, and Nicaragua (34,019 animals vaccinated). Evidence of the positive results of this work can be seen in the reduced incidence, which dropped from 107 cases (early 1957) to 48 (October 1958). The consultant gave technical advice to the animal-health services of the countries on the control of bats and other predatory animals of importance in the epidemiology of rabies. Vaccine requested for these programs was obtained from United States laboratories through the Bureau.

(c) Human Rabies. Advisory services and assistance were furnished on 1) determining the needs for carrying out preventive treatment in man; and 2) on procedures for treatment. Urgent shipments of hyperimmune serum and anti-rabies vaccine for human use were made to several countries. Information material and publications were also furnished.

(d) Vaccine Production. Collaboration and technical advisory services were furnished to laboratories in Zone III that produce anti-rabies vaccine for human use. This assistance was directed both toward improving production and establishing biological control (potency and viability) of the vaccine manufactured.

(e) Personnel Training. To facilitate training of personnel, and as part of the regional control plan, a rabies training course was given for the Central American countries and Panama. The 24 participants included physicians, veterinarians, and laboratory workers from the rabies programs of each country. The main topics covered were diagnostic tests, vaccination methods, vaccine production, potency tests, and human and animal prophylaxis.

## Colombia

Efforts were made toward a coordination of the assistance provided by PASB/WHO and that by SCISP toward the common goal of assisting Colombia in its struggle to control rabies. A pilot program was developed at Sogamoso (Colombia-4) which could not be sustained due to lack of technical assistance. During 1957 there were 33 human deaths in Colombia and in the preliminary report for 1958, 19 deaths are listed.

Rabies transmitted by bats is exacting a severe toll of the cattle population with its corresponding economical and nutritional burden in the human population. Exact figures totalling losses are unavailable, but it is known that in March several thousands of animals died during an epizootic. Assistance by PASB has been provided since 1956 when a study revealed the nature of the interrelated factors producing major losses during that year. Correspondence, training at the Caracas course, reference virus and serum have provided encouragement which has resulted in good diagnostic facilities for rabies.

## Peru

For a number of years an anti-rabies program has been in operation with modest funds. With the technical assistance of the Organization these activities have covered most of the country, but the level of operations has served to delineate the problem rather than control rabies. For the latter, adequate financing must be provided.

During 1958, studies were made of the hydatidosis problem in Peru and of the possibilities of combining into one campaign the dog-control phases of control work against these two diseases. Both diseases are important public health problems in many areas of Peru. Such a combined attack, which has been judged to be quite practical and feasible, will result in considerable savings in operating expenses. The work in Peru has provided valuable data upon which can be built an all-out campaign when the necessary funds are available.

## Brazil

Both urban (canine) and bat rabies are serious problems throughout Brazil. In the Federal District alone the average annual number of laboratory proven cases in dogs is in the vicinity of 500.

During the year, the Zone Veterinary Public Health Adviser was constantly in touch with the health and agriculture authorities of the Federal District with respect to the development of a project for rabies control. The visit of the WHO Rabies Consultant to Rio in October provided a great stimulus, which resulted in an increase of interest in the disease. The consultant was received by the Minister of Health and by the Mayor of Rio, both of whom expressed a desire to improve prophylactic and treatment measures with respect to this disease. His report has been received; it is hoped its recommendations will lead to the setting up of a National Advisory Commission on Rabies as well as the appointment of a rabies control coordinator within the Ministry of Health. This plan would also include the organization of a pilot demonstration area for rabies control in the Federal District.

The production of anti-sera and an increased production of vaccine for both human and animal use are envisioned by the government.

## Rabies Control in the Americas

In general, rabies control programs have been given rather low priority in public health practice chiefly because the number of human deaths due to this disease are infinitesimal compared to many other communicable diseases. Where carried out they have been sporadic and inadequate. Most campaigns have not been intensive but rather extend over a period of months or the entire year and usually have not been extended into the suburban areas surrounding the large cities. Elimination of strays in general has been inadequately carried out except in those areas where poisoning has been used. After interest has been aroused sufficiently to carry out a campaign, follow-up has usually been poor. In all instances any effort made has been rewarded by a marked reduction in the number of positive dogs, but in no case has the disease been eliminated.

Although modern methods are being used and live virus Flury vaccine is receiving widespread use in control campaigns, in many instances the vaccine used is not potency-tested. This is of special concern because there is reason to think that in some cases vaccine is being used which is of no value. The use of a live virus vaccine has tremendous advantages over an inactivated vaccine for rabies control purposes, but it does increase the possibility that vaccine may be inactive at the time of its use. The vaccine virus

must be alive and at good titer at the time it is inoculated into the animal. If inactive vaccine is used in control campaigns it is not only a waste of time, effort, and money, but tends to give vaccination a bad name and discourages its future use.

## Vaccine Production

While inactivated vaccines for human use must be shown to be potent, the greatest concern is with the live virus vaccine for canine and bovine use. Greatest problem in production is in their preservation, which must assure the presence of sufficient live virus at the time of use. It is in the drying process that difficulties are occurring, and, even though satisfactory immediately after drying, a vaccine must have stability on storage. Tests must be made to assure this stability. Since live virus vaccines will probably be used to an increasing extent and since proper drying is all important in their preparation, it would seem that a special effort in this specialty is indicated. The availability of a manual outlining the detailed points of selection, operation, and maintenance of drying equipment, test for efficiency, and perhaps a consultant for special problems would be of great help.

## Vaccine Testing

In most instances the lack of potency tests are due to two factors—the unavailability of healthy experimental animals and of proper deep-freeze facilities for maintaining standard challenge virus pools.

In the case of inactivated vaccine for human use, mice are required and frequently are available at least in sufficient numbers for a screening type of test. Although frozen pools of previously titrated challenge virus are preferred, it is still possible to run the complete Habel Test using fresh passaged virus as challenge since a complete titration of the challenge is an integral part of each test.

Potency tests of Flury vaccine have been a problem in nearly every laboratory. The problem has been in obtaining an intramuscular challenge virus which will be consistently virulent in the control guinea pigs. Although a recent change from salivary gland street virus to mouse brain fixed virus seemed an improvement, difficulty is still being experienced in obtaining fixed virus sufficiently virulent to give 100 per cent deaths in control animals. Further experimental work needs to be done on this problem. However, a titration of the amount of live virus in the vaccine by intra-cerebral inoculation of mice is possible and is better than nothing. It is also a good screening procedure for testing the efficiency of drying and the stability of the dried vaccine.

# Poliomyelitis

In regions of the world with low standards of personal and community hygiene, exposure to the poliomyelitis viruses and the consequent development of antibodies occur almost universally and at an earlier age than in areas where these standards are higher. Placentally-transferred passive immunity to poliomyelitis can be converted to active immunity by sub-clinical infection during the phase of declining protection by maternal antibody. Such induction of active immunity could partially explain the low frequency of clinically recognizable poliomyelitis epidemics in most tropical and subtropical countries, a frequency, however, which is increasing in apparent relation with the improvement of socioeconomic and sanitary conditions in these areas.

Infant mortality rates have been found to be a good index of the degree and quality of general sanitation and public health services of a given population; it has been observed that where the rates decrease below 80 per 1,000 live births, poliomyelitis outbreaks begin to occur and are particularly severe when the rate falls below 40. Additional support to this observation was given in 1957 by British Guiana, where the first recorded outbreaks of paralytic poliomyelitis occurred when steadily decreasing infant mortality rates reached 70 per 1,000 live births. Similar paralytic outbreaks and epidemics have been increasingly frequent in the last years in several of the countries of the Region (see table); in 1958 they were reported from Colombia, Nicaragua, Haiti, and Brazil.

Intensive vaccination of the susceptible population of the United States and Canada with Salk vaccine has been credited, in part, with the uniform decline of paralytic rates observed in those countries in 1956 and 1957. In 1958, however, in spite of a substantially larger Salk-vaccinated population, the number of paralytic cases in the United States far exceeded the figures for 1957.

Vaccination with an adequate and practical vaccine is still the only effective means of controlling the disease. The development of Salk vaccine constituted an important step in that direction. However, the inability of the inactivated virus vaccine to prevent infection of the intestinal tract by virulent or attenuated poliovirus was soon demonstrated. Furthermore, the incapacity of Salk vaccine to interfere with the movement of poliovirus in the community as well as the necessity for administering it by injection, with repeated "booster" doses, and the fact that its manufacture is technically complicated and expensive for most countries of the world, have kept alive the search for better types of immunizing agents against the disease.

## Live Poliovirus Vaccine Trials

Active immunization against poliomyelitis with attenuated live virus vaccines has been pursued by a small group of investigators during the past nine years. There are now available attenuated strains of the three known types of polioviruses which have been proved safe and effective in extensive laboratory experiments and substantially large trials in man under field conditions.

The vaccine is administered by mouth in capsules or in a liquid, cherry-flavored preparation. The attenuated virus multiplies in the intestinal tract in much the same way as the naturally-occurring strains. The antibody response is comparable to that of natural infection, and it may be assumed that the resulting immunity may also be as long-lasting; there are reports showing that it may, indeed, persist for at least seven years.

A large proportion of orally immunized individuals are resistant to subsequent infection of the intestinal tract by the homologous virus; therefore it is anticipated that the generalized use of attenuated strains of poliovirus as immunizing agents may eventually make possible the eradication of poliomyelitis.

Following the successful demonstration in Minnesota in 1957 and 1958 (the latter with PASB participation) of the first use of a live poliovirus vaccine containing the three types of poliovirus, in normal families in their natural setting, the Pan American Sanitary Bureau has stimulated

Nurse administers oral vaccine against poliomyelitis to a child of the Andean village of Santa Rita, Colombia

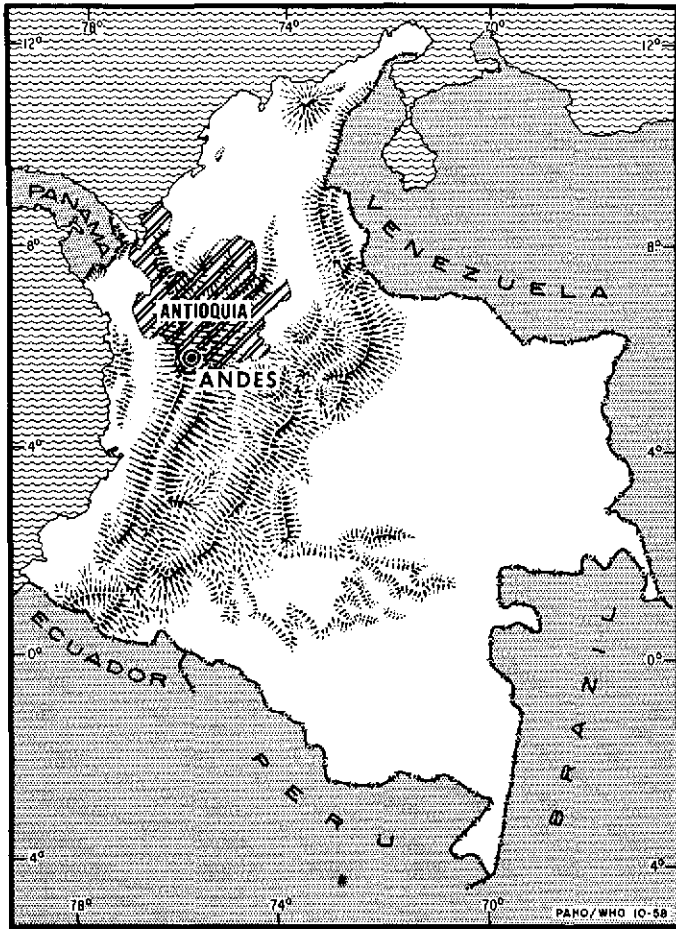


TABLE VII. NUMBER OF REPORTED CASES OF POLIOMYELITIS AND RATES PER 100,000 POPULATION IN THE AMERICAS, 1955-1958

Area	1955		1956		1957		1958 <sup>a</sup>	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Argentina	435	2.3	6,496	33.3	757	3.8	813	4.0
Bolivia	1	0.0	18	0.6	14	0.4	3	0.1
Brazil <sup>b</sup>	368	4.1	698	7.4	461	4.8	535 <sup>c</sup>	...
Canada <sup>d</sup>	1,021	6.5	607	3.8	273	1.6	299	1.8
Chile	416	6.4	719	10.9	333	5.0	333	...
Colombia <sup>e</sup>	155	1.4	108	0.9	169	1.4	215	1.7
Costa Rica	45	4.7	170	17.2	51	4.9	58	5.4
Cuba	267	4.4	56	0.9	97	1.5	103	1.6
Dominican Republic	—	—	15	0.6	1	0.0	4 <sup>c</sup>	...
Ecuador	40	1.1	30	0.8	42	1.1	37	0.9
El Salvador	9	0.4	54	2.4	68	2.9	41 <sup>e</sup>	...
Guatemala	86	2.6	146	4.4	107	3.1	85	...
Haiti	—	—	—	—	45	1.3	238	...
Honduras	...	...	...	...	...	...	21	1.2
Mexico	1,824	6.1	602	2.0	1,562	5.0	904	2.8
Nicaragua	113	9.1	48	3.7	68	5.1	255	18.5
Panama	14	1.6	144	16.3	5	0.5	5	0.5
Paraguay	57 <sup>e</sup>	5.2	115	7.2	35	2.1	23	...
Peru <sup>e</sup>	203	4.9	294	6.9	291	6.5	480	9.8
United States	28,985	17.6	15,140	9.1	5,485	3.2	6,031	3.5
Uruguay	551	21.1	71	2.7	49	1.8	162	...
Venezuela <sup>e</sup>	390	11.7	321	9.3	275	7.6	221	5.7
Alaska	57	27.3	11	5.3	4	1.9	2	...
Bahama Islands	—	—	—	—	2	1.7	1	...
Barbados	—	—	—	—	1	0.4	—	—
Bermuda	—	—	—	—	1	2.4	—	—
British Guiana	2	0.4	4	0.8	90	18.2	—	—
British Honduras	1	1.3	—	—	—	—	6	...
Canal Zone	4	10.3	16	42.9	—	—	1	...
French Guiana	—	—	9	30.7	—	—	—	—
Guadeloupe	13	5.5	4	1.6	—	1	—	...
Hawaii	185	36.8	62	11.8	10	1.8	77	...
Jamaica	71	4.6	14	0.9	394	25.0	90	...
Leeward Islands								
St. Kitts-Nevis-Anguilla	—	—	1	1.8	—	—	—	—
Martinique	2	0.8	—	—	—	—	—	—
Netherlands Antilles	14	7.7	24	13.0	—	—	3	...
Puerto Rico	434	19.2	54	2.4	44	1.9	60	...
Trinidad and Tobago	16	2.2	9	1.2	274	35.8	12	...
Virgin Islands (USA)	1	4.2	—	—	—	—	—	—
Windward Islands								
Grenada	...	...	...	...	31	33.0	—	—
St. Lucia	1	1.1	8	9.0	4	4.4	—	—

— No case. ... Data not available. <sup>a</sup> Provisional. <sup>b</sup> Federal District and State Capitals, except Niteroi, 1955. <sup>c</sup> Incomplete. <sup>d</sup> Excluding Northwest Territories. <sup>e</sup> Reporting Area.

# COLOMBIA



and actively participated in increasing large field trials of the vaccine in Colombia, Nicaragua, Haiti and other countries of the Region. During 1958 over 270,000 vaccinations were carried out in field trials sponsored and assisted by the Bureau; in no instance were untoward reactions to the vaccine observed in vaccinated subjects or their associates. The same experience has now been reported by all investigators working with this and a similar vaccine in various parts of the world.\*

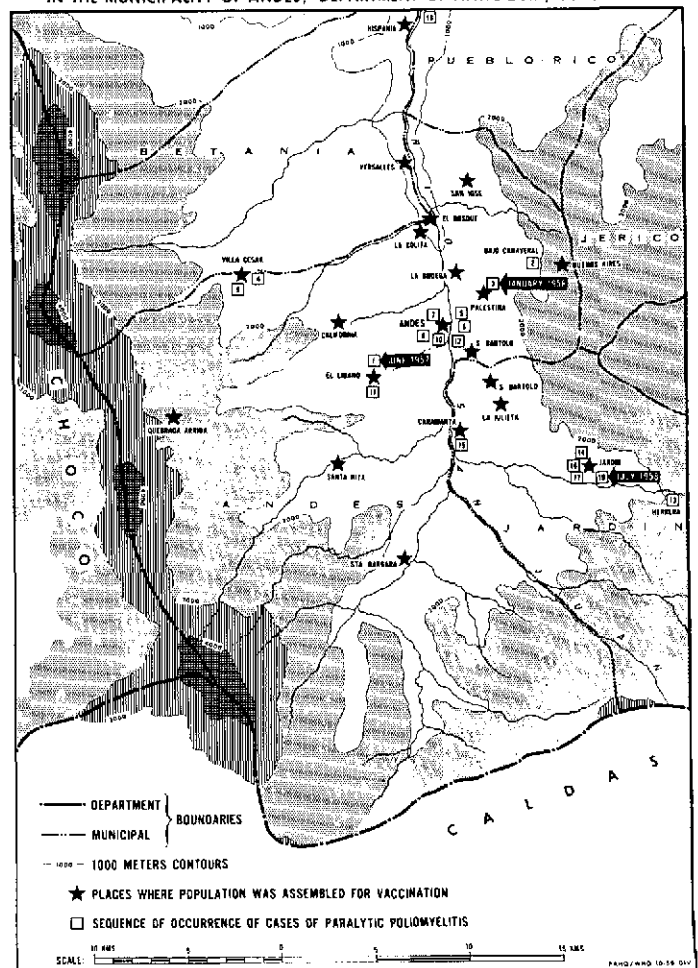
Colombia. In May of 1958, at the request of the Government of Colombia, the Pan American Sanitary Bureau initiated an extensive vaccination trial in cooperation with the health authorities of the country. In the first step of the program 6,977 children in the Municipality of Andes, Department of Antioquia, received the three types of virus with no untoward reactions. The program in Andes was motivated by a type 1 paralytic outbreak which began in January, reaching a total of 24 paralytic cases by July, an attack rate of 48 per 100,000 population. The disease was

virtually unknown in the county previously, and was not present in the listing of reportable diseases of the preceding three years.

Since studies, previously carried out in other parts of Colombia for naturally occurring poliomyelitis antibodies in comparable population groups, had revealed greatest susceptibility to the disease in the age group under seven years, and since all cases in Andes had occurred in children under six years of age, vaccination was limited to the group under seven years.

The program was carried out on a house-to-house basis in the urban areas, and elsewhere by bringing the population to vaccination points, usually a school or church. To ascertain the immune status of the population being vaccinated, blood samples were collected prior to the administration of the vaccine from every tenth family comprising children aged six months to 10 years. From 576 of these children another blood sample was secured one month after the completion of the vaccination schedule; the paired blood samples were used to measure the antigenic potency of the vaccine. Laboratory results to date, based on

VACCINATION WITH LIVE ATTENUATED POLIOMYELITIS VACCINE IN THE MUNICIPALITY OF ANDES, DEPARTMENT OF ANTIOQUIA, COLOMBIA.



\* Approximate grand total to date: 800,000 vaccinations.

about 60 per cent of the pre-vaccination samples collected from the age group under seven years, showed 29.6, 42.8, and 59.6 per cent susceptibility to types 1, 2, and 3 polioviruses, respectively. After vaccination the rate of conversion of this group was 89.0, 75.0, and 90.0 per cent, respectively. No cases of poliomyelitis occurred in the vaccinated populations up to eight months after the program began.

In September the field trial was extended to the city of Medellin where all children under 10 years (calculated to number about 160,000), as well as the newborn infants born since then, are now receiving the three types of vaccine. By December 27, 133,642 children had already received the type 2 virus and 2,641 newborns the triple virus vaccine.

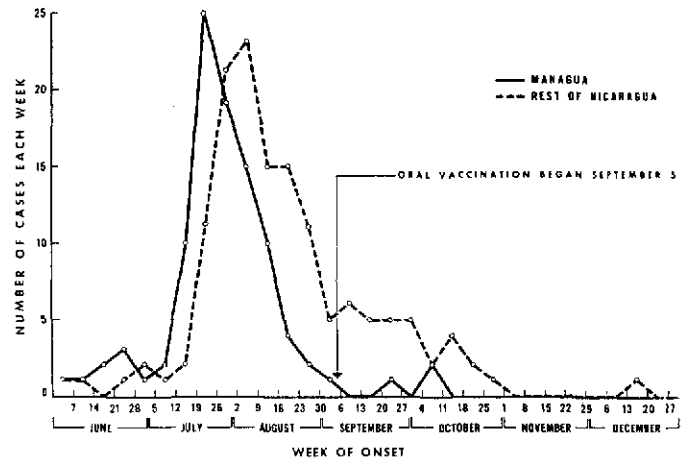
To carry out the serological and viral studies connected with this program, a tissue culture laboratory was set up at the Universidad del Valle in Cali, Colombia, and two consultants were provided by PASB for a period of at least one year. The unit will operate as a collaborative laboratory for poliomyelitis vaccine field studies and will render its specialized services to any country of the Region as the need may arise.

The laboratory may also be used for courses already sponsored by the PASB on the application of modern virus techniques to the diagnosis, epidemiological, studies and control of poliomyelitis (AMRO-92).

Nicaragua. In Managua, following a sudden increase in the occurrence of paralytic cases early in July of 1958 and a request for assistance by the health authorities of the country, a mass vaccination campaign on an emergency basis was carried out by the Nicaraguan Government in cooperation with the Pan American Sanitary Bureau. The total number of paralytic cases in the country for the year was 225, 88 of which occurred in Managua (attack rate: 17.8 and 40.3 per 100,000 population, respectively); 91.3 per cent of the cases developed in children less than five years of age.

Laboratory studies carried out simultaneously at the Viral and Rickettsial Research Division of the American Cyanamid Company at Pearl River, N. Y. and at the Yale Poliomyelitis Study Unit in New Haven, Conn., on duplicate stool and blood samples of patients and their immediate family contacts from Managua, revealed that type 2 poliovirus was responsible for the epidemic. For this reason the program was started with the attenuated type 2 MEF<sub>1</sub> strain, on a house-to-house basis, and included

CASES OF POLIOMYELITIS BY WEEK OF ONSET IN MANAGUA AND REST OF NICARAGUA, 1958



all children two months to 10 years of age, a total of 55,503. No cases were observed among vaccinated children up to four months after the start of the program.

It is interesting to note that in Andes and Managua, where the vaccine had been given in the face of existing epidemics and the campaign started with the homologous virus responsible for the outbreaks (type 1 and type 2, respectively), no paralytic cases were reported among vaccinated individuals after the program began.

New field vaccination trials, or extension of existing ones to programs of national scope, are at present under study for Costa Rica, British Guiana, Uruguay, and Nicaragua (rest of the country).

### Rehabilitation Activities

With the assistance of the Elizabeth Kenny Foundation, the Organization made available in 1958 to the Rehabilitation Institute in Buenos Aires the services of two consultants in physical and occupational therapy for a period of one year (Argentina-16). This type of assistance, in addition to fellowships in the field of rehabilitation, will be provided and furthered by the Organization in the immediate future.

A Regional Poliomyelitis Adviser was appointed to coordinate and stimulate the activities of the Organization in the Region in the broad field of poliomyelitis, including rehabilitation and vaccination programs with the live poliovirus vaccine.



## Leprosy

Until recently, the Bureau's activities in the field of leprosy were directed mainly toward obtaining a better knowledge of the problem and of the human and material resources available in the various countries of the Hemisphere for organizing programs to combat it.

The Directing Council of the Pan American Health Organization, at its III Meeting in October 1949, discussed the leprosy problem and recommended that the Bureau make a study for the purpose of promoting and coordinating the campaign against the disease.

In 1951 the Bureau carried out surveys in Bolivia, Colombia, Ecuador, Paraguay, and Peru. Similar surveys were made in 1955 in Trinidad and Surinam, and in 1956 in British Guiana, French Guiana, Guadeloupe, Martinique, Saint Lucia, and Grenada.

At its IX Meeting (Guatemala, 1956), the PAHO Directing Council instructed the Director of the Bureau to continue the studies to determine the extent of the leprosy problem in the Americas, and to undertake studies and measures necessary to provide the fullest possible facilities for training personnel of national leprosy services, and to promote the exchange of experience among professionals throughout the Hemisphere.

Pursuant to this resolution, and as an initial step toward intensifying its activities in the field of leprosy control, started in 1958, the Bureau decided to complete the survey in other countries and territories of the Americas and to sponsor a seminar on leprosy control.

The available data on 53 political units of the Hemisphere, excluding Alaska, the Aleutian Islands, continental Chile, the Falkland Islands, Newfoundland, and Petite-Terre, where no leprosy has been recorded, indicate that all have endemic foci of varied extent. Table VIII lists the prevalence rates for leprosy in the different endemic areas of the continent.

The countries and other areas of the Americas have been divided according to high, medium, and low endemicity. High endemicity means rates of prevalence of 1 per 1,000 population and over, medium endemicity means rates of 0.2-0.9 per 1,000 population, and low endemicity means rates below 0.2 per 1,000 population. This has been done since the method of organization of a leprosy control program is based essentially on the prevalence. The data on known cases available through four-year reports on health con-

ditions and reports to the seminar on leprosy, which was held in Brazil in July 1958, have been used.

The three countries and seven other areas of high endemicity are as follows, ranked in order of prevalence rates per 1,000 population: French Guiana, 51.19; Guadeloupe, 9.40; Martinique, 7.56; Surinam, 4.41; British Guiana, 2.83; Virgin Islands (U.K.), 2.71; Brazil, 1.98; Venezuela, 1.72; Paraguay, 1.50; and Trinidad and Tobago, 1.21.

Seven countries and seven other areas are included in the areas of medium endemicity, in order of prevalence: Hawaii, 0.87; Antigua, 0.86; Colombia, 0.75; Cuba, 0.66; Virgin Is. (USA), 0.62; Argentina, 0.51; Costa Rica, 0.48; Mexico, 0.37; Jamaica, 0.35; St. Kitts-Nevis-Anguilla, 0.33; Bolivia, 0.29; St. Lucia, 0.28; St. Vincent, 0.26; and Peru, 0.22.

The remaining 12 countries and eight other areas of the Americas in which the prevalence was less than 0.2 per 1,000 population were considered to have low endemicity.

The leprosy control services in the various areas of the Americas are in different stages of development, ranging from newly established agencies only now starting their programs to more complex organizations comprising numerous and diversified services. In the majority, however, there is a lack of balance among the component services, and in nearly all the magnitude of the leprosy problem is not known.

Moreover, the relationship between the specialized anti-leprosy services and the general health services varies to a great degree. The two are integrated only in exceptional circumstances, and when such is the case the public health physicians usually lack specialized training in leprology.

Although the available data on orientation in leprosy control are scarce and insufficient, they do reveal a wide disparity in the operation of programs. In most of the leprosy control services there is no balance among activities conducted in the various sectors. In almost all of them, isolation activities are over-developed to the detriment of all others, and in several cases the leprosy service is devoted exclusively to isolation measures.

On the other hand, the anti-leprosy legislation in force in most of the countries and territories predates the recent advances in leprology and is therefore obsolete. Also, all the laws on which information is available are too detailed, since they prescribe specific methods and standards more suitable for inclusion in rules and regulations which can

TABLE VIII. PREVALENCE OF LEPROSY IN THE AMERICAS IN RECENT YEARS<sup>a</sup>

Area	Year	Number of known cases	Rate per 1,000	Area	Year	Number of known cases	Rate per 1,000
Argentina	1958	10,321	0.51	Bahama Islands	1956	14	0.13
Bolivia	1956	951	0.29	Barbados	1956	18	0.08
Brazil	1957	121,314	1.98	Bermuda	1956	6	0.14
Canada	1956	15	0.00	British Guiana	1957	1,403	2.83
Chile	1956	35	0.01	British Honduras	1956	1	0.01
Colombia	1958	10,085	0.75	French Guiana	1956	1,500	51.19
Costa Rica	1957	493	0.48	Guadeloupe	1956	2,297	9.40
Cuba	1958	4,242	0.66	Hawaii	1956	459	0.87
Dominican Republic	1955	223	0.09	Jamaica	1957	563	0.35
Ecuador	1955	150	0.04	Leeward Islands			
El Salvador	1957	61	0.03	Antigua	1956	46	0.86
Guatemala	1957	77	0.02	St. Kitts-Nevis-Anguilla	1956	18	0.33
Haiti	1955	7	0.00	Virgin Islands	1953	20	2.71
Honduras	1955	40	0.02	Martinique	1955	1,865	7.56
Mexico	1958	11,855	0.37	Netherlands Antilles	1956	23	0.12
Nicaragua	1957	100	0.08	Puerto Rico	1956	150	0.07
Panama	1957	121	0.13	Surinam	1958	1,063	4.41
Paraguay	1958	2,506	1.50	Trinidad and Tobago	1956	896	1.21
Peru	1958	2,017	0.22	Virgin Islands (USA)	1956	15	0.62
United States	1956	740	0.00	Windward Islands			
Uruguay	1958	228	0.08	Dominica	1956	8	0.13
Venezuela	1958	10,405	1.72	Grenada	1956	4	0.04
				St. Lucia	1956	25	0.28
				St. Vincent	1956	20	0.26

<sup>a</sup> Data from *Summary of Four-Year Reports on Health Conditions in the Americas*, PASB, 1958 and from Lauro de Souza Lima, "La Lepra en las Americas", *Boletín de la Oficina Sanitaria Panamericana*, 45: 472, 1958.

easily be modified as required by the needs of the service and the advances made in leprology.

During 1958 the Bureau consultant was able to carry out surveys only in Jamaica, Guatemala, Costa Rica, Argentina, and Uruguay, owing to the preparations required for the seminar on leprosy control.

### Seminar in Belo Horizonte

This Seminar held in Belo Horizonte, State of Minas Gerais, Brazil, from June 30 to July 7, under the joint auspices of the Government of Brazil and the Bureau, was one of the most important events of the year in this field.

Among the 42 participants were specialists from Argentina, Brazil, British Guiana, Colombia, Cuba, French Guiana, Jamaica, Martinique, Mexico, Paraguay, Peru, Surinam, Trinidad, the United States, Uruguay, and Venezuela. A representative of ICA also participated.

Members of the PASB/WHO staff took part in the discussions and were responsible for secretariat services at the meeting.

The purpose of the Seminar was to furnish the participants ample opportunities to discuss and exchange ideas and experiences with respect to leprosy control and the most effective ways of coping with this problem in the Americas.

As in other seminars organized by the Bureau, active discussions on the various problems covered in the agenda were conducted in working groups.

Special attention was given to topics of general interest, such as the extent and scope of the leprosy problem in the Americas, the methods presently available for leprosy control, and the organization of anti-leprosy programs and their future integration in the general public health services. Another topic studied was the organization, methods, and accomplishments of the leprosy control program of Paraguay, in which the Organization has collaborated. The final report of the Seminar was published in the *Boletín* of the Pan American Sanitary Bureau.

Outstanding among the interesting and valuable conclusions reached at the Seminar were those recommending

abolition of compulsory isolation and the gradual and complete integration of anti-leprosy activities into the general public health services, with a view to broadening these services and permitting more effective and extensive operations which would lead to reduction in costs and better coordination with other public health services.

### Collaboration with Countries

During the year the Bureau continued its collaboration with the leprosy control programs being conducted by the Governments of Colombia and Paraguay.

The objective of the program in Colombia (Colombia-19), begun in 1958, is to make a complete survey of the leprosy problem in the country and prepare plans for application of the most suitable technical and administrative measures. In 1958 the Organization provided the services of a consultant who, after completing a detailed study, drew up a plan of work together with suggestions for reorganizing the Leprosy Service.

In Paraguay (Paraguay-9) the work proceeded according to the plan of operations. A total of 247,279 persons were

examined and 571 new leprosy cases were found. Treatment was given regularly in 90 per cent of the cases and irregularly in 5.1 per cent; 4.9 per cent of the patients abandoned treatment. Surveillance of foci and contacts was intensified in the Central and Caaguazú Departments, where the case-census has been completed; there are 621 known foci in these areas and 542 contacts of those foci were covered by control measures. A total of 1,603 contacts were examined twice a year and 19 positive cases were detected. At present efforts are being concentrated in Asunción, the most important focus in the country. To ensure continuation of the work, the program is being integrated in the general health services in Villarrica, Coronel Oviedo, and Caacupé.

In Argentina preliminary steps have been taken for the preparation of a program which, in its first stage, will cover six provinces in the coastal and central regions. The Ministry of Public Health appointed a committee, which, with the advisory services of the PASB regional consultant in leprosy, made a general review of the status of the problem, established bases for the program, and will draw up a plan of action with the cooperation of national and provincial leprologists.

## Brucellosis

Brucellosis continues to be a public health and a socio-economic problem in most of the countries of the Americas. The type and severity of its burden varies with the prevalence of livestock, the type of livestock, the incidence of the disease, and the food habits of the people. In Canada and the USA, progressing bovine brucellosis eradication programs and extensive pasteurization and other treatment of milk and dairy products have greatly reduced the incidence of human brucellosis. Most of the human cases are now traced to contact with the animals involved—cattle and swine. In other countries, like Mexico and parts of Argentina, where thousands of families rely on the family goats for milk and meat, a serious problem exists in caprine brucellosis contracted via various routes from the goats. In still other countries the magnitude of the problem is not known but limited surveys in the cattle populations have revealed that five to 40 per cent of the herds contain reactors. The number of human cases is difficult to ascertain, for

because of lack of reliable laboratory diagnostic services cases are often treated symptomatically and never recorded as brucellosis.

During the last several years PASB/WHO has conducted a program in the Americas to furnish assistance to countries in brucellosis control. In addition to the advisory services provided by personnel of the Zone Offices, projects and special consultants, a series of brucellosis training courses have been held. Subjects of the courses have been antigen production and standardization, diagnostic procedures, control of animal brucellosis, and the handling of human brucellosis. The last in the series of courses, scheduled for 1959 and 1960, will be devoted to the production and control of brucellosis vaccines and the techniques of brucellosis eradication.

During 1958 the activities of the program were directed toward assisting countries to appraise their individual problems concerning brucellosis and to plan control pro-

grams which will lead eventually to eradication of the disease. A summary of the activities of the brucellosis program, by Zone areas, is contained in the following:

### **Mexico**

Barring bovine tuberculosis, brucellosis is the most serious zoonosis in Mexico. Infectious abortion severely affects the economy of the dairy industry, while caprine brucellosis, as a painful and frequent affliction of the human urban and rural population, is recognized as a major public health problem.

The Zone II Office has collaborated with the agricultural and public health authorities in the general epidemiological study of the disease, promoting training courses, symposia, seminars, and working groups. It has also rendered assistance to the FAO/WHO Brucellosis Center in maintaining a continuous interest in the disease, in the experimental therapy in man, as well as in the evaluation of diagnostic methods of the disease in man and animals.

Assistance has been given for the production of standard antigens in the Brucellosis Center of Mexico and in the Instituto de Investigaciones Pecuarias. The Strain 19 vaccine, as well as the diagnostic antigens, which have been subject to the standard control tests recommended by the Organization, have been supplied at cost to Cuba, the Dominican Republic, Guatemala, Costa Rica, and Panama.

Of significant value has been the collaboration given to the Ministry of Public Health of Mexico in revealing the importance of environmental infection in caprine brucellosis and the significance of air and water-borne infections. Demonstration programs leading to the control of caprine brucellosis have been planned for early implementation in 1960. These include the substitution of dairy cattle for goats in irrigated areas; the development of the goat industry on a cooperative basis, as a means to remove the infective animals from close human contact; and the production of sterilized or pasteurized milk products.

Steps have been taken to establish a pilot program for the control of brucellosis in cattle. This is being conducted in conjunction with a program for the control and eradication of bovine tuberculosis.

### **Cuba and the Dominican Republic**

In Cuba a national commission has been organized to study a program for the control of brucellosis. In the Dominican Republic a pilot program for the control of brucellosis in cattle has been organized. In this program, leading to the eradication of the disease, more than 2,500 positive or suspicious animals have been slaughtered.

### **Central America and Panama**

Brucellosis exists in all countries of this Zone, with the exception of British Honduras, even though there is a relatively low incidence (7.01). The Bureau has stimulated

the intensification of control programs, directing them ultimately toward eradication. During the years 1957-58 veterinary services expanded their diagnostic programs by 20 per cent and cattle vaccination with Strain-19 vaccine by 32 per cent. These measures have already caused a reduction in incidence since the beginning of 1957 (7.01) to October 1958 (5.08). The Bureau collaborated with the authorities of Costa Rica and Panama in the preparation of brucellosis control laws.

### **Colombia**

About 20 years ago an excellent study was made by Patiño of the prevalence of brucellosis in man. This revealed only a few persons affected at that time, and as no review study has been made since, current data are not available. The Ministry of Agriculture through limited testing of animals has found the disease centered in a few localities. In the Department of Cundinamarca, which has the highest human population density and also is a very high milk-producing area, the percentage of infection in cattle has been found to be low, being not more than four to five per cent; a voluntary calf-vaccination program has developed in this Department. Discussions have been held with the national authorities about an intensive survey of a larger number of population centers in Colombia to verify the current concepts that brucellosis is of low prevalence in Colombia.

### **Ecuador**

Official reports for Ecuador indicate a low human prevalence of brucellosis. These reports have been based on screening tests of sera at hospitals and at the National Institute of Hygiene, where only occasionally positive sero-agglutinin tests were found. Stimulated by the Bureau, the Ministry of Agriculture has planned an extension program, combining brucellosis and tuberculosis control measures, to begin in 1960.

### **Peru**

In 1957 the highest recorded number of human brucellosis cases for the country was reported, there being 880 cases. A large majority of these were from the Lima-Callao area and from Ica. The ever increasing incidence has interested the Ministry of Health in taking remedial measures. To date, a practical control program has not been developed, since at present it is not feasible to sterilize certain frequently incriminated food products such as fresh cheese. This problem was discussed with the individuals of the WHO/FAO Expert Committee on Brucellosis, but no practical suggestions were elicited. During the visit of the PASB/WHO consultant on zoonosis, some hope was raised that perhaps research agencies might become interested in

developing a means for sterilizing fresh cheeses, using supersonic techniques.

The center of animal brucellosis has been found to be in the Lima area. Some calfhood vaccinations were performed, but these have been on a volunteer basis and not according to a national control program. There is concern as to the dispersal of these infected animals to other parts of the country. Control legislation apparently is inadequate since it is known that a gradual increase of infection in animals is found in areas away from Lima.

## Brazil

The PASB/WHO Brucellosis Training Course, the Fourth Inter-American Congress on Brucellosis, and the Expert Committee Meeting on Brucellosis, all of which were held in Lima, Peru during September-October 1957, have had a definite stimulating effect on brucellosis control in Brazil. Three Brazilian technicians, two from the Ministry of Health and one from the Ministry of Agriculture, attended the Course and Congress. One of the technicians served on the Export Committee.

Early in 1958 the Zone Veterinary Public Health Adviser arranged an informal meeting of technicians from both the Ministry of Agriculture and the Ministry of Health to discuss the possibility of forming an Inter-Ministerial

Commission on Brucellosis, in accordance with the recommendation of the Fourth Inter-American Congress. In May the Minister of Agriculture appointed six members to sit on this new Commission. In September six technicians were appointed to represent the Ministry of Health on the Commission. Meetings of the Commission were held regularly during the balance of the year.

The chief function of the Inter-Ministerial Commission on Brucellosis is to act as a consultative body which provides technical orientation with respect to the organization of brucellosis control programs, collection of statistical data, production and standardization of vaccines and antigens, and research on brucellosis disease. The Commission is also directly responsible for the provision of training courses at different levels, development of educational material and coordination of the work of the ministries of health and agriculture, commercial and international organizations.

The Zone Veterinary Public Health Adviser is an "ex-officio" member of the Commission and has been in attendance at all meetings. In April he participated in a survey of goat brucellosis in the States of Alagoas and Pernambuco, and in September attended a State-sponsored Conference on Brucellosis and Hydatidosis in Pôrto Alegre, Rio Grande do Sul.

## Tuberculosis

Tuberculosis continues to be an important public health problem in the Americas despite a drop in the death rates and a lesser decline in morbidity.

In the "*Summary of Reports on Health Conditions in the Americas, 1950-1953*" (PASB Scientific Publication No. 25), the disease is listed among the five principal causes of death in 15 countries and territories. In the "*Summary of Four-Year Reports on Health Conditions in the Americas, 1953-1956*" (Scientific Publication No. 40), tuberculosis appears in this category in only three countries and territories.

However, in analyzing the mortality rates by age groups, we find that tuberculosis was among the five principal causes of death in the 1 to 4-year group in four countries, and in the 5 to 14-year group in seven.

As in previous years, the Organization's activities in this field continued to center on mass BCG vaccination campaigns, followed by a consolidation of the vaccination program as a routine procedure of the appropriate health services.

In addition to the government concerned, the Organiza-

tion and UNICEF cooperate in each of the campaigns. The governments are not only responsible for the conduct of the program, but provide personnel for the vaccination teams. The Organization provides technical advice by assigning international personnel to collaborate in the organization of activities and in the training of national personnel. UNICEF furnishes financial assistance, particularly equipment and supplies needed for the campaign.

A number of nationals have been trained under PASB/WHO fellowships, and the tuberculosis control program has been considered an active phase of the integrated health projects in several countries.

These efforts will be continued where needed and the activities in this field will be extended toward other fields, such as ambulatory chemotherapy and chemoprophylaxis, which have changed the tuberculosis problem completely, making prevention more simple and bringing it more within reach.

During 1958 plans were completed for an active tuberculosis control program. The activities in this program will be directed to five main fields of interest, namely:

- 1) Training of national personnel in the new techniques and procedures for the management of the tuberculosis problem. This training will be done through the awarding of fellowships to selected key personnel, participation in seminars, and in-service training in different tuberculosis-prevention projects;
- 2) Surveys of the tuberculosis problem in the various countries, in order to ascertain the nature and characteristics of the problem in the different population groups, which is essential for the sound planning of a tuberculosis-prevention program;
- 3) Seminars on tuberculosis prevention, which will permit a review of the information obtained in the surveys and discussion of ways and means to utilize the new technical developments in an expanded program against tuberculosis and stimulate action in country programs;
- 4) Country projects for tuberculosis prevention, based on modern control procedures and techniques. Case-finding, domiciliary and ambulatory treatment, and chemoprophylaxis will receive special emphasis in these projects;
- 5) Field trial of mass administration of isoniazid, to study the possibilities of this mass technique of tuberculosis prevention. The principal questions to be answered by this study would refer to: a) effectiveness of the procedure, in terms of tuberculosis infection, tuberculosis morbidity, and tuberculosis mortality; b) methods of administration of the drug to the population; c) doses, intervals between them, and total duration of the treatment; and d) response of the population to the administration of the drug. The mass BCG vaccination programs, started or planned in previous years, were either continued or imple-

mented in 1958, while others were brought to successful completion.

At the end of the year, a nationwide mass BCG vaccination campaign was started in the Dominican Republic with the cooperation of the Organization and UNICEF.

The campaign in Honduras was started in June 1957. As of December 31, 803,641 tuberculin tests had been made and 458,456 persons vaccinated.

In 1958 the mass BCG vaccination campaigns were completed in Chile and Guatemala.

The campaign, started in January 1956 in Chile, was completed in February 1958. The National Health Service of Chile, in collaboration with the Organization and UNICEF, was responsible for conducting the program. Since a vaccination campaign had already been carried out in the cities, the BCG vaccination campaign was restricted to rural areas. The vaccine used was prepared by the Bacteriological Institute of Santiago, Chile, which was approved in 1956 by WHO for the preparation of BCG to be used in the PASB/WHO/UNICEF campaigns. Of the 1,031,539 persons between the ages of one and 30 who were examined in communities of less than 5,000 inhabitants, 501,665 were vaccinated.

The campaign in Guatemala, begun in July 1956, was completed in July 1958. The number of tuberculin tests was 2,286,940 and 1,250,557 persons were vaccinated. On successfully completing the national BCG vaccination program, the Government of Guatemala decided to make an all-out attack on the tuberculosis problem through a nationwide control program whose basic objectives are: a) to detect and treat the largest possible number of cases in the country; b) to treat their contacts during the contagious stage of their family foci; and c) to come as close—and as quickly—as possible to the final goal of eradicating tuberculosis. Using its own resources, and assisted only by a consultant of the Organization, the Ministry of Health drew up a national six-year plan that was implemented on September 1, in parts of the Department of Escuintla. This department, bordering on the Department of Guatemala, was the field for the first stage of the national plan and was considered a demonstration area. If the results of this first phase show that the program is feasible and effective, it will be extended progressively to other areas until the entire national territory is covered.

The method consists of: a) mass miniature chest X-ray examinations of the population over 15 years of age, and supplementary examinations (radiologic-bacteriological) of those showing abnormal lung shadows; b) miniature chest X-ray or radiographic examination (according to age) of those living with confirmed tuberculosis patients or with persons showing abnormal lung shadows; c) intensive treatment of patients with isoniazid over a period of two years, or at least until three months after negative bacteriological tests, and of healthy contacts over a six-month period or until the bacteriological test of the contact case is

negative. From September 1 to November 30, 1958, 24,938 photofluorographs were taken and interpreted. Abnormal shadows were found in 1,149, or 4.6 per cent; of that number, 1,068 (93 per cent) completed their examination and tuberculosis was confirmed in three per cent. Of the confirmed cases, 48 per cent presented minimal forms, 28 per cent moderately advanced forms, and 24 per cent advanced forms. Ninety-three per cent of the cases diagnosed as having tuberculosis started treatment. Of this group, 94 per cent took the drug regularly during the month of September, 84 per cent in October, 90 per cent in November, and 93 per cent in December.

At the request of the government, the Organization provided the services of a short-term consultant to review the program of tuberculosis control in the Bahamas. The same consultant made a tuberculin survey of Montserrat and advised on appropriate preventive and curative measures. A tuberculin and X-ray survey of Antigua was completed and similar advisory services provided.

A plan of operations has been completed for carrying out a survey, to be started in 1959, in various regions of Argentina. This will serve as a starting point for a nationwide tuberculosis-control program.

Tuberculosis is an important problem along the Mexico-United States border. The border States of California, Arizona, New Mexico, and Texas have consistently higher mortality and morbidity rates than the country as a whole. Although this is not the case in the six Mexican border states, the known figures reveal that they too have high incidence rates.

The enormous population movement across the border (over 70 million persons cross the border annually from south to north) has made it necessary to adopt special measures to prevent the entry of infectious persons. At nearly all important crossing points along the border there are now permanent programs of X-ray examination of persons requesting permission to enter the United States, either as visitors or immigrants. A considerable number of persons have been identified as tuberculosis cases as a result of these examinations; in the program for recruiting Mexican laborers alone, 400,000 individuals were examined in 1957, of whom 5,000 were rejected because they were suspected of having active tuberculosis.

At the suggestion of the Organization, representatives of the Mexican and United States Governments met at El Paso in January to discuss problems of mutual interest in tuberculosis control, particularly international notification of suspected tuberculosis cases.

During the XVI Annual Meeting of the Mexico-United States Border Public Health Association, a resolution was approved recommending that a system be organized for exchanging information on tuberculosis cases and that this information be used in establishing and developing appropriate programs for the control of tuberculosis cases.

Pursuant to this recommendation, the Pan American

Sanitary Bureau has drawn up a procedure for the inter-American reporting of tuberculosis and the transmittal of reports (*Inter-American Exchange of Reports of Cases of Tuberculosis*, Miscellaneous Publications No. 48). This procedure is designed to facilitate exchange of data on cases between clinics or health departments of the different countries.

In the great majority of cases, the only effect of this diagnostic effort is to prevent the admission of persons suspected of carrying the disease. Consequently, it was considered that there is great need for a simple and effective international system for notification of tuberculosis in order that the public health authorities of the places of origin of such persons may know of the cases and adopt the necessary control measures for them and their contacts.

The tuberculosis program of PASB/WHO to be complete must include, of course, the public health problems of tuberculosis in animals. While monkeys, parrots, pigs, and sometimes dogs and other animals become infected with tuberculosis, it is the cow that is the greatest threat to the human population.

In a number of countries of the world, studies have revealed that a high incidence of tuberculosis in bovine animals is accompanied by human cases infected with bovine organisms, particularly in children and those in close association with the animals. In most of the countries of Central and South America little is known of the incidence of bovine tuberculosis in the human population, chiefly because laboratory typing services are not readily available.

The reduction, and even disappearance, of human cases which follows the reduction of tuberculosis in bovines has been clearly demonstrated in the USA and Canada where the eradication programs have reduced the incidence of reactor cattle to a fraction of one per cent and human cases are very rarely seen. Eradication of bovine tuberculosis is a major objective of a number of countries of the Americas.

Tuberculosis in humans resulting from bovine organisms is believed to be a serious problem in several areas and countries. In Venezuela, the bovine tuberculosis eradication program was assisted by the provision of fellowships for key officials to visit and study the programs in Canada and the USA. The experiences of the campaign in Venezuela have been most encouraging. In the first sweep of tuberculin testing of the cattle, herds were found with up to 70 per cent reactors, while after removal of these reactors only up to three per cent of the animals were reactors to the second test. Further progress has resulted in the establishment of many TB-free herds. The two major difficulties of such a campaign are the expense involved in paying compensation for the reactors removed from the herds for slaughter and the problem of obtaining sufficient TB-free animals as replacements for the large number of reactors removed on the first sweep of tuberculin testing.

In Mexico during 1958 a pilot program was initiated in a large milk supply area to make a complete study of the tuberculosis (and brucellosis) situation in both the human

and cattle populations. Technical advice has been provided by the Zone Office staff and a fellowship furnished for a senior laboratory official to observe typing techniques in the USA.

In Peru officials have been deeply interested in an appraisal of the tuberculosis situation in the cattle contained in the milkshed surrounding Lima. The number of reactors is such that it has been judged impractical to conduct a test and slaughter program among these animals. With the technical consultation of the Zone Office staff, studies have been made of other methods which might be employed to remove the disease from these milk supply herds.

The use of BCG was not adopted, for such vaccination

of cattle has never been shown to lead to eradication of the disease. Vaccines such as those composed of BCG or the vole strain of bacilli create a sensitivity to tuberculin and therefore interfere with any subsequent program in which tuberculin testing forms the basis. Chemotherapy, which is proving very useful in treating human cases, was judged to have no place in dealing with tuberculosis in animals. In addition to the possibility of the development of resistant strains of the TB organisms in treated animals which might be passed on to the human population, the use of chemotherapy is impractical in animals because of the high cost of treatment and frequent recurrence of the disease when treatment is stopped.

## Treponematoses

In 1958 the Organization continued to assist health administrations with campaigns against treponematoses by providing advice on planning, starting and following up on projects, or providing consultants.

In Haiti, yaws eradication can be considered almost an accomplished fact, and the eradication campaign, after eight years of work, is nearing completion. By the end of 1957 mass operations had been completed. In 1958 a system, involving the respective checking of remaining cases, was established, and, at the same time, an adequate survey was instituted. In order to attain these aims the national agency responsible for the program was reorganized. During the year 672 cases of infectious yaws and 5,534 contacts were treated. A random sampling survey was carried out in order to estimate the level of remaining infectious yaws cases in the country. In the survey 82,905 persons, or 2.3 per cent of the population of Haiti (3,600,000) were examined in the five departments into which the country is divided. The net over-all prevalence rate for the whole country is 0.05 per cent which, for a population of 3,600,000, gives a residual pool of approximately 1,800 cases. Out of those nearly 300 have already been treated along with their contacts.

The prevalence rates for infectious yaws, by department, are the following:

North-West	0.04%	(80)
North	0.03%	(200)
Artibonite	0.01%	(80)
West	0.06%	(850)
South	0.09%	(880)

The remaining few small pockets of infectious cases are confined to places of difficult access, mostly in the Departments of West and South which seem to hold the key for achieving complete eradication.

It is also demonstrated that the extensive prevalence of non-pianic ulcers, probably tropical (nearly 95 per cent of ulcers examined were non-pianic by dark-field examination), may prove a problem in the near future when the last case of yaws will be completely eradicated.

All efforts are being directed and concentrated to find the last cases, and it is anticipated that by the end of 1959 it will be possible to declare yaws eradicated from Haiti.

The success of the yaws eradication campaign in Haiti reinforces the need for the eradication of this disease from





Technicians at the Serology section of the Central Laboratory, Ciudad Trujillo, Dominican Republic

the Dominican Republic. The campaign which was initiated in July 1954 has developed slowly because of the limited funds available up to the end of 1957.

In 1958 more active steps were taken by the government to intensify eradication activities and, for the first time, it has been possible to obtain almost all the necessary elements (personnel and vehicles) to permit the normal development of the program toward its objective, i.e., the eradication of yaws.

The larger contribution made by the government for this project has resulted in considerable progress both in venereal disease control and in yaws eradication. Although yaws still exists in the country, its incidence and prevalence are rapidly decreasing as a result of the intensification of operations. The picture is also improving as far as venereal disease is concerned. This has been due largely to efforts directed toward the training of personnel and to more effective coordination of activities, particularly in the larger cities.

During the year the government augmented the number

of personnel available for the yaws eradication service, as well as the number of vehicles, which permitted treatment of 314,785 persons (cases and contacts) from January 1 to November 30 as against 146,151 for the whole of 1957. It is expected that by the end of 1959 the entire country will have been covered by the first nationwide operations. Plans are already under way to organize random-sample surveys and surveillance procedures. Meanwhile, four teams are at work checking results in areas already covered.

With regard to venereal disease control, the government, in cooperation with the Organization, has developed a five-year plan envisaging a nationwide program which is now being put into operation. Five training courses, with a total of 197 participants, were arranged in 1958 for general medical practitioners. A manual of venereal disease control has been prepared. The laboratory for serological diagnosis of syphilis is being upgraded.

In the Caribbean area, the inter-country project AMRO-47 continued during 1958 when the mass phases of the campaigns in Dominica, St. Lucia, and Trinidad-Tobago were finished, covering a population of 917,900. Since 1956, 1,153,660 inhabitants in this area, including the populations of the British Virgin Islands, St. Kitts-Nevis-Anguilla, St. Vincent, and Grenada, have been protected. The number of persons treated in Dominica, St. Lucia, and Trinidad-Tobago was 153,326, according to the latest information available. This is 69 per cent of the population (223,400) of the areas considered to be endemic. Since the campaign has begun the number of persons injected with penicillin to date is 356,405, or 76.5 per cent of the population of the areas of high prevalence.

With the end of the intensive phase in Trinidad-Tobago, the mass treatment of the territories that merited this type of approach because of high prevalence rates will have been covered. This accomplishment in only two years is remarkable in that each island has a different government, with independent health authorities, and in each of them a local team had to be organized to meet specific and varying needs, making it necessary to conduct separate negotiations and training of new personnel for each of the island units.

At present, and necessarily for several years to come, re-surveys of consolidation coverages will be conducted in Dominica and Trinidad-Tobago to find and treat active cases and contacts.

In St. Lucia, St. Vincent, and Grenada the search for active cases and treatment are done by teams also responsible for other public health duties, such as malarionometric surveys and vaccinations, since the limited number of cases now found does not justify, economically, the exclusive use of personnel.

In St. Kitts-Nevis-Anguilla no house-to-house visits are now being made, but the health centers throughout the three islands are on the alert, and personnel have been trained to detect any case of yaws and report it for investigation and treatment if necessary.

The following table gives a summary of the campaign since its start in 1956 to September 1958:

TABLE IX. NUMBER OF PERSONS AND PERCENTAGE OF POPULATION TREATED AGAINST YAWS IN THE CARIBBEAN AREA, 1956-1958

Area	Population (1957)	Persons treated	
		Number	Per cent
Total	466,160	356,405	76.5
Lecward Islands			
St. Kitts-Nevis-Anguilla	54,000	46,539	86.2
Virgin Islands	7,760	4,422	57.0
Trinidad and Tobago	77,400 <sup>a</sup>	43,190	55.8
Windward Islands			
Dominica	62,000	51,148	82.5
Grenada	94,000	79,700	84.8
St. Lucia	91,000	58,988	64.8
St. Vincent	80,000	72,418	90.5

<sup>a</sup> Represents all of Tobago and selected high prevalence areas of Trinidad. Total population of Trinidad and Tobago is 764,900.

In keeping with the concept of eradication, the activities of this project must now be expanded to other territories where yaws is known to exist. Surveys are necessary to evaluate the magnitude of the problem and to decide what measures should be taken to attain eradication of the disease from the Caribbean.

In the territories already treated permanent surveillance is necessary to discover new cases that might appear, whether imported or otherwise; it is planned to establish a mechanism for accurate diagnosis of suspicious and doubtful cases.

Jamaica constitutes an important territory where cases of yaws continue to be reported; here, the problem may well be solved along the same lines as in Trinidad, namely with the selection of the zones of high prevalence for mass treatment at the same time as more facilities for diagnosis and pre-treatment are provided in the rest of the island.

The AMRO-47 project also has as an objective the strengthening of laboratory services in the various territories not only in what refers to a treponematosi and venereal disease program, but also in regard to public health services in general.

## Plague

In 1958, cases of plague were reported in three countries—Brazil, Ecuador, and Peru—all cases being of the sylvatic type. As in previous years, all ports and major cities of the continent remained free of infection.

Table No. X shows the number of cases of plague reported throughout the continent during the period 1954-1958. The map shows the cases in 1958 and the political subdivisions where they occurred in each country.

The Bureau's consultant, who in previous years had conducted epidemiological plague surveys in Bolivia, Peru,

and Ecuador, concluded similar studies in Brazil during 1958.

Plague has been totally eliminated from Brazilian ports and cities and has been localized in the rural portions of certain areas where it continues to be endemic. Its incidence in man and the domestic rat has considerably diminished in recent years in Brazil.

In the interior of the country the disease is endemic in the northeast, where the infected region extends along the border between the States of Piauí and Ceará to the State



adequate in most countries. This situation has been increasingly recognized as national and local health services have been reorganized and expanded. Particularly has this been the case as more concentrated disease control and eradication programs have been established. A typical example of this was seen in the decision by the countries to launch nationwide smallpox prevention and control programs only to find that the liquid vaccine available was not suitable for vaccination programs in rural areas. As a consequence, the Organization was requested to assist the countries in the establishment of production of dried smallpox vaccine which could withstand transportation to areas lacking refrigeration (AMRO-60). Another example was noted in the various outbreaks of poliomyelitis-like disease that occurred in various countries, and could not be confirmed as poliomyelitis or declared as some other disease because inadequate virus diagnostic facilities exist in most of the countries.

### Organization's Assistance Varies

The Organization annually receives requests from the countries for assistance in the field of laboratory services. These requests vary greatly in size and importance. They may be for a sample of a standard vaccine, or for provision of a special consultant in virology, or for the services of a consultant to appraise the existing laboratory services in a country and make recommendations for their improvement, or for training. During 1958, as in other years, requests for initial service to a laboratory or for initial attention to a special phase of laboratory work were serviced by provision of a short-term consultant (AMRO-45). After initial appraisal and planning, further assistance was often provided through special country projects (e.g., Haiti-9, Argentina-4, Ecuador-4, and Mexico-28), as part of integrated health projects (e.g., Paraguay-10 and Panama-1), or as an intercountry project (e.g., AMRO-47). In addition, many of the projects for specific diseases, such as malaria, tuberculosis, rabies, poliomyelitis, and the zoonoses, contain important elements of assistance to the laboratory services of the countries.

During 1958 the fellowship program of the Organization provided training for national laboratory personnel. For the first time in the Region there was established a post-graduate public health course (School of Hygiene, University of Toronto) especially designed for laboratory personnel. While this is basically intended as a national course, one or two places will be available to candidates sponsored

by the Organization. In 1958 a fellow from Ecuador was placed in the course.

### Provision of Laboratory Aids

One of the most frequent and widely used forms of the Organization's assistance has been in the provision of various laboratory aids (AMRO-45). Through this service countries have received, upon request, antigens to assist diagnoses or to appraise nationally produced antigens, specific strains of bacteria and viruses for the production of vaccines and antigens, standard vaccines to appraise national standards, and various specific strains of organisms for challenge and other purposes. Conversely, samples of nationally produced vaccines, together with local testing protocols, have been received for check testing (AMRO-76) in PASB/WHO selected reference laboratories. This allows the national production laboratories, and especially their control laboratories, to verify their work periodically. During 1958 studies were made to seek the services of another reference laboratory to handle some of the viral vaccines which cannot now be tested in a cooperating reference laboratory.

### Need for Formal Training of Laboratory Technicians

Throughout most of the countries in the Region little, if any, formal training is available for laboratory technicians. Existing personnel in this category are generally recruited without reference to any basic educational standards, and are then provided practical apprenticeship-type training in the work they are to perform. As a result most laboratory technicians are inadequately trained, very limited in types of work they can perform, and often unreliable. Most countries have realized the present situation to be unsatisfactory, and some have requested assistance in establishing a training course for laboratory technicians (Chile-19 and Brazil-33). To prepare for this type of work a laboratory consultant devoted six months of the year to preparing a complete outline, curriculum, and training manual for such a course. Lists of supplies and teaching aids and proposed standards for selection of candidates, including their subsequent examination, were also prepared. This material will be used to establish a course in Brazil during 1959 (Brazil-33). This may well be one of the most far-reaching benefits provided in this field. The availability of well-trained and reliable laboratory technicians greatly extends not only the total output of the laboratory, but also the time that professional staff members can devote to activities in keeping with their training.

## Food and Drug Services

Again in 1958 there has been increased interest and activities, on the part of the Ministry of Health of most of the countries, in the field of food and drug control. While Canada, the United States, and Venezuela have developed full and active services in this field, most of the other countries of the Americas have but minimum activities which are not always effective or backed by modern legislation. With few exceptions the health officials have requested advice and assistance in the formulation of laws and in the establishment of services to provide adequate authority for control of the manufacture, packaging, labelling, advertising, and sale of foods and drugs, both in the interests and for the protection of the public health.

Samples of general legislation and specific regulations have been provided upon request, as well as standards for the testing of various products. Training of national personnel has been assisted through fellowships for training in laboratory procedures or for visits to national food and drug services in the USA and Canada.

Specific assistance was provided to three countries during 1958 through the provision of specialized consultants. In Ecuador a consultant visited the national food and drug laboratory to appraise the present installation and provide recommendations for future development of the laboratory and its work. Similar service was provided by a PASB/WHO consultant to the Ministry of Health of Chile. The consultant visited Santiago to study the government program for the control of foods and drugs, and especially to make an analysis of the problem in connection with the number and kind of pharmaceutical and biological products and medicinal food stuffs to be controlled. In addition he studied the available resources in specialized personnel

and laboratory equipment, prepared a work-plan to improve the activities of the service, advised as to the training of professional personnel and technicians and as to the acquisition of necessary equipment and supplies.

In Brazil the PASB/WHO consultant spent six months studying the plans of the government and assisted in the preparation of the basic legislation and drafting of the operational regulations. Detailed plans were also prepared for the organization of the national food and drug service, both laboratory and field services. Work-plans were developed for the drug laboratory now in operation and for the food laboratory to be established in the near future.

A trend is developing in the planning of regulatory responsibilities of the ministries of health for the establishment of a separate unit with complete responsibility for this type of work. Such a unit would be responsible for the control and licensing of biological products, as well as the pharmaceutical and therapeutic substances and devices, and food products. The nature of this type of work and the volume of imported products in most of the countries of the Americas require that an efficient administration be established in each country to handle the work at a cost which is not prohibitive.

During 1958, plans progressed for the survey of food and drug services in the Americas scheduled to begin in 1959. This will be a further part of the study of this field undertaken by PASB/WHO as a result of discussions at the X Meeting of the Directing Council (1957). The Member Governments confirmed their desire for further work in this field at the XV Pan American Sanitary Conference (1958).

## Pan American Zoonoses Center

During 1958, the second full year of its operation, the Pan American Zoonoses Center (AMRO-81) reached the stage of development whereby it was possible to satisfy an increasing number and a wide variety of requests made by governments for its services. These services ranged from education and training, through consultation, laboratory services, field demonstrations, research and special surveys, and information. Special attention was given to certain of the zoonoses which are considered most important from their over-all socioeconomic impact: brucellosis; hydatidosis; rabies; and tuberculosis. Some work was also carried on in other zoonoses which are problems in most or all of the countries of the Americas, e.g., leptospirosis and trichinosis.

Training activities included a special postgraduate course in zoonoses, as well as refresher work for individuals sent to the Center by governments or by international agencies. The 10 persons received for such work in 1958 were from Argentina, Brazil, Colombia, Mexico, Peru, and Uruguay. Preparations were completed and announcement made for the special postgraduate course to be repeated in January 1959. Preparations were also completed for long-term postgraduate training of individuals, each for a 12-month period to begin during 1959, in techniques applicable to zoonoses of bacterial, viral, or parasitic origin. The laboratory services included preparation and distribution of standard strains of organisms for biological production and testing purposes, preparation and distribution of standard serums and diagnostic antigens, reference testing of biological products under special circumstances, and confirmatory diagnosis based on material submitted by authorities. Field demonstration work included programs for control of bovine rabies using avianized vaccine and of bovine leptospirosis through use of bacterin; both programs were designed so as to afford means for critical evaluation of results. Consultation, both through visits of staff members and through correspondence, was extended to Argentina, Paraguay, and Peru. Research problems were selected on the basis of their importance in the

development or improvement of practical field control methods, and included field surveys to determine the extent of zoonoses problems as well as studies to evaluate the efficacy of different control procedures. Information work involved the collection and distribution of publications on the different zoonoses in accordance with the expressed needs of government departments and individuals, the preparation of bibliographic reference lists on different zoonoses subjects upon special request, and the preparation of reports on selected zoonoses problems. A series of mimeographed circulars, entitled "Technical Recommendations" was initiated; these papers are distributed to zoonoses workers known to have an interest in the particu-

Collection of equine blood sample to be studied for evidence of encephalomyelitis



lar subject presented. Methods used in the animal colony of the Center were studied by a number of persons especially concerned with the care and breeding of laboratory animals. Even though presently working under inadequate conditions, the colonies produced the experimental animals needed at the Center and also provided special foundation stocks for the establishment of new colonies in other institutions.

The past, present, and planned program was reviewed and evaluated by a Technical Advisory Group on Zoonoses in the Americas, which was convened at the Center in November. The five members of the Group visited various countries of the Americas, in order to assess zoonoses problems and determine the desires of government authorities concerning those problems. The Group then met at the Center. Their report and recommendations constitute a valuable guide for the development of the Center. The Zoonoses Technical Advisory Group was financed in part by a grant from the Rockefeller Foundation to the Bureau.

A resume of the technical work of the Center is presented in the accompanying chart.

## Staff

The international personnel continued, as in 1957, to be comprised of one administrative worker and three scientific staff members. The professional staff was augmented by the temporary six-weeks' assignment of a special consultant in rabies.

The non-professional or local staff increased from 13 to 22 during the year, including technicians, semi-skilled, and unskilled personnel. An on-the-job training program was carried out for field and laboratory technicians in order to attain the required proficiency.

It is recognized that the personnel provided is minimal and that additional staff members, of both professional and para-professional category, are required if the increasing demands for the Center's services are to be met. Still, the present staff group forms a sound nucleus of talent and experience for expansion as soon as available resources will permit.

## Physical Facilities

Remodelling work in adapting the building in Azul for the operations of the Center was completed in 1958. The training, service and research laboratories, the classrooms, library, and offices, provided by the present structure are adequate to meet immediate requirements. Housing for supporting services and for the animal colonies is included on a temporary basis in the same building. These facilities are, however, inadequate even for immediate needs, and plans have been made for new construction to give suitable accommodations for these operational necessities.

By virtue of a supplementary agreement signed with the



Main building of the Pan American Zoonoses Center, Azul, Buenos Aires, Argentina

Government of Argentina in December 1958, the original physical facilities of the Center were augmented by the addition of a Farm Annex. The 370-acre farm, located about three miles from the main site of the Center in Azul, is to be used for training, experimental and service purposes. Trainees will thus be provided with the opportunity of practical work in diagnosing and controlling different zoonoses. Studies designed to perfect zoonoses control methods are made possible through the facilities available at the farm. Installation of the breeding animal colony there is scheduled as soon as suitable quarters can be prepared.

The most severe restriction on the operations and development of the Center during 1958 was the limitation of equipment and supplies necessitated by the present financial level of the Center.

## Financial Situation

The Pan American Zoonoses Center has, since its beginning late in 1956, been financed by international funds (from the Pan American Sanitary Bureau and the WHO Technical Assistance Fund) and annual contributions made

PAN AMERICAN ZONOSSES CENTER  
RESUME OF SOME TECHNICAL ACTIVITIES DURING 1958

	Information	Training	Investigation	Laboratory Services	Demonstration	Consultation
Rabies	Publication: Tech. Recommendation N° 1: "Potency testing of Avianized Vaccine Using Fixed Virus".	Special Refresher Training in laboratory techniques provided for government officials.	Study of bat rabies in Argentina and Paraguay: ecology and control. Study of passive immunity in bats through ingestion of blood of immune cattle (in progress).	Reference testing of vaccines as desired by different countries. Challenge virus, production virus, and immune serum prepared for distribution. Isolation of virus from outbreak of bovine rabies in Paraguay.	Control of bovine rabies with avianized vaccine (Paraguay) in demonstration involving 8,000 cattle, in progress.	Consulting visits made to Argentina, Brazil, Chile, Panama, Paraguay and Peru to advise on laboratory techniques, human treatment and field control methods.
Hydatidosis		Selected trainees from Argentina and Brazil on field control.	Wildlife surveys (in initial phase). Evaluation of drugs for canine treatment (preliminary phase). Provision of material to Mayo Foundation and CDC, USPHS, in support of research work.	Standardization of Casoni antigen and evaluation of this intradermic and the various serologic diagnostic techniques (in progress).		Consulting visit to Peru to assist in evaluating extent of problem and in preparation of plans for control.
Brucellosis	Publications by staff: "Present State of Brucellosis in Latin America." "Strain 19 Vaccine in the Fight against Brucellosis."		Field trial of Elberg-Meyer vaccine in goats (Argentina, with collaboration of national officials), in progress. Field mission in search for bovine brucellosis (in Argentina, collaborating with government agencies).	Antigen for ring milk test prepared and ready for distribution upon request. Serological diagnosis performed as special service.		Collaboration with Buenos Aires Province in developing its antibrucellosis program. Consulting visits to Chile and Paraguay concerning plans for measuring the problem and development of suitable control measures.
Tuberculosis			Check of local dairy products for presence of tubercle bacilli.			Consulting visit to Paraguay on planning for survey in Asunción area.
Leptospirosis		Special refresher training in laboratory techniques provided for government officials.	Survey of possible canine reservoir in three different countries, in progress. Complete serological study in progress in an Argentine rural establishment, in progress.	Serological screening performed on samples (human; domestic and wild animals) submitted by government authority. <i>Leptospira</i> serotypes provided at request of official laboratory.	Control of bovine leptospirosis with bacterin (Argentina) involving 2,500 animals, in progress.	



PAN AMERICAN ZOONOSES CENTER  
RESUME OF SOME TECHNICAL ACTIVITIES DURING 1958—*Continued*

	Information	Training	Investigation	Laboratory Services	Demonstration	Consultation
Trichinosis			Survey of problem in an epidemic area, in progress.	Reference diagnosis on human cases and on animal material (pork, etc.).		Technical collaboration with provincial authorities in control program.
Zoonoses (general)	Information on various zoonoses and related topics distributed to interested research workers, laboratory and field-control officials in the different countries.	Special advanced postgraduate course held in January for seven physicians and veterinarians from five countries. Individual PASB/WHO fellows provided with special training and field observations.	Collaboration with hospitals and physicians in Azul area in studying atypical pneumonias and other cases that may be zoonoses.	Reference diagnosis performed on material sent from various countries.		Provided member of Secretariat for Second Meeting of WHO/FAO Expert Committee on Zoonoses. Official visitors from several countries received for discussion of zoonoses problems. Wide variety of requests for advice on zoonoses matters handled by correspondence.
Library service	Progress made on establishment of central library service on all aspects of zoonotic diseases and their control, for reference of staff and trainees, as well as for investigators and disease-control officials throughout the Americas.					
Laboratory animal colony	Definite progress made toward development of model colonies of laboratory animals, to serve for training and demonstration purposes, as well as to serve for investigation, laboratory diagnosis, and biological standardization work at the Center. Foundation, stock of different mouse strains provided to official laboratories as well as to medical and public health schools (five institutions in two countries).					

by the Argentine Government. This financial base has been sufficient to establish the Center and to provide for its operation on a limited scale. It is recognized, however, that additional support must be obtained if the institution is to develop in accordance with the needs and demands for its services. It was for this reason that the Director of the Bureau announced to Member Governments his intention to call an Inter-American Specialized Conference in 1959 for the purpose of studying the program of the

Center and arriving at an agreement for the long-term financing of its operations. In view of the zoonoses problems and their socioeconomic repercussions, governments are being invited to send representatives of both health and agriculture ministries. The meeting will thus provide the opportunity for the national governments of the Americas to act in concert toward the solution of a group of problems seriously affecting the health and economy of their citizenry.

# Aftosa

No major change occurred during the year regarding the aftosa situation in the Americas. In general the countries of South America still have the disease in their livestock populations, while the countries and territories north of the Colombia-Panama border remained free.

Financing of the Pan American Foot-and-Mouth Disease Center in Rio de Janeiro (AMRO-77) by the Technical Cooperation Fund of the Organization of American States has been scheduled for continued support until 1962. Preliminary studies were made in 1958 of methods by which long-term financing of the Center might be provided.

An Aftosa Technical Advisory Group to the Director of PASB was established in November. The following members were appointed: 1) Dr. Karl F. Meyer, the George Williams Hooper Foundation, University of California Medical Center; 2) Dr. Ramon Rodriguez, Instituto Bacteriológico de Chile; and 3) Dr. Richard E. Shope, the Rockefeller Institute for Medical Research.

Members of the Advisory Group visited a number of the countries in the Hemisphere and then met at the Center in São Bento, Brazil where they prepared a report on matters concerning aftosa in the Americas and on the program and activities of the Aftosa Center. This report contained many useful and encouraging suggestions and recommendations, one of which stated, "We are of the opinion that the Pan American Foot-and-Mouth Disease Center is playing a vitally important role in the control and eventual eradication of aftosa, and earnestly urge, as our final recommendation, that its training, field consultation, and research effort be continued at an increasingly high level of excellence."

A brief review of the activities of the Center is presented below.

## Building Program

The construction of the new laboratories and the two cattle isolation stables was begun in July by the Brazilian Government as the initiation of their program to provide permanent accommodation for the Center. This phase of construction will be at a cost of Cr. \$15,000,000.

## Training Program

Two training courses were conducted. The first, lasting six weeks, was held at the Center for veterinarians from Argentina (1), Brazil (3), Colombia (1), Paraguay (1),

Uruguay (1), and Venezuela (1). Instruction and practice was given in laboratory methods, including techniques recently developed for the culture of tissues used in the production of virus for vaccine preparation.

The second course (in Costa Rica), was for veterinarians from Costa Rica (2), Cuba (1), El Salvador (2), Guatemala (2), Haiti (1), Honduras (2), Nicaragua (2), and Panama (2). Fellowships were also offered to Mexico and the Dominican Republic, but the nominated candidates were unable to attend. This course was for two weeks, the syllabus being the importance of the prevention of aftosa, the disease security regulations necessary for prevention and how they should be applied, and the actions to be taken in the case of an outbreak of vesicular disease.

Two long-term fellows were working at the Center during the year—one from Peru and one from Brazil. The André Meyer Research Fellow from FAO was accepted for work at the Center on the modification of virus strains.

## Research

The research program has consisted of a continuation of the work on the modification of virus strains for the development of a modified live virus vaccine, on the production of virus for the preparation of inactivated virus vaccines using methods of tissue culture, and on the examination of the antigenic behavior of virus strains so far as this is of importance in the immunization of cattle.

## Diagnosis and Virus Typing

Over 400 samples were received in 1958, a number of which were examined with regard to the occurrence of subtypes. The identification and classification of subtypes is being done in collaboration with the Foot-and-Mouth Disease World Reference Laboratory in England. The Center acts as the channel of communications between the World Reference Laboratory and the countries of Latin America.

## Field and Advisory Work

Members of the Center's staff visited Bolivia, Chile, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Peru, Trinidad, Venezuela, and a number of the Brazilian States. The Center was represented at the Sixth OIRSA (Organismo Internacional Regional de Sanidad Agropecuaria) meeting in Managua, the Fourth Inter-

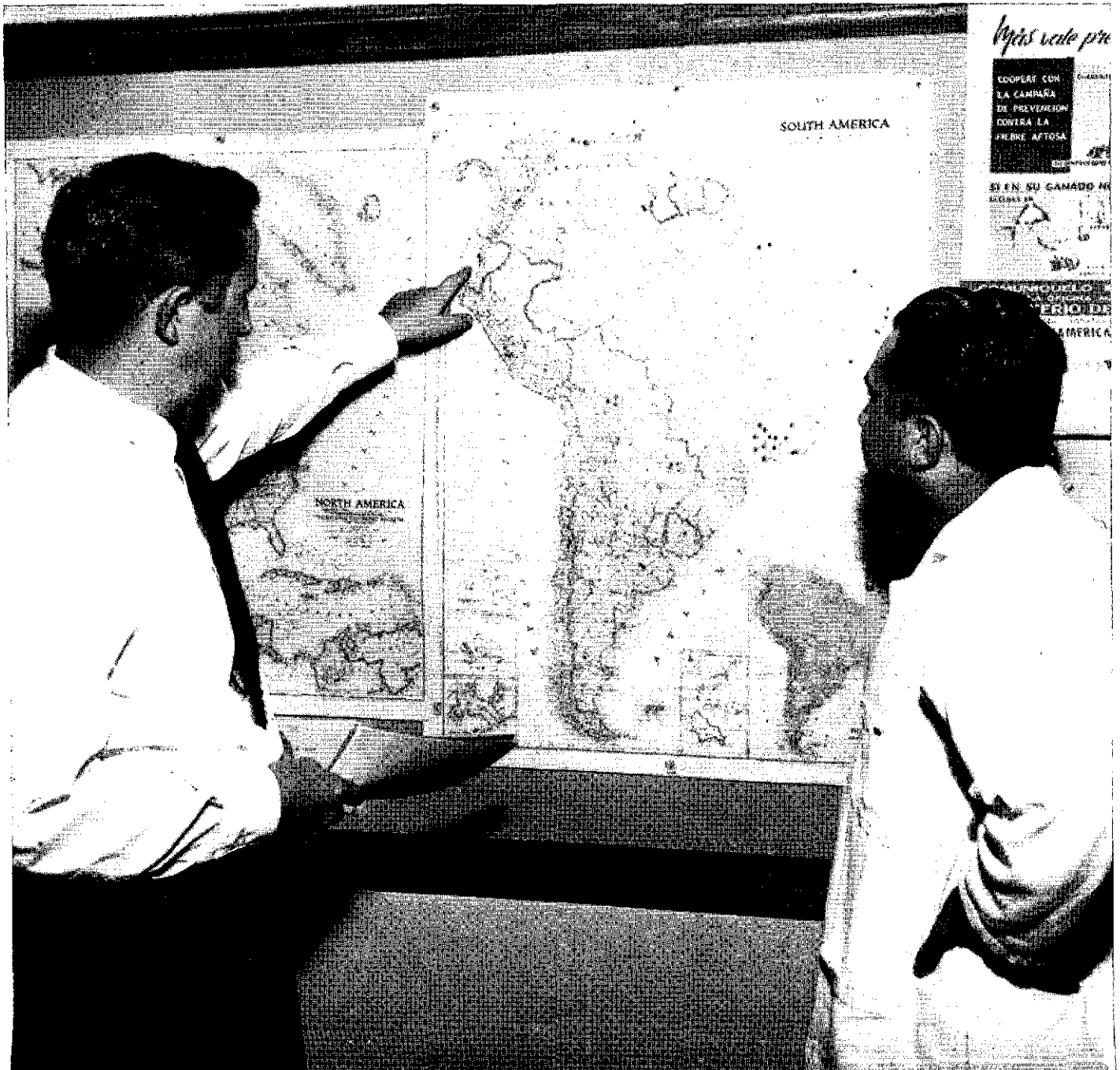
American Meeting of Livestock Production in Jamaica, the Third Convention of the British Caribbean Veterinary Association in Trinidad, the Third Convention of Chilean Veterinarians in Chillan, and the Seventh International Congress of Microbiology in Stockholm.

A "Plan of Action" to be followed in the case of an out-

break of foot-and-mouth disease was prepared and distributed to the countries of the Americas free of the disease.

An important part of the field work continues to be the attempt to establish a regional approach toward control and eradication of the disease.

The chief of the Field Services (left), Pan American Foot-and-Mouth Disease Center, São Bento, Caxias, Rio de Janeiro, discusses Hemisphere's aftosa problem





Staff meeting with participation of PASB/WHO consultants, integrated health project in Uruguay

# PUBLIC HEALTH ADMINISTRATION

## Introduction

Promoting the development of balanced health services continued during 1958. Progress was achieved at national levels in the active use of planning commissions and committees recently established in a number of countries. One such example of an effective method for top-level planning discussions was the organization of a round table in the Dominican Republic; other countries have successfully used still different methods for active planning. These are described below.

Assistance which the Organization is providing is given mainly through the Zone Offices and through advisers assigned to the projects for integrated health services in the several countries. The Organization has been studying methods to enhance its collaboration with the countries. Meetings were called of health administrators and other professional advisers (particularly sanitary engineers, public health nurses and epidemiologists) directly concerned with integrated health projects. After a successful first meeting of this kind in Guatemala in 1956, primarily for personnel of northern Latin America, a second such meeting was held in 1958 in Peru for personnel of South America and the Caribbean. These meetings have promoted a consolidated approach based on the experience of all consultants concerned with such programs.

A number of important changes in the administrative

patterns of health services, as well as expansion and progress in decentralization, can be reported for 1958. At local levels further progress was achieved in the demonstration and training areas of the projects and in adequate development of basic services, particularly communicable disease control, including public health laboratory facilities, maternal and child health, sanitation, nursing, and health education. The inter-dependency of these is essential for effective improvement in the health of the community. It is also at this level that programs for training of personnel, especially in-service education of medical, nursing, and sanitation personnel, have continued or been expanded thus making available larger groups of professional and auxiliary personnel with better training for expansion of local health services.

Many important developments that have occurred in specific fields within the program of integrated health services have been more fully described in the separate sections of this chapter dealing with environmental sanitation, public health nursing, nutrition, maternal and child health, health statistics, health education, public health dentistry, and veterinary public health. Also described in this broad chapter are the more limited activities of collaboration in the fields of hospital planning and organization, and of mental health.

# National Health Planning

It has been in recent years that the various aspects of national health planning have been considered by the Directing Council. This was the case during its Technical Discussions both in 1956 and 1957. Attention was thus further focused on this important phase of health programs. In 1958 the governments provided valuable information on health conditions in their four-year reports, summarized by the Organization and presented at the XV Pan American Sanitary Conference. In the present Report a number of important developments in the year are described.

A majority of the countries have established planning commissions or incorporated such activities in policy and normative services. Such activities were newly established in 1958 in Peru and Uruguay. In several countries and other political units, such as Bolivia, Colombia, the Dominican Republic, Guatemala, Haiti, Honduras, Panama, Paraguay, Peru, and British Honduras, broad plans are reported to have been advanced for considerable reorganization, over a number of years, of the national health structure, decentralization, and expansion of local health services. In certain of these countries and political units, such as the Dominican Republic, Guatemala, Honduras, Panama, Paraguay, and British Honduras, this has taken the specific form of five-year plans.

The following developments are reported for individual countries and political units.

In Bolivia a new sanitary code, as well as sanitary regulations to complement the code, have been prepared and presented by the President to the Congress for endorsement.

In Colombia the Planning and Coordination Office studied the principles on which reorganization of the national health structure should be based and the budget needs for establishing a public health career. A project of law was presented to the Parliament establishing the budget of the Ministry as 12.5 per cent of the total national budget.

In Costa Rica an evaluation of health services in which the Organization has closely collaborated was carried out in 1958 and is described in detail elsewhere. Based on this evaluation, plans are expected to be developed for reorientation and expansion of health services where needed.

Extensive planning for reorganization of the health services took place in Ecuador. As a result an agreement was signed in 1958 with the government for a cooperative project on reorganization of the national health services, decentralization, and expansion of local services. This plan provides, in particular, for regionalization and for establishment or development at the national level of the environ-

mental sanitation, epidemiology, MCH, and nursing divisions with full-time personnel.

In Haiti one of the most important developments was the active functioning of the National Committee of Planning of Public Health. This Committee considered several important phases in the development of health services, particularly the program of development of local health services in the north of the country and the tuberculosis control program in the rural areas. A study was made for the establishment of appropriate legislation for an organic law of the Ministry.

A plan for the reorganization of the various dependencies of the national health service was developed in Guatemala by the Division of Rural Services with the assistance of consultants of the Organization. As a result the revision of the sanitary code and the development of a salary scale is expected.

In Honduras a "Junta Planificadora" has been responsible for specific proposals for the reorganization of the national health service including decentralization and plans for the development of local services in a five-year program.

In Jamaica the Organization collaborated with the government in plans for the reorganization and expansion of hospital and medical care services. Assistance was also provided in plans for the organization of a mental health program.

The national planning commission in Panama was active during 1958 in finalizing the five-year plan which incorporates the proposals made in conjunction with the economic studies conducted jointly by the Government of Panama and the International Bank for Reconstruction and Development. In planning the budget for 1959 plans were made for two new health units in the eastern region, five in the central, and three in the western region.

In Paraguay plans for reorganization of a national health care structure, development of decentralization, and extension of local services were finalized as a five-year plan. The plan was officially approved in mid-1958. Plans were further made for the legal establishment of a health career. Adoption of the Sanitary Code of the Republic, prepared with the assistance of the Organization, is also pending approval. Planning was continued for an expanding program of basic environmental sanitation services throughout the country, a nutrition and dietetic survey, iodization of salt, and rabies control.

In Peru the Office of Planning, Evaluation, and Coordination participated in plans for country-wide hospital

and health center construction. A preliminary outline for a national health plan which stressed the basic features of environmental sanitation, maternal and child health, and tuberculosis control was prepared on request of the Ministry.

Assistance was rendered in Trinidad in the preparation of a new Sanitary Code which is expected to serve as a model for the West Indies Federation. Completion of this Code is expected in 1959.

In Uruguay two coordinating committees for the project, one for technical assistance and one for technical coordination, were established. The latter includes the relevant technical personnel to deal with planning and development of the project and the former is composed of representatives of the Organization which gives technical assistance.

An outstanding development was the holding of a one-week round-table discussion on national health planning in the Dominican Republic. In this country the Secretary of Health and Social Welfare, with the assistance of the Organization, organized the meeting with the purpose of bringing together for joint discussion all health personnel involved in the development of the national health service. The discussion centered on four main subjects: 1) central health structure; 2) functions and structure of local health services; 3) training of personnel; and 4) eradication program and its relation to the permanent public health services. The meeting was organized according to the techniques of active group discussion with an outstanding exhibition of the use of audio-visual methods in plenary sessions to stimulate audience interest. A total of 75 participants included 56 public health workers from the Dominican Republic, 10 PASB/WHO country consultants, five Zone II personnel, and four Washington Office staff. The largest group (34) were health administrators. Furthermore, smaller groups of MCH specialists, malariologists, epidemiologists, physicians, health educators, statisticians, dentists, and others participated. These were distributed in four inter-professional working groups.

Preparation for the meeting included an impressive



International personnel of PASB discuss program planning for the Dominican Republic

amount of work and discussions in the country. One basic introductory paper for each subject was prepared by a combined group of national and international staff. The final report constitutes a good statement of sound principles in the planning of health services. Continuous reference is made through the whole report to the Sanitary Code promulgated in the recent past in the Dominican Republic and still to be implemented in many of its facets.

## Integrated Health Services

Progress in integrated health services will be considered in terms of consolidation of policy, progress of the projects at national and local levels, training programs, and evaluation of services.

### Consolidation of Policy

Collaboration with governments in the development of health services continued with the operation of 15 projects in 1958. Of these, 10 were operating at the national level, one at the state level (Mexico), one at the provincial level (Argentina), and two at local levels (El Salvador and Venezuela). A project was initiated in Haiti during the year to which one medical officer was assigned; other personnel will be added in coming years. The number of international personnel assigned to these projects is given in Table XI.

TABLE XI. NUMBER AND TYPE OF INTERNATIONAL CONSULTANTS IN INTEGRATED HEALTH PROJECTS, 1958

Project	Medical officers	Public health nurses	Sanitary engineers	Other
Argentina-7	1	1	1	—
Bolivia-10	1	—	—	—
Colombia-4	2	3	1	—
Dominican Republic-4	1	1	1	—
Ecuador-4	1	1	—	—
El Salvador-5	1	2	1	—
Guatemala-8	1	2	1	—
Haiti-16	1	—	—	—
Honduras-4	1	2	1	(1) <sup>a</sup>
Mexico-22	1	1	1	1(1) <sup>a</sup>
Panama-1	2	2	1	—
Paraguay-10	2	1	1	1
Peru-22	1	1	1	—
Uruguay-5	1	1	1	—
Venezuela-1	—	—	1	—

<sup>a</sup> Unfilled position in parenthesis.

The Organization has gained valuable experience in the years since the first integrated health project was initiated in 1950. In 1956 a meeting was convened in Guatemala of PASB/WHO advisers assigned to the projects and of Zone (II and III) and Washington staff. The purposes of this meeting were to profit by the experiences gained so far, clarify the policy of collaboration between countries and

PASB/WHO, and discuss methods of making the collaboration more effective. A second meeting was then held in Paracas, Peru in 1958 with participation principally from personnel in projects in South America.

The organization of these meetings was the outcome of an extended effort to develop policies and guides for the strengthening of national health services. They were likewise a good means for in-service education of the staff, thus enabling them to collaborate more effectively with governments in planning, operation, and evaluation of generalized health programs.

Applying the basic principles of public health to this Organization's task has required continuous readjustments and re-definitions of aims and methods. The 1956 meeting was decisive in shifting emphasis in PASB/WHO collaboration from the local demonstration to the regional and national level. This year's meeting confirmed such approach and further stressed national health planning as a major opportunity for international collaboration. Both these meetings represented a solid investment for the Organization, as they provided an opportunity for many professional staff to contribute to policy development. The meetings were divided into three inter-professional working groups; discussions were based on active participation, in group discussion, of each major subject and on plenary sessions to discuss and approve the draft of each group on a particular subject.

The following five subjects were considered: 1) role of the consultant in the strengthening of health services; 2) concept and scope of integrated health programs; 3) planning and development of integrated health programs; 4) training of personnel of integrated health programs; and 5) evaluation of integrated health programs.

There was also a plenary session on relationships with the international and bilateral organizations, as well as a session each for the three major professional groups by profession—public health administrators, nurses, and sanitary engineers. In a final plenary session the report of each group on all subjects was considered for approval. A final report was prepared combining the conclusions of both meetings in Guatemala and Peru.

Major conclusions can be summarized as follows: In considering the role of the PASB/WHO advisers in co-operating with governments toward strengthening their health services, the importance of their technical training and experience and of their understanding of the aims of the Organization was fully recognized. But special stress was placed on their ability to understand the over-all



socioeconomic and cultural characteristics of the countries where they are stationed as well as the particular characteristics of the project in which they are active. Stress was also laid on their ability to establish good working relationships through their discretion, enthusiasm, and skill, thus obtaining the respect and confidence of the nationals with whom they collaborate.

In order to coordinate the activities of the different advisers in the projects of integrated health services it was agreed that the principal public health administrator should act as team leader of the group, but that most important for effective functioning of the team was the proper mental attitude toward the establishment of real team spirit. Furthermore, the need was stressed for continuous interchange of information among advisers of various projects. Since the principal public health administrator, as team leader of the integrated health project, has close access to the higher national health authorities, it was considered that his assignment as administrative coordinator between the different team leaders of the various projects and the government could be very useful.

It was recognized that the concept of integrated health services is a working philosophy, founded on the principle that health involves man and his community. Most important components of a program of integrated health services are the development of a working plan to cover the basic health needs, the use of well-prepared personnel employed on a full-time basis for key positions, the development of a strong structure and organization at all administrative levels with proper coordination and, where appropriate, the development at the local level of services in a pilot or demonstration project. In developing the program the necessary priorities are based on the proper understanding of the size of the problems and of the techniques and resources for action. The health program requires a structure which permits, insofar as is possible, technical centralization and executive decentralization for concomitant development of local services and a strong central structure. Where it is necessary to demonstrate the development of local services these should take into full account the existing resources and be aimed at the major problems. This demonstration may be necessary as a model for the rest of the country and as a center for training of personnel to be employed in these services.

Development of health programs requires large numbers of trained personnel, and it is necessary to meet the immediate needs as well as those on a long-term basis. Such training relates both to formal training of various types of public health professional workers and to training of auxiliary workers of different categories. In many areas the latter are doing a major part of direct work with the families and communities whereas the professional workers are often used in administrative positions and for the supervision that is highly needed for the auxiliary personnel.

A program of training is essential for professional

workers both through fellowships abroad and through strengthening of professional schools in the worker's own country. Needed too are courses and training programs connected with service areas.

Evaluation is an important phase of the program of integrated health services. This involves an orderly and continuous process of collection and analysis of data for measuring the progress of the program toward fulfillment of objectives. Such process offers elements of judgment that will justify the continuous support of the community and enable the readjustment of the program where needed.

These basic ideas are guidelines in the various projects organized by the countries with the collaboration of the Organization.

### Progress in Projects

In 1958 the progress of projects of integrated health services varies since some projects have been already established for several years and others are in early phase of development. Also, the pace of progress is dependent on the stage of development of services within the country as well as on personnel and financial resources. The proj-



ects function essentially in three areas of activity: 1) development at national levels; 2) development at local levels; and 3) training of personnel for extension of health services. In the projects that have been in operation for several years progress involves program consolidation and extension of services to other areas. It is essentially in these projects that increasing attention is being given to evaluation, described more fully below.

#### *National Level*

Developments at the national level have been important for many countries and have involved changes in the national structure, progress in decentralization, and provision for increase in budgets for facilities and personnel.

It is worthwhile to underline the proposed and established changes in structure and reorganization made in 1958. Important alterations were made in several countries in the structure of health services at the national level.

In the Dominican Republic a Division of Communicable Diseases was established with an increase in technical and administrative personnel. The former Division of Venereal Diseases forms part of the new Division. Also were created a Division of Health Education and a Section of Statistics.

In El Salvador the Demonstration Area became a part of the Division of Education and Training and Experimental Program and is now called "Escuela de Capacitación Sanitaria".

In Paraguay two major changes were made—a regulation of nursing by decree and a new structure for the Department of Epidemiology and Zoonosis by ministerial resolutions. Provisions were included in the budget proposals for 1959 for Departments of Environmental Sanitation, Veterinary Public Health, and Public Health Nursing which will provide for planning and organization at the national level. Collaboration was given for improvement of technical services, especially in environmental sanitation, reports and health studies, public health nursing, veterinary public health, laboratory, nutrition, and health education, some of which had substantial development. In the field of health statistics the "Servicio de Informes y Estudios Sanitarios", in coordination with the "Oficina de Epidemiología", has initiated improvement in the reporting of communicable diseases and is collaborating in the organization of the statistical reports of the hospitals.

A project in Argentina has been established in El Chaco at the provincial level. This cooperative project is of particular importance as it is intended as an example of reorganization and services in other provinces. By ministerial resolution a new structure was established with two sub-secretaries, one of public health and the other of administration. Also were created Departments of Hospital Care, Maternal and Child Health, Epidemiology, Environmental Sanitation, and General Technical Services.

In Honduras the consultant of the Organization has

established collaboration with the Faculty of Medicine, which is preparing a plan of reorganization.

The fact that several countries have included decentralization in the national plan and are actually implementing it is further evidence of the interest of the countries in the extension and improvement of their services. Thus, regionalization is already underway in Paraguay where geographical limits have been defined and health administrators have been appointed chiefs of the regions. In Panama, as another example, the plan for five years includes development of three regions. The central region has filled key positions; recently the key position for the nurse has been filled in the western region; for the eastern region, which includes the cities of Panama and Colon, the medical director needs to be named.

In Argentina the Province of El Chaco has been divided into three administrative zones, and activities have been initiated in one of them.

The changes in organization, extension of services, and decentralization obviously require important increases in budget provisions. Budgetary provisions in some countries now exceed 10 per cent of the national budget and, for instance, in Panama the budgetary provisions are over 15 per cent of the national budget.

Notable increases in personnel are provided for the countries where reorganization of the national health structure and expansion of services have been established or proposed. Besides increases in number, the most important changes or additions are those for the establishment of a full-time career service. Paraguay and Panama particularly have reported increases in career service personnel during the year.

#### *Local Level*

The activities reported at the local level are mainly in the demonstration and pilot areas developed in the program of integrated health services. Information given here is limited to specific new developments during the year and a summary is not given of the scope of these programs which are under way.

In the project in Argentina, which operates at the provincial level, the organization of two health centers was initiated in 1958 in the zone which is being developed as the demonstration and training area. However, the project contemplates the progressive extension of services to the whole province. The project was also concerned with the improvement of hospital facilities as part of the medical care program. Three water-supply systems were completed in communities of zone I in this project and 252 latrines were constructed in connection with the training program of sanitary inspectors. A housing survey has been made in the area of the health centers.

Field activities were initiated in Colombia only at the beginning of the year in the local pilot areas in the De-

partments of Santander and Boyacá, two of the five departments of the project, utilizing recently trained personnel. One of the first assignments in each of these two pilot areas is the health survey of the localities by the local team of physician, nurse, and sanitary inspector. Detailed plans were drawn up for each health center and a general plan was developed which was adapted to the particular conditions of each municipality.

In Colombia a detailed plan of operations for sanitation has been prepared for one of the pilot departments. The Section of Engineering is engaged in the planning of small rural water systems in the pilot areas. An entomological survey has been carried out to obtain information necessary for the control of arthropods since the presence of triatomas has created a serious health problem.

Environmental sanitation services of the demonstration health center at San Cristóbal in the Dominican Republic are now attending the needs of approximately 120,000 people. A sanitary engineer was appointed as chief of sanitation services of the center in 1958. In the Dominican Republic there was considerable increase in personnel to operate sub-centers of the demonstration health center, namely one medical officer, five public health nurses, and five sanitarians. Eighty per cent of the houses which should be connected in the demonstration center have been connected to the sewerage system. The Division of Environmental Sanitation has continued providing co-operation to the urban center in the improvement of sanitary conditions in hotels and restaurants, and to the market area in courses for food handlers. Several rules and procedures for inspection have been prepared.

In the demonstration area in El Salvador, principal objectives were to consolidate the health services, continue the training program, and evaluate the results of the program in general. Two new health centers covering 13,000 beneficiaries were completed and placed in operation. Another new center is under construction. This project continued in 1958 to be used mainly for training; about 13 per cent of the professional time was devoted to this activity.

In El Salvador the Sanitation Section of the demonstration area developed a program of water supply construction and maintenance at the beginning of the year. This program includes sanitation of schools. Construction is proceeding on the sewerage system in the control city of the demonstration project.

Six new health centers in five cities were created during the year in Ecuador. Measures were explored to utilize one of these as a demonstration center for the integrated health program.

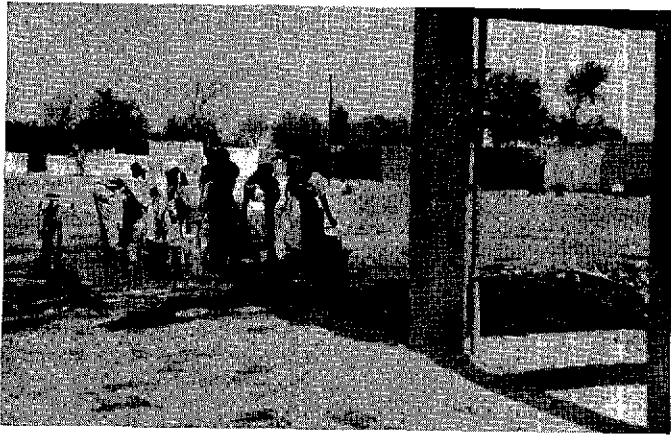
In Guatemala a new health post was inaugurated and placed in operation; health centers or rural posts are in construction in six communities. Changes in the organization of environmental sanitation, however, have led to disruption of the program as previously planned.

In Honduras programs in environmental sanitation were further developed. The Environmental Sanitation Section of the health center consisted of four trained inspectors and one supervisor under the over-all supervision of the national sanitary engineer. They completed a sanitary survey which indicated crowding and the need for new homes, water supply, and excreta disposal facilities. The following projects are being undertaken: sanitation assistance for a new public market; public showers, toilets, and laundry for the health centers; and plans for sanitary posts and for the sanitary workshop. A latrine program is under way, as well as a survey for a sewerage system, a study for the improvement of the water supply, and a study for a garbage collection system.

The general plan of work in the State of Guanajuato, Mexico consisted in training of personnel at all the levels, organization of the work in rural centers, and gradual strengthening and reorganization of the services in the urban population. Thus the district office was transferred in 1958 to a location adjoining the regional health center where good physical conditions and adequate equipment are available for the service and training program. The district laboratory was inaugurated. Efforts have also continued for the improvement of four auxiliary urban centers. A new regional hospital with 80 beds is being built. To improve the collection and tabulation of statistical data the chiefs of the urban centers and the administrative personnel in charge of the reports received additional training. Furthermore, the Biostatistical Section of the State initiated the sending of weekly reports regarding six major diseases. Ten rural auxiliary centers have been operating as part of the program. They serve in areas covering approximately 30,000 population or 18 per cent of the rural population of the project.

In the field of environmental sanitation the program included the development of water supplies through the drilling of wells, contribution of water units and tools, and a water-supply system. During the year 429 latrines were installed. Considerable emergency activity in the field of sanitation was necessary because of the emergency caused by the flood.

Although there were deficiencies in personnel in Panama the demonstration center in La Chorrera has been able to secure much greater participation of the communities, rural as well as urban, in its area of activities. A program for provision of water supplies for small rural communities is developing at a rapid pace and the collaboration of the communities was obtained for construction of 67 wells in rural towns. Services for urban water supplies and sewerage systems are in process of development. Collaboration has been extended by the Organization to the urban areas of the country and the medical and nursing consultants have participated in the reorganization of an urban health center, which will also serve for the training of personnel. Simplified procedures for the collection and analysis of the



Villagers of Roque, Guanajuato, Mexico, drawing water from a group of public taps and faucets

statistical data were also established experimentally in this center. These procedures are to be extended in the future to other health centers.

No new demonstration area has been established in Peru. Nonetheless, plans were prepared for training of personnel and visits were made to pilot areas previously assisted by the Organization and to others included in the plans of the government for development and expansion of local services.

In Paraguay nine water-supply systems were completed for small communities and 39 for families, serving in all 2,080 people; 2,046 latrines were constructed to serve 10,533 population. Revision of activities of the demonstration program in rural sanitation has continued with emphasis on stimulating community participation especially in the construction of driven wells.

In Uruguay health services in the demonstration area extended to 35,000 population and received the part-time services of two doctors, three nurses, and eight health visitors. Several new appointments have been made, namely three health educators to begin in 1959, a veterinarian for the national team of the project, two officials in environmental hygiene to serve as instructors for the course for sanitarians, six nursing instructors for the course for health visitors, and a supervising nurse for one of the departmental health centers. The use of a manual of nursing designed for training of personnel has been extended to all the health centers and schools of nursing.

In the Venezuela program in the Tuy Valley, collaboration of the Organization was terminated in December when the only international consultant (engineer) was withdrawn. In the latter part of 1958 the center of opera-

tional headquarters was transferred to Ocumare, a focal point of transportation, industry, and population. Standard clinic services have been expanded in keeping with the plan of operations.

### Training of Personnel

An important activity of the projects is the training program for personnel through fellowships, locally organized courses, and in-service education for medical, nursing, sanitation, and auxiliary personnel. Some of these activities have been carried on for several years and have in general been adjusted from year to year to improve their effectiveness. Many courses have been evaluated and as a result new approaches have been proposed. With regard to the training of auxiliary nursing personnel there has been a tendency to reduce formal instruction and give increasingly more in-service education.

For training of personnel for key positions, emphasis is placed on academic studies in schools of public health for which fellowships are awarded for such studies in other countries. In addition, for training of staff and for extension of local services, courses are developed in the demonstration areas of the projects. In 1958, 452 persons were trained in either short courses or courses of several months. The number of personnel trained in such courses is given in Table XII.

In Argentina three courses were completed with the training of 17 sanitary inspectors in a nine months' course; 14 nurses in a four months' course; and 37 nursing auxiliaries in a five months' course. Also during the year, the School of Nursing of Resistencia was functioning with the matriculation of 15 students.

In Colombia the course of orientation for doctors was conducted with 21 students selected from 60 applications. The course of nine months was divided into six months of academic studies and three of practical work in the field. Sixteen students attended the eighth post-graduate course of public health nursing and midwifery which will be completed in February 1959. The second course of 3½ months for nursing auxiliaries had 21 students. A first course for sanitary inspectors at the School of Hygiene in Bogota was held for 35 students for a period of six months, including six weeks of field training. This was followed by a second course for 29 sanitary inspectors. Because of shortage of personnel and space at the school, short courses of six weeks' duration were planned in each of the departments.

In the Dominican Republic the first course of orientation in public health for medical directors of the provincial services was inaugurated in the latter part of 1958 at the pilot health center of San Cristóbal. The course of four weeks' duration was given to nine doctors and included practical work and visits to the different services, both national and local. At the same time a second course of

eight months for nurses was started with 17 nurses. A course for vaccinators for the BCG campaign was also conducted.

In El Salvador emphasis was placed on the introduction of new, dynamic methods of teaching and on improved supervision of field practice. The sixth course for sanitary inspectors was given to 23 students, of whom three were from other countries; the third course for nursing auxiliaries was held for 22 students. In-service training took high priority during the year, requiring all the personnel of the area. For example, nearly 13 per cent of the time of the nursing personnel, professional and auxiliary, was devoted to training activities. The government passed a decree transforming the old training center of the demonstration area to "Escuela de Capacitación Sanitaria." This

new school will utilize the facilities and personnel of the training center, as well as the other facilities of the demonstration area, to continue the education and training of health personnel of the country.

In the new health centers in Ecuador, 12 nursing auxiliaries and a group of 20 vaccinators were trained.

In Guatemala, the fourth course for health administrators for 14 doctors and the third course for nine graduate nurses were conducted during the year. The courses of training for 20 inspectors and 22 nursing auxiliaries were also completed. Twelve "parteras empíricas" received training. Thus, in all 77 persons received training in this demonstration program. Collaboration by means of conferences and discussion groups on public health subjects were given in accordance with requests.

TABLE XII. NUMBER AND TYPE OF PERSONNEL COMPLETING COURSES IN INTEGRATED HEALTH PROJECTS, 1958

Project	Total	Physicians	Sanitary inspectors	Nurses	Nursing auxiliaries	Vaccinators	Other
Total	452	59	131	31	132	70	29
Argentina-7	68	—	17	14	37	—	—
Colombia-4	77	21	35	—	21	—	—
Dominican Republic-4	39	9	—	—	—	30	—
Ecuador-4	32	—	—	—	12	20	—
El Salvador-5	45	—	23	—	22	—	—
Guatemala-8	77	14	20	9	22	—	12 <sup>a</sup>
Honduras-4	44	—	26	—	18	—	—
Panama-1	10	—	10	—	—	—	—
Paraguay-10	60	15	—	8	—	20	17 <sup>b</sup>

<sup>a</sup> Traditional birth attendants. <sup>b</sup> Health educators, 10; personnel for nutrition survey, 7.

TABLE XIII. COURSES FOR PUBLIC HEALTH NURSES AND FOR NURSING AUXILIARIES COMPLETED IN 1958 IN INTEGRATED HEALTH PROJECTS

Project	Number of public health nurses	Duration in months	Hours		Number of nursing auxiliaries	Duration in months	Hours	
			Theory	Practice			Theory	Practice
Argentina-7	14	6	354	360	37	5	242	547
Colombia-4	—	—	—	—	21	3	...	...
Ecuador-4	—	—	—	—	12	3	...	...
El Salvador-5	—	—	—	—	22	10	520	646
Guatemala-8	9	7	638	237	22	4	290	244
Honduras-4	—	—	—	—	18	1	...	...
Paraguay-10	8 <sup>a</sup>	3	28	50	—	—	—	—

— None. . . . Data not available. <sup>a</sup> Control of Communicable Diseases.

In Honduras a course of four weeks was given to 18 nursing auxiliaries who work in the national health service; the training of 26 sanitary inspectors was completed. Two courses of five months' duration were started late in the year for nursing auxiliaries and sanitary inspectors.

Ten sanitary inspectors were trained in Panama and a course for nursing auxiliaries was organized late in the year for mixed training in public health, home and hospital care for auxiliaries who will work under the supervision of graduate nurses. Forty-three students were selected, of whom 20 will work in hospitals and 23 in health centers. Furthermore, in-service training was given to the following: doctors, nine; nursing auxiliaries, four; laboratory technicians, nine; health educators, four; sanitary inspectors, 20; traditional birth attendants, 11. The center also served for field practice for 10 nursing students, 10 midwifery students, and 19 medical students.

In Paraguay the second four weeks' orientation course in public health for rural doctors was carried out late in 1958 for 15 doctors, chiefs of health centers from the four health regions, who received theoretical and practical training in 11 principal subjects and remained one week in diverse health centers. In addition, eight nurses for control of communicable diseases, 10 health educators, 20 vaccinators, and seven persons for nutritional surveys were trained during the year, making a total of 60 persons trained.

Regular activities of in-service education are also carried on in health centers. These have included a theoretical-practical course for 15 midwives to acquaint them with the field of public health, training of nursing auxiliaries in control of communicable diseases, intensive training of instructors, orientation of midwives for training of "empiricas" and home visiting, and a short course for personnel who serve as secretary-receptionists, statistical and file clerks.

During the year there were interesting developments in the field of round-table discussions and seminars regarding various aspects of the program. These were usually stimulated by the staff of integrated health projects, and the results proved very useful for improvement of the programs.

For example, in Colombia two seminars were held with the participation of the personnel of the health centers of the Departments of Norte de Santander and Boyacá to discuss general problems and difficulties observed during the first seven months of work, to standardize procedures and unify criteria in the interpretation of the forms, and to develop measures to facilitate field practice of the doctors and nurses. These meetings were of great value for the exchange of ideas.

In Guatemala a seminar was held on the problems of public health practice in the demonstration area. The two subjects discussed were: 1) standards and regulations of work; and 2) inter-personal relations and teamwork.

Planning for a seminar on water-supply development for the city of Tegucigalpa, Honduras was carried out.

In Panama a regional seminar on statistics was conducted during the year for discussion of the new system of organization of statistical work in the health centers and hospitals.

In Paraguay several meetings and seminars were held including the following: round tables of chiefs of health centers in regions I, II, and III for integration of activities; round table on administrative matters for doctors of region III; round table on functioning of "Mothers Clubs" in region I; seminar on infant diarrheas and their relation to environmental sanitation; and a refresher course on nutrition.

In Uruguay a round-table discussion took place with the participation of doctors of four communities regarding the general objectives and activities of the project.

## Evaluation

Attention was called during the 1957 Technical Discussions to the importance of evaluation as part of program planning and measurement of achievement. Evaluation has been recognized as a basic phase of reorientation for new emphasis in the program following changes in program priorities resulting from successful action.

In the development of the cooperative efforts between the government and the Organization for the establishment and development of projects of integrated health services many surveys of an over-all national nature or of a partial or special nature have been carried out. Some governments have particularly turned their interest in 1958 to the measurement of achievements and accomplishments in their health services.

One example is in El Salvador where an agreement was reached between the Pan American Health Organization and the health authorities of the country regarding the purpose and methods for evaluation of the project. The two principal objectives are: 1) to take advantage of the interest of the Organization in developing a guide which would be made during this experience; and 2) to develop a document that would give a clear idea of the accomplishments of the demonstration area and would be used as a basis for making plans for further expansion of public health at the national level. The preliminary draft of the evaluation is almost complete.

In Costa Rica an actual evaluation of service was carried out at the initiative of the government and received the special attention of the Director General of the Ministry of Public Health. Collaboration of the Organization was requested by the government and given through the services of three consultants with active participation of the Zone Representative and the professional staff of the Zone Office.

The analysis and recommendations related essentially

to the public health services of the Ministry of Health and did not include the services of the General Directorate of Medico-Social Assistance, the programs of SCISP, or the Social Security Agencies. However, the report did include the data on the services of those agencies particularly insofar as their activities were intimately related to the services of the General Directorate of Public Health, thus permitting the evaluation of these latter services in proper perspective.

The evaluation was carried out in two phases. A first phase consisted of the planning for the evaluation. The second phase consisted of the actual evaluation by the three visiting consultants in collaboration with the governmental authorities.

In the first phase PASB/WHO obtained (at the request of the government) the services of a consultant in survey techniques and statistics to assist in the preparation of the documentation and in the coordination of the project. During this phase the consultant made two visits to Costa Rica, the first a brief visit for general discussion of the scope of the project, timing, and the establishment of the evaluation commission. A second longer visit was made by the consultant to assist in the preparation of reference

documents and questionnaires to be filled in by the various chiefs of departments and directors.

During the second phase three consultants of the Organization, two public health administrators and one sanitary engineer, as well as the previous consultant, formed part of the evaluation commission to make the actual evaluation based on the study of the statistical and reference documents and on a series of planned visits. At the end of the evaluation period a report was prepared and submitted to the government. The report included descriptions of demographic data and the health status of the population, analysis of the administrative organization of the public health services and of all its departments, and study of key personnel and future development of public health services in Costa Rica. The evaluation also included various recommendations which were submitted to the government together with the report. The preparation of the report and the recommendations were the result of close cooperation and discussions among the consultants of the evaluation commission, government officials, and the PASB/WHO Zone Office. The report in final form was submitted to the government by the Zone Representative on behalf of the Pan American Sanitary Bureau.

## Health Statistics

Major activities in the field of health statistics in 1958 involved the preparation of Four-Year Reports for the XV Pan American Sanitary Conference, developments in teaching of medical statistics, and extension of field consultant services. The activities of the Section of Epidemiology and Statistics are described under the five headings: 1) Collection, Analysis, and Distribution of Statistical Information; 2) Education and Training Program; 3) Field Consultant Services; 4) International Sanitary Regulations; and 5) Miscellaneous.

### Collection, Analysis, and Distribution of Statistical Information

The outstanding services rendered in this field during the year were the collection and analysis of data on health conditions from four-year reports, assistance on the report on malaria eradication for the XV Pan American Sanitary Conference, and the completion and release of the first

publication on *Reported Cases of Notifiable Diseases in the Americas*. These reports as well as continuing and current activities are summarized.

#### *Summary of Four-Year Reports*

The most important activity in this field during the year was the preparation of the *Summary of Four-Year Reports on Health Conditions in the Americas* for the XV Pan American Sanitary Conference held in Puerto Rico in September 1958. The Pan American Sanitary Code and the Constitution of the Pan American Health Organization provide for the exchange of information regarding the prevention of disease and preservation of health in the Western Hemisphere. For the Pan American Sanitary Conferences, the member states have provided reports of health conditions during the preceding four years. The first summary report was prepared for the XIV Pan American Sanitary Conference held in Chile in 1954 (*Summary of Reports*

on the Health Conditions in the Americas, 1950-1953, Scientific Publications N° 25). This Conference recommended that the member states increase the statistical information contained in their reports for the XV Pan American Sanitary Conference. In compliance with the resolution regarding the preparation of the report for the XV Conference, forms for recording selected data on vital statistics, notifiable diseases, and health personnel, facilities and programs were distributed in January 1957 to all member states. Since the World Health Organization also needed data on health conditions for preparation of a report on the world health situation for the Eleventh World Health Assembly in May 1958 it was necessary to request that the countries transmit the reports considerably in advance, and complete data for 1957 could not be provided. The report, *Summary of Four-Year Reports on Health Conditions in the Americas*, Scientific Publications N° 40, was prepared in both Spanish and English and released in August 1958. The great progress being made in health work can be viewed by study of the data in this report. Considerable progress has been made in the quality of the data reported, especially in the field of vital statistics and communicable disease. There is also evidence of progress in other aspects of programs for the protection, promotion, and restoration of health reported for the first time here.

#### *Report on Malaria Eradication*

This VI Report on Status of Malaria Eradication in the Americas was completed in English and Spanish for the XV Pan American Sanitary Conference and is actually the sixth in a series of four-year reports relating to progress in the campaign against malaria in the Americas. The report as a whole is the result of the combined effort of field staff in all Zones, Malaria Eradication, and the Statistics Section. The first section was primarily the responsibility of the Epidemiology and Statistics Section, and contains 21 tables showing the various aspects of the malaria eradication program for the countries of the Americas. The areas from which malaria has not yet been eradicated, the areas under surveillance, and those from which malaria has been eradicated are given to show the extent of the problem.

#### *Ten-Year Report on Notifiable Diseases*

The publication, *Reported Cases of Notifiable Diseases in the Americas, 1946-1955* (Scientific Publications N° 38, February 1958) was prepared in response to the many requests for data on communicable diseases for the Americas by national and international agencies and by health workers concerned with the study of the distribution of diseases.

Efforts were made to have the data included in this report checked by the health authorities in each country in the Americas. Although difficulties were encountered in obtaining satisfactory data for certain countries, the development of more adequate reporting systems and annual provision of official data by countries should result in more

complete reports in the future. The main part of the report consists of a series of tables for 32 selected communicable diseases declared notifiable in most of the countries. Data are also given for 17 other selected diseases reported by a relatively small number of countries. In addition to cases for the 10 years, 1946-1955, several countries provided the age distribution of reported cases of five diseases. It is hoped that, in future reports, data on age distribution will be available and included for additional countries.

#### *Current Reports*

The *Weekly Epidemiological Report* was prepared regularly on Tuesday of each week and distributed by air mail to the health authorities. In addition to data on the quarantinable diseases, the Report provides current data on cases of poliomyelitis and malaria. The quarterly publication *Health Statistics*, which provides monthly data on notifiable diseases, was issued routinely.

The procedures for current reports on the progress of *Aedes aegypti* eradication have continued. Reports have been published monthly and quarterly. Reports giving the localities with international traffic inspected each month and quarterly summaries of the number of localities treated or inspected in every country were published in the *Weekly Epidemiological Report*. A progress report, showing the status of the campaign in each country and the international traffic localities remaining infested, was published monthly in the *Boletín*. Also, cooperation was given to the AMRO-88 consultant in the preparation of document CSP15/8 entitled, "Status of the *Aedes aegypti* Eradication Campaign in the Americas," for the XV Pan American Sanitary Conference.

#### **Education and Training Program**

The three fields of major activity in education and training in which the Section was involved during the year were vital and health statistics for statisticians employed in health statistics, medical statistics for students in medical schools, and training in classification of causes of death through instruction given by the Latin American Center for Classification of Diseases.

#### *Course in Vital and Health Statistics (AMRO-10)*

The School of Public Health of the University of Chile gave the sixth course on vital and health statistics for statisticians of nine countries. Fellowships were awarded for 18 students from eight countries as follows: Argentina, seven; Bolivia, one; Colombia, one; Guatemala, one; Mexico, two; Panama, one; Paraguay, one, and Peru, four. Two-hundred-and-eighteen statisticians have received training in this Center, of whom 112 were from countries other than Chile. The distribution of these students is given in the following table.



TABLE XIV. DISTRIBUTION OF STUDENTS IN COURSES IN VITAL AND HEALTH STATISTICS, 1953-1958

Country	Number	Country	Number
Total	218	Ecuador	6
Argentina	20	El Salvador	3
Bolivia	6	Guatemala	6
Brazil	2	Haiti	3
Chile	106	Mexico	13
Colombia	4	Nicaragua	3
Costa Rica	6	Panama	6
Cuba	2	Paraguay	9
Dominican Republic	1	Peru	12
		Uruguay	8
		Venezuela	2

The course in vital and health statistics is divided into two periods. The first period of 16 weeks, from March 17 to July 5, consisted of 164 sessions of three hours each in which the teaching is elementary. In the second period, from July 7 to December 13, the teaching in 234 sessions was of a higher level and there was differentiation in the teaching according to the interests of the students. The formal classes are fewer and there is more work combined with that of other students of the school. Collaboration of the Bureau with the School of Public Health for providing this instruction includes a grant for employment of teaching staff, fellowships, and short-term consultants.

#### *Latin American Center for Classification of Diseases (AMRO-85)*

The activities of this Center were expanded considerably in 1958. In addition to the services rendered by the Director of the Center, and by members of the Division of Epidemiology and Vital Statistics of the Venezuelan Ministry of Health, a full-time staff member was employed throughout the year to assist in the activities of the Center, especially in courses given in Venezuela and in other countries, and to process samples of certificates received from the countries.

The third annual course on classification was given in Caracas for two weeks in May 1958, and was the first course of instruction with the Seventh Revision of the *International Classification of Diseases*, which was placed in use in 1958. There were 16 students from 10 countries, including four from Venezuela. Fellowships were awarded to 12, with one each from Argentina, Colombia, Guatemala, Haiti, Nicaragua, and Paraguay, and two each from Mexico, Panama, and Peru.

For the three courses given in 1955, 1956, and 1958, fellowships have been awarded for 38 students from 15

countries as follows:

Argentina	1	Dominican Republic	1	Mexico	6
Chile	1	Ecuador	2	Nicaragua	4
Colombia	2	El Salvador	1	Panama	6
Costa Rica	2	Guatemala	5	Paraguay	1
Cuba	2	Haiti	1	Peru	3

During 1958 a staff member of the Center gave the first training courses on classification in other countries—in Colombia and the Dominican Republic. Thirteen students attended the three-week course in Colombia and 15 in the Dominican Republic. Considerable educational material was distributed. These first courses indicated the value of such national courses.

During the year samples of death certificates were received by the Center from many of the countries. This transmittal of samples of certificates provides an excellent method for the Center's becoming familiar with problems of classification and the medical terminology in use in Spanish-speaking countries. The series of 60 slides adapted in Spanish from the film on Medical Certification of Causes of Death of the U. S. National Office of Vital Statistics has been distributed throughout the Americas, and reports indicate that it has proved valuable in several countries.

#### *Teaching of Medical Statistics*

There were several very productive activities in the field of medical statistics which included visits by two professors of biostatistics to 12 countries; the South American Conference on the Teaching of Medical Statistics in São Paulo, Brazil; the Round Table on the Teaching of Biostatistics in Schools of Medicine in San Luis Potosi, Mexico; and, as the result of these activities, the development of long-range plans for the teaching of medical statistics. A brief report of these activities follows.

Professors of biostatistics of the Harvard School of Public Health and the Columbia School of Public Health and Administrative Medicine served as consultants for the Bureau for the two months, July and August. Both served as consultants for the South American Conference on Teaching of Medical Statistics and one for the Round Table in Mexico. Medical Schools in 12 different countries were visited principally for discussions of teaching of medical statistics. In Chile series of lectures were given by the visiting professor on elementary biostatistics, statistical methods in research, and statistical aspects of bioassay.

#### 1) South American Conference on Teaching of Medical Statistics (AMRO-166)

The South American Conference on the Teaching of Medical Statistics, sponsored by the Pan American Sanitary Bureau and the Faculty of Hygiene and Public Health of the University of São Paulo, was held in São Paulo, Brazil, from July 22-28, 1958. The participants were a carefully

selected small group who, because of teaching or other specific responsibilities, would work together to review the present status of the teaching of medical statistics in the medical schools of South America, to discuss a recommended teaching program and the role of the medical profession in provision of statistics for the community, and to prepare a report on the teaching of medical statistics. The participants were principally professors of medicine or biostatistics of schools of medicine and public health from the following countries: Argentina, one; Brazil, nine; Chile, one; Colombia, one; Ecuador, one; Peru, one; and Uruguay, two. The report of the Conference contains recommendations for the content of instruction, the development of a statistical nucleus, and recommendations for improvement of the teaching of statistics in schools of medicine. The original report in Portuguese will be published in the *Boletín*. A condensed version in English will be submitted to the *Journal of Medical Education* for publication, and in Spanish to several journals.

#### 2) Round Table on the Teaching of Biostatistics in Schools of Medicine

The "Secretaría de Salubridad y Asistencia" through the "Dirección de Estudios Experimentales en Salubridad Pública," in collaboration with the Faculty of Medicine of the University of San Luis Potosí, organized a Round Table on the Teaching of Biostatistics in Schools of Medicine, from August 11-15, 1958. The statistical consultant of the Bureau in Zone II rendered assistance and the Bureau provided a consultant and awarded fellowships for participants from Guatemala and El Salvador. The participants numbered 35, of whom 25 were from 15 Mexican medical schools. The discussions at this Round Table were carried on principally through three working groups. The three subjects of discussions were: 1) Needs for Teaching of Biostatistics in Schools of Medicine; 2) Contents and Teaching Methods which Satisfy the Needs; and 3) Administration of the Teaching Programs. A fine report of this Round Table was printed very promptly by the "Dirección de Estudios Experimentales en Salubridad Pública," Mexico, August 1958. In addition to the report of the discussions the method of organization and functioning of working groups are given in the published report.

#### 3) Plans for Teaching of Medical Statistics

A meeting was held at the Bureau in October to develop long-range plans for the teaching of medical statistics. In 1958 the needs in this field were clarified through services of two visiting professors, and through discussions both at the South American Conference for the Teaching of Medical Statistics and the Round Table on Teaching of Biostatistics at San Luis Potosí, Mexico.

Teaching of medical statistics is limited to a few of the 79 Latin American medical schools. Very few professors of statistics are prepared to teach the subject and to render consultant services to the staff of medical schools. However,

there is interest in the addition of such instruction and the preparation of faculty members.

The South American Conference on Teaching of Medical Statistics made several recommendations for the improvement of such teaching. One was concerned with the need to awaken interest in the faculty through visits, courses, or lectures by professors or consultants and at the same time to find persons interested in this field for training in other centers. The participation of international organizations in the plan of training through a scholarship program and the provision of consultants were also recommended.

The following three steps were recommended for this program. Their purpose is to stimulate interest in medical statistics and to find and train personnel for specialization in medical statistics.

a) Development of national courses of approximately 10 evening classes in statistics for professors and faculty members in basic sciences, preventive medicine, and other departments would be the first step. For this course there are several well-qualified professors who could contribute in their own countries or as short-term consultants in others.

b) The second step would be to hold in São Paulo an international, intensive course of one month on medical statistics in 1960 which would be open to members of faculties of medical schools interested in additional instruction. This one-month course would be designed to give limited training in medical statistics for a relatively large group, perhaps 30-40. From this number potential professors of medical statistics would be selected who would profit by a year of advanced study in this field. This intensive course could be repeated according to the needs.

c) The third step would be the one-year special course in medical statistics in a medical school or school of public health, beginning in 1961. It was emphasized that the preparation of those teaching medical statistics and rendering consultant services in schools of medicine includes biological sciences and the application of statistical methods in biological and medical research; as well as in vital and health statistics. By the expansion of the faculty in biostatistics and by strengthening through addition of consultants, a course for approximately 15 professors could be developed.

### Field Consultant Services

Statistical consultant services were expanded during the year. A statistical consultant was appointed effective January 14, 1958 for service in Zone II. He participated in the Round Table on National Health Planning in the Dominican Republic, consulted on malaria eradication, yaws eradication, and health statistics in Haiti, and on health statistics in the Dominican Republic, Cuba, and Mexico. He also participated in the South American Conference on the Teaching of Medical Statistics and in the development of the Round Table on Teaching of Biostatistics in Medical Schools in San Luis Potosí, Mexico. Also, at the request of the health authorities of Puerto Rico

assistance was rendered in teaching of statistics in the School of Public Health.

With the appointment of a statistical consultant for Zone II the statistical consultant previously assigned to Zones II and III was able to devote his time to services in Zone III. His headquarters were maintained in Panama so that he could give considerable attention to consultant services regarding the improvement of statistics in the health service of Panama. Important features of his services have been in training programs of health center and hospital workers in Panama. Assistance was rendered to the Nicaraguan authorities in the preparation of a form for certificate of death and the necessary instructions for its use, and visits were made to Honduras to evaluate the needs for consultant services and the ways of improving health statistics. The statistical consultant for Zone III taught the malaria statistics course in June and October in the Training Center in Jamaica for physicians, engineers, and sanitarians to be employed in malaria eradication programs.

The statistical consultant for Zone IV rendered service in Colombia. Important activities included establishment of arrangements for sampling of death certificates in the National Department of Statistics and transmittal to the Latin American Center for study, and the development of the first national course given by a staff member of the Latin American Center in Bogota, Colombia at the School of Hygiene. Analyses were prepared of the data collected in family surveys in the pilot area of the Public Health Services Project—Colombia—4.

### International Sanitary Regulations

In order to carry out the International Sanitary Regulations, emphasis is placed on prompt reporting of quarantinable diseases, and, in general, progress can be reported. However, there remain areas where cases of quarantinable diseases are reported many weeks or months after the cases occurred. If cases of quarantinable diseases in newly infected local areas were reported by cable within 24 hours in accordance with the Regulations greater confidence would be placed in the official reports. The weekly publication of a complete list of infected local areas by Headquarters, beginning in 1958, has placed emphasis on prompt reporting both of the infected local area and that the area is free of infection.

WHO Headquarters has released an annotated edition of the International Sanitary Regulations, which includes the amendments of the Eighth and Ninth World Health Assemblies. The translation of this edition at PASB was almost ready for publication in Spanish at the end of the year.

In conjunction with WHO Headquarters, correspondence is carried on with the health authorities in regard to the working of the Regulations, the difficulties encountered, and notifications and reports to be made to the Organization.

### Miscellaneous

#### *Inter-American Exchange of Reports of Cases of Tuberculosis*

Early in 1958 the Chief of the Field Office, El Paso of the Pan American Sanitary Bureau developed plans for discussion of some international aspects of tuberculosis with the participation of the "Secretaría de Salubridad y Asistencia" of Mexico, the United States Public Health Service, and the Bureau. Over 5,000 Mexican agricultural workers are rejected at the Reception Center each year because of tuberculosis. Also, many local border "crossers" are found to have suspected tuberculosis and are not issued cards for border crossing. It was agreed that a mechanism for establishing the regular notification of tuberculosis cases between the United States and Mexico would be studied and proposed to the respective authorities. A resolution to that effect was passed at the United States-Mexican Border Public Health Association. In accordance with these directives, a record for the inter-American reporting of tuberculosis has been designed and is incorporated into a bilingual guide, *Inter-American Exchange of Reports of Cases of Tuberculosis*. The procedures have been developed for the prompt exchange of data regarding cases from one clinic or health department to another, irrespective of countries involved.

#### *Information on Water Supplies and Sanitary Facilities in Housing Census*

As a basis for planning for expansion of environmental sanitation programs, especially in the provision of water supplies, data on housing from the 1950 Census have been analyzed and found to lack comparability and to be difficult to interpret. Thus, efforts are recommended for the collection and tabulation of at least minimum information on water supplies and sanitary facilities in the 1960 Census. The recommendations of the Committee on Improvement of National Statistics of the Inter-American Statistical Institute for collection of such data on housing have been distributed. It is hoped that great emphasis will be placed on the collection and use of accurate data on water supplies and sanitary facilities in the housing census.

#### *Other Activities*

The *International Classification of Diseases, 1955 Revision* (two volumes) in English, Spanish, and French has been released by Headquarters. The Bureau has sent copies to National Health Services and to Zone Offices for distribution as needed to health officials.

The publications *List of Categories* in English and *Lista de Categorías* in Spanish (Scientific Publications No. 34), which contain the list of categories taken from the new *International Classification of Diseases*, were prepared and distributed widely in the Americas. This new publication is part of the material intended to contribute to the improvement of mortality statistics and is designed for use by those who wish to refer to the Classification but do not need the complete Manual.



Sanitation Inspector checks cleanliness of china in kitchen of Hotel Paz, Ciudad Trujillo, Dominican Republic

In the Dominican Republic a PASB sanitary engineer collaborated with the government in formulating sanitation programs for the Ciudad Trujillo Health Center (Dominican Republic-4). Progress was made in building latrines for communities and schools.

During the year an important water-supply system was built in San Vicente Pacaya (Guatemala-8).

Steady progress was made in Panama in the field of environmental sanitation (Panama-1). Three-hundred-and-fifty-five water-supply wells were drilled. Five water distribution systems and three slaughterhouses were built. Guarare's sewerage system was completed.

A PASB/WHO consultant prepared an outline for an environmental sanitation division in the Ministry of Health of Bolivia (Bolivia-10).

In Colombia a PASB/WHO sanitary engineer provided assistance in planning the environmental sanitation program for the Pilot Project, helped in training, and helped coordinate the public health programs (Colombia-4). The rural-water system development as planned in connection with the Pilot Project will be a great improvement to sanitation in the rural areas.

PASB/WHO collaboration in environmental sanitation continued in Peru in 1958 and was concerned with urban water data, visual aids for sanitary inspectors and schools, and related activities. The consultant began investigation concerning the status of water-supply improvements in the Callejón de Huaylas (Peru-22).

A department of environmental sanitation was organized within the Ministry of Public Health of the Province of Chaco, Argentina (Argentina-7). An office of planning was established by the Ministry of Health. This office will be in

charge of making preliminary water-system studies in the principal cities of the province. Three water-supply systems and 252 latrines were built.

In Uruguay a department of environmental sanitation was created. A study was made on the health sanitation situation of the areas where the project will be carried out (Uruguay-5).

The project AMRO-95 in the Caribbean serves French Guiana, British Guiana, Surinam, and the British, Dutch and French islands of the Greater and Lesser Antilles. Activities are concerned with water supply, sewage disposal, insect control, refuse disposal, housing, and other environmental factors.

The activities of the project staff during 1958 were varied and concerned the following:

- 1) helping supervise present WHO/UNICEF-assisted environmental sanitation programs;
- 2) conducting sanitation surveys;
- 3) furnishing technical advice to local governments in matters pertaining to sanitary engineering problems;
- 4) organizing a course for Waterworks Operators in Trinidad (AMRO-17.4);
- 5) assisting in setting up in-service training courses for sanitary inspectors;
- 6) providing assistance to local governments in matters pertaining to health education; and
- 7) collaborating with local governments and regional agencies in the preparation and distribution of school health booklets and teachers' guides, with particular reference to environmental health.

The international staff consisted of one public health engineer (January-May) and one sanitarian (January-December), assisted by two short-term consultants to project AMRO-17.4.

In the three years that AMRO-95 has been in operation there has been an increasing demand for the type of services rendered by this project, described more fully below.

St. Kitts, Nevis, and Anguilla. These three islands form part of the Leeward Islands and constitute one of the "unit" governments of the West Indies Federation. In 1956 the government signed an agreement with WHO and UNICEF to improve sanitation facilities by providing methods of rural excreta disposal, improving the supply and quality of water for domestic use, and by the training of health personnel including health education as part of the program. The private latrine activity includes the casting of latrine components in a central shed and the distribution of the finished products to rural areas. Demand for the units has outstripped production. The laying of the main bringing water to the capital city of Basseterre is almost completed; the building of a sand filter and the installation of a chlorinator supplement the supply of clean, safe water by 850,000 gallons per day. Storage tanks and distribution lines were also constructed in Nevis. The health education phase of the program being conducted by the health department has made excellent progress and this service is continuing as part of their total public health program.

St. Lucia. A sanitation survey was completed and a plan

of operations drawn up by the project consultants in 1956 and amended in early 1957. The program is now in progress with the building of a central casting shed by the government and the training of supervisory personnel by PASB/WHO. Arrival of UNICEF supplies is expected in January 1959.

**The British Virgin Islands.** A sanitation survey was completed for these islands, showing need for improvement of the quantity and quality of the water supplies, adequate excreta disposal, education of the public in health matters, and improved methods of refuse disposal. The government has approved this plan in principle and has requested aid from PASB/WHO and UNICEF.

**Montserrat.** At the request of the Government of Montserrat a survey was made in November 1957. Based on the results a plan was drawn up. The government has approved the plan and has requested aid from PASB/WHO and UNICEF.

**British Guiana.** A survey was carried out in British Guiana in January 1958. The plan submitted to the government was a comprehensive one. The over-all program envisioned sanitation as one phase of an integrated public health service. The government has approved the plan in principle, and aid will be requested from PASB/WHO and UNICEF.

## Training

### *Waterworks Operators Course*

A refresher course for waterworks operators of the British Territories in the Caribbean was organized in Trinidad with the cooperation of the government. Preparation of the course occupied the period from March 17 to April 14, and instruction was given from April 14 through May 3. Two short-term consultants were primarily responsible for the preparation and instruction. After completion of the formal instruction the consultants visited the participants in their home territories.

The course resulted in an increased knowledge of water-supply problems, and one of the territories has already set up a laboratory for bacterial analysis of water, using modern techniques; another territory has expressed interest in setting up a similar laboratory and has requested assistance from PASB/WHO in training a technician.

### *Other Training*

During the year training courses in environmental sanitation for professional and auxiliary personnel continued as part of integrated health projects in Mexico (Mexico-22), El Salvador (El Salvador-5), Guatemala (Guatemala-8), Honduras (Honduras-4), and Uruguay (Uruguay-5).

The Bureau collaborated with the schools of public health of Chile, Mexico, and Brazil by providing consultants, fellowships, and supplies and equipment (AMRO-1).



Installation of sewage pipes at a home in San Cristóbal—another project of the Health Center's Sanitation Section, San Cristóbal, Dominican Republic

## Meetings

In May the VI Congress of AIDIS (Asociación Interamericana de Ingeniería Sanitaria) met in San Juan, Puerto Rico. The meeting was attended by a large number of sanitary engineers from the Hemisphere.

PASB/WHO contributed to the Congress by sending 19 sanitary engineers of its staff. Many papers on technical and administrative aspects of sanitation problems in the Americas were discussed at the sessions. A pamphlet on water-supply needs in urban areas of Latin America was produced by PASB and presented at the Congress. Field visits to sanitary engineering plants and institutions were organized. An exhibit illustrating the environmental sanitation work of international and other official health agencies and commercial undertakings was set up.

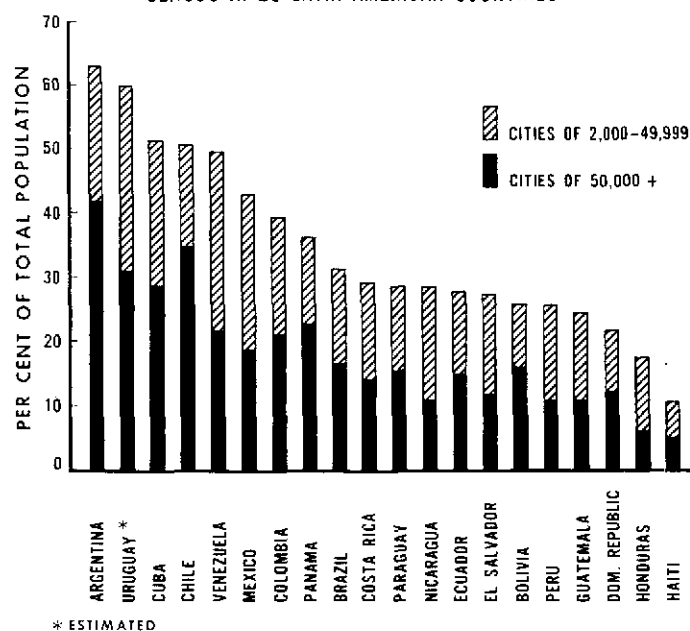
A meeting of PASB/WHO staff, the first of its kind, preceded the opening of the Congress at the School of Medicine of the University of Puerto Rico; discussions concerned PASB/WHO programs in environmental sanitation, the sanitary engineering international service, collaboration with ICA engineers, and suggestions for the AIDIS Congress. A special PASB/WHO short-term consultant informed the group of the conclusions arrived at in the first session of the Advisory Committee on Environmental Sanitation, and the staff was thus briefed on likely trends which the Bureau sanitation policy may follow over the next several years. There was general agreement to give the highest priority in the Bureau's program to public water supply.

## Directing Council Technical Discussions—1959

The topic for the Technical Discussions of the Directing Council in 1959 is Technical, Financial, and Administrative Aspects of Water Supply in the Urban Environment in the Americas. In preparation for this, forms were sent out to obtain information regarding the water supplies in cities of 50,000 population and over and in the smaller cities of the countries.

In view of the emphasis being given to water supplies in the urban environment it is advisable to review the situation in the Americas. Using data from the most recent census, taken around 1950, the number of cities of 2,000 and more inhabitants has been obtained with the population in those cities. For this tabulation the population in the city proper was obtained. However, it is anticipated that water supplies will in many areas serve large metropolitan areas. Using the available data and estimates, there were found to be slightly more than 4,000 cities in 20 Latin American countries. Table XV shows the number of cities and their population according to size. Considering only the cities with 50,000 population or more—those in which the development of water supplies would probably have first priority—there are 142 which include one-fifth of the population of these countries. The smaller cities have approximately 18 per cent of the population of the countries.

PERCENTAGES OF POPULATION LIVING IN CITIES OF 50,000 POPULATION AND OVER AND 2,000-49,999 POPULATION ACCORDING TO RECENT CENSUS IN 20 LATIN AMERICAN COUNTRIES



\* ESTIMATED

TABLE XV. NUMBER AND POPULATION OF LATIN AMERICAN CITIES GROUPED BY SIZE, ACCORDING TO LATEST CENSUS<sup>a</sup>

Size of cities (population)	Number of cities	Population <sup>b</sup>	
		Number	Per cent
Total	4,208	152,185,291	100.0
1,000,000 and over	5	10,884,209	7.2
100,000-999,999	62	14,967,636	9.8
50,000-99,999	75	5,214,479	3.4
10,000-49,999	646	12,805,827	8.4
2,000-9,999	3,420 <sup>c</sup>	14,036,280	9.2
Rest of population	—	94,276,860	62.0

<sup>a</sup> See Table XVI for list of countries. <sup>b</sup> Data refer to city proper and not urban agglomeration whenever distinction is made in census publications. <sup>c</sup> Including some cities of 1,500-1,999.

Thus the provision of water supplies for the cities would serve approximately 38 per cent of the population; if the urban areas around the cities are included, such supplies would serve an even higher proportion of the population.

The countries of the Americas vary widely in the extent of urbanization. Thus, Table XVI and the graph attached show the proportion of the population in cities of 50,000 and over and with 2,000-49,999 population. In four countries, namely, Argentina, Uruguay, Cuba, and Chile, half of the population live in cities. In over half of the countries, less than 30 per cent of the population live in cities of 2,000 population and over.

TABLE XVI. NUMBER AND POPULATION OF LATIN AMERICAN CITIES GROUPED BY SIZE AND BY COUNTRY,  
ACCORDING TO THE LATEST CENSUS

Country	Total population	Cities of 50,000+			Cities of 2,000-49,999		
		Number	Population <sup>a</sup>		Number	Population <sup>a</sup>	
			Number	Per cent of total		Number	Per cent of total
Total	152,185,291	142	31,066,324	20.4	4,066	26,842,107	17.6
Argentina	15,893,827	26	6,691,426	42.1	459	3,240,707	20.4
Bolivia	3,019,031	3	464,843	15.4	44	304,040	10.1
Brazil	51,944,397	33	8,486,644	16.3	1,137	7,524,713	14.5
Chile	5,930,809	9	2,048,466	34.5	72	917,282	15.5
Colombia	11,228,509	12 <sup>b</sup>	2,345,809 <sup>b</sup>	20.9	368 <sup>c</sup>	2,019,877 <sup>c</sup>	18.0
Costa Rica	800,875	1	109,693	13.7	19	120,985	15.1
Cuba	5,829,029	10	1,660,538	28.5	180	1,302,857	22.4
Dominican Rep.	2,135,872	2	238,111	11.1	34	222,156	10.4
Ecuador	3,202,757	2	468,898	14.6	60	418,706	13.8
El Salvador	1,855,917	2	213,653	11.5	56	297,606	16.0
Guatemala	2,790,868	1	284,276	10.2	86	386,239	13.9
Haiti	3,097,220	1	134,117	4.3	31	175,114	5.7
Honduras	1,368,605	1	72,385	5.3	33	164,749	12.0
Mexico	25,791,017	24	4,828,574	18.7	964 <sup>d</sup>	6,202,804 <sup>d</sup>	24.0
Nicaragua	1,057,023	1	109,352	10.3	28	186,665	17.7
Panama	805,285	2	180,078	22.4	21	102,932	12.8
Paraguay	1,328,452	1	201,340	15.2	43	171,751	12.9
Peru	6,673,111	3	684,047	10.3	173	1,002,361	15.0
Uruguay <sup>b</sup>	2,397,849	1	745,000	30.5	63	694,345	29.0
Venezuela	5,034,838	7	1,099,074	21.8	195	1,386,218	27.5

<sup>a</sup> Data refer to city proper and not urban agglomeration whenever distinction is made in census publications. <sup>b</sup> Estimated. <sup>c</sup> Estimated; including some cities of 1,500-1,999. <sup>d</sup> Cities of 2,500-49,999.

# Maternal and Child Health Services

## Development of MCH Services

Efforts to strengthen maternal and child health services at the national level as part of the over-all national health services continued during 1958. As reported earlier, most countries have already established MCH administrative units at the national level. In those countries where regionalization is being implemented there are also plans for the assignment, where needed and at opportune moments, of MCH consultants to regions.

In 1958 the reorganization of the national health services in Argentina also included MCH services. Furthermore, several provinces have assigned an MCH specialist within their provincial health services. Thus, in the Province of El Chaco the reorganization of the services by the provincial government, carried out with the collaboration of the Organization, has included the creation of a department of MCH services. Further progress was also reported toward the establishment of an MCH division in the Dominican Republic.

Within all projects of integrated health services the development and expansion of maternal and child health services have received continuous attention. These services are being expanded as an integral part of basic health activities. In fact, in the demonstration and training areas substantial contributions to MCH services are being made by both medical and nursing personnel. For instance, in one project an analysis of home visiting by nurses in the health demonstration area showed that over 80 per cent of their time was devoted to MCH activities before the communicable disease phase of the program had been sufficiently developed.

Up to the present time MCH activities, carried out in health centers and rural posts, have tended to be primarily concerned with maternity care and with infants. In some projects 50 per cent or more of the pregnant women, and approximately an equal percentage of infants, were under supervision, but not more than 20 per cent of pre-school age children were receiving any form of supervision.

It is also striking in the maternity care program that outside of the cities high proportions of deliveries are still done by non-professionals, even in the demonstration area of projects. For this reason the program of supervision of lay midwives is necessary and is receiving increasing attention. In view of the mortality of children up to four years, it is important to find ways of expanding care to pre-school age children. In infancy and pre-school age, morbidity and mortality are largely due to intestinal dis-

eases and malnutrition. Ways are being explored to increase activities in these fields. In the late infancy and early pre-school age periods the problems of improvement of weaning diets, both for prevention of protein malnutrition through early supplementary feeding, as part of a balanced diet, and of prevention of diarrhea through the teaching of hygienic measures in the preparation of the feeding, are of particular importance.

## Diarrheal Disease

In some projects in 1958 attention was particularly focused on the prevention and control of diarrheal disease. This was the result of interest created in this problem through the seminars on diarrheal disease in childhood organized by PAHO in Chile and Mexico in 1956 and 1957, respectively. Thus, for example, in Paraguay a seminar for public health personnel from the project was held on diarrheal disease and its relation to environmental sanitation. In Argentina and Ecuador plans for a program of early rehydration of cases of diarrheal disease have been developed. A one-day seminar on diarrheal disease was organized as part of the U. S.-Mexico Border Health Meeting in 1958. Following introduction of the subject active discussion was carried on in four working groups of approximately 25 persons each, representing various professions. This has stimulated interest in the diarrhea control program for the USA-Mexico border areas. It is expected that in 1959 increasing attention will be focused on this basic problem and that experimental projects within the demonstration areas will be developed, which will serve for the training of the health personnel connected with the services.

Conclusions of the two seminars on diarrheal disease held in Santiago, Chile in 1956 and in Tehuacán, Mexico in 1957 were combined into a single report which was published in the *Boletín* in 1958. The basic information contained in the seminar working papers was incorporated into a paper which was published in conjunction with the report in the *Boletín* and was also published in English in the *Bulletin of the World Health Organization*. A working paper on the role of the auxiliary nurse in the control of diarrheal disease was also published in the same issue of the *Boletín*. The report and two papers were combined into a special publication entitled, *Seminarios sobre Diarreas Infantiles, Publicaciones Científicas No. 36*, which is being widely distributed in Latin America.

There is still a need, nonetheless, for more knowledge on





Vaccination Clinic of the San Cristóbal Health Center, San Cristóbal, Dominican Republic

the magnitude and nature of the problem of diarrheal disease and on the relationship between diarrheal disease and protein malnutrition. In order to learn more about infectious agents responsible for diarrheal disease in an area with high death rates and also to investigate the relationship of diarrheal disease to protein malnutrition, studies were initiated in 1955 in INCAP. In 1957 a bacteriologist was assigned to assist in the development at INCAP of the bacteriological investigations in relation to diarrheal disease.

Studies of the prevalence of *Shigella* and *Salmonella* in children under 11 years of age in communities have been continued. A report of investigations carried out by INCAP from 1956-1958 was made for a study session held at INCAP in January 1958. Three members of the Commission on Enteric Infections of the Armed Forces Epidemiological Board, members of the staff of INCAP, and of the Bureau participated. The following four studies were analyzed: 1) study of the causes of death of 222 children in four towns in the highland region of Guatemala with a combined population of 9,000; 2) study of the prevalence of *Shigella* and *Salmonella* from 8,769 examinations of cultures of children under 11 years of age from seven villages; 3) a small study of the prevalence of *Shigella*, *Salmonella*, and pathogenic *E. coli* in children with diarrhea attending municipal clinics; and 4) an analysis of morbidity from diarrhea in two villages of Guatemala with a combined population of 1,159 in which homes were visited every two weeks for one year.

As a result of this meeting recommendations were made for continuing research activities of INCAP in the field of diarrheal disease in relation to malnutrition. The following two community studies were recommended, namely: 1) a morbidity study in a community of approximately 2,700 persons to determine the prevalence and incidence of diarrheal disease, the etiology of the diarrheal disease observed (*Shigella*, *Salmonella*, and pathogenic *E. coli*, particularly), and the possible relationships of the diarrheal disease observed to nutritional disorders; and 2) a five-year study of infants born in a community to observe the interrelationship of malnutrition and infectious diseases including diarrheal disease and the resulting mortality of children from birth to five years of age. It was also proposed to utilize clinical material at the general hospital in Guatemala City to clarify the pathological aspects of the relationship between intestinal infection and malnutrition. As a result of this, the planning of a project has been developed and a request has been made to the National Institutes of Health for a grant-in-aid. The Committee of the Public Health Research Study Section has given favorable consideration to the grant application and the project will be undertaken for a five-year period. The Bureau is providing a bacteriologist and a statistician. For the clinical and laboratory studies at the general hospital in Guatemala City, assistance will be rendered by the pathology department of Peter Bent Brigham Hospital in Boston.

At the Prenatal Clinic of the San Cristóbal Health Center—staff nurse demonstrates to two expectant mothers the use of mosquito netting and crib arrangement, San Cristóbal, Dominican Republic



The Organization is further helping, through a grant, in a study to measure the results that can be obtained by oral rehydration applied to infants and young children in an area of Mexico City. This study has been developed to clarify how much can be obtained through oral rehydration and which cases will benefit the most within prevailing conditions in Latin America. It is hoped that the study will produce more evidence of the applicability of this method in health services.

### Study of Birth Weights

The Bureau is cooperating with WHO Headquarters in initiating studies of birth weights in various countries and among different ethnic groups. The objective of this study is to assemble data on the birth weight of an adequate number of unselected live-born babies in different parts of the world with a view to studying their distribution according to maturity and to studying survival of babies in the various birth weight and maturity groups. As one of the results of this study it is hoped that better definitions of the terms "prematurity" and "immaturity" can be obtained. Records and instructions have been distributed for trial in Guatemala, Venezuela, and Chile.

## Public Health Nursing

Increasing attention of the governments of the Region to improvement of nursing services within health programs continued in 1958. National nursing personnel, with the collaboration of the international nursing consultants in the Zone Offices and in the projects, have worked steadily for the improvement and extension of nursing services in the projects for integrated health services. During the year the following developments occurred at national and local levels, and, as in previous years, training programs received heavy emphasis.

### Activities at the National Level

Noteworthy developments at national levels have related in various countries to planning and improvement of the structure of nursing services, to increases in personnel and salary scales, and to developments of decentralization. Great attention has been given in several countries to increasing the number of supervisory personnel and to better preparation for their activities.

For example, in Argentina the National Department of Nursing of the Ministry was created and organized during the year. In several provincial ministries of health, departments or sub-departments of nursing were also created.

Studies have been actively carried on in Honduras, in collaboration with international consultants, for the development of the nursing service in the national health

plan. These have included the study of the status of nursing and the nursing resources of the country. These studies have led to the recommendation for a department of nursing in the national health plan. Plans were also made for a register of nursing auxiliaries who have been certified.

In Ecuador a beginning was made for improvement in salaries of nurses by an increase in salaries of those nurses appointed to new health centers.

The Department of Nursing in Guatemala was integrated as part of the Division of Rural Services. Nursing Services were established in the Pacific zone with a regional supervisor and auxiliary nurses.

Progress in the field of public health nursing has been noted in Jamaica. Accomplishments since the creation of the principal nursing officer post in October 1956 were reviewed. A position was created for an assistant to the principal nursing officer and 12 senior public health nurse positions were proposed as supervisors. Posts for senior staff were upgraded. Supervisory aids such as definition of functions of the various levels of personnel, determination of priorities for service, policy and procedure manual, personnel evaluation techniques, and in-service education are being developed to improve the quality of nursing care. In the field of hospital nursing a short conference for 20 rural hospital matrons was held. Based on findings of the nursing survey of these hospitals, staffing patterns were



Public health nurse, making her rounds, crosses a river on horseback, District of Guazapa, El Salvador

modified and staff numbers increased in proportion to patients served.

In Mexico a close working relationship has continued with the Mexican Nurses Association as a basis for determining needs and resources in nursing.

Progress in Panama was realized in the orientation of supervisory public health nurses for rural areas in the field of maternal and child health by preparation of a guide for interviewing mothers. There was collaboration with nursing authorities in the regional program in reorganization of work, preparation of reports, and in-service educational programs in order to improve the work. For the larger cities the program of auxiliary nurses is being revised.

In Peru a survey of nursing problems in the country was made and recommendations submitted for their solution.

The regulations of the Section of Nursing in Paraguay were approved, and all the nursing activities are being developed with their participation. Personnel of the Section met regularly to plan and discuss program standards and technical and administrative arrangements of the services. Five nurses and 17 midwives have been appointed to full-time positions. The salary scale was increased for nurses, midwives, and nursing auxiliaries. The number of nurses employed in the Ministry was 33 in 1958. The number of

midwives increased from 126 in 1957 to 160 in 1958, while the number of nursing auxiliaries remained the same, 390. Better cooperation has been obtained between the central and regional services of nursing, and the functions of the regional nurses were defined.

### Local Activities

In all countries where integrated health projects have been established with local services for training and demonstration, nurses have continued to be active in the extension and expansion of such services. The activities of nurses at the local level have related in many projects to preparation of manuals of nursing procedures or to the revision of such procedures, definitions of functions, and review of activities. In all projects with local services nurses have been very active in promoting the MCH services of the programs, and, as part of this, the supervision and improvement of local midwives have received increasing attention. In some projects the nursing techniques for the prevention and treatment of diarrheal disease and protein malnutrition are being reviewed as a result of increased emphasis on these problems. Further efforts are being made to provide for participation of nurses in the program of communicable diseases, particularly in reference to the vaccination programs and epidemiological investigation.

An example of development of local activities in a demonstration area is that reported for Guatemala, where the principal activities were the following: 1) planning of the establishment of nursing services in several health centers and analysis of nursing activities in the health centers in operation; 2) the development of several new or revised forms and the preparation of nursing procedures and guides for training, methods of interviewing, and visits; 3) a survey of midwives and the study of delivery practice; and 4) planning and participation in a seminar on the study of problems in public health practice in the area. In all of the projects for integrated health services similar activities are being promoted and are at various stages of implementation.

### Training Activities

Nursing personnel have participated in many different phases of the education and training programs of health personnel. The programs have taken the form of formal courses, in-service education, and discussions through seminars and meetings. Some of these activities were necessary because of the shortage of graduate nurses in most of the countries. Others were needed to prepare personnel for the new local programs being established in demonstration areas and also being extended to other areas of the countries. Other training activities are an essential and integral part of a health program. As seen in Table XII in the section on Integrated Health Services, during 1958, 31 public health nurses and 132 nursing auxiliaries were trained in

nine courses in these projects. Available information regarding these courses is given in Table XIII.

The differences observed in duration of these courses are partly the result of differences in levels of training of these professional and auxiliary workers. To some extent these differences are a reflection of variation in approach to methods of training. The tendency at present, particularly with nursing auxiliaries, is to reduce the period of theoretical training and to increase the amount of practice in the field.

In addition to courses given as a part of the demonstration program in several countries, important services were rendered to schools of nursing. For example, in Guatemala, relations with the National School of Nursing were maintained in the following ways: in the first year the students visited and discussed the activities of the health centers in the demonstration area; in the second year six hours of classes and a week of observation of the maternal and child health program were included as part of the program in obstetrics; and in the third year 16 hours of classes and 80 hours of supervised practice were given in the health centers. In Uruguay, 10 students from the two schools of nursing carried out their practical work in health centers in the project. In Panama the first group of post-graduate nurse-midwifery students were trained for one month in the health center.

A seminar for public health nurses was held at Huacho, Peru. A postgraduate institute of nursing was planned for the purpose of providing post-graduate instruction to nurses in the fields of supervision and administration, nursing education, and public health. This was formally established by governmental decree as a dependency of the Ministry of Health, and a director appointed. Two short courses were conducted in 1958. Assistance of the Organization was requested for this program through the assignment of a nurse-educator in 1959. This institute will also promote the establishment of university schools of nursing.

In-service education has been reported in many of the projects. For example, in El Salvador it was stated that the activities of in-service education received great emphasis, since personnel were employed without orientation and special knowledge of the activities of the demonstration area. An organized, continuing in-service education program was developed in the demonstration area in Guatemala with one day each month for the public health nurses and, if needed, once a month in each center for the nursing auxiliaries.

## Evaluation

Exploration of a satisfactory procedure for reviewing nursing activities in projects of integrated health services in three countries, by collecting data on developments in selected areas of activity receiving assistance, was attempted during the year. Information was collected for three



Public health nurse gives a lesson in practical hygiene and disinfection to a local midwife, El Salvador

projects which had been in operation from one to six years. The information collected showed the stage of development of public health nursing and indicated areas which needed further assistance.

The status of development of a nursing section in each project by showing the highest administrative level concerned with such a section as well as the status of certain supervisory techniques are given in Table XVII. In only one of these countries was a nursing section established at the national level; however, in another such a section was planned.

Studies of nursing resources were reported in two of the projects. No study of nursing resources was carried out in the specific area of the third project prior to its initiation, and the nurse consultant did not report on national activities. Community surveys were in progress or completed in all projects depending upon their length of operation. Priorities for nursing services also were established in all three projects. Comments about these priorities in two instances indicated that revisions were needed; in the third, the statement was made that service priorities had been established before the community surveys were initiated.

Methods for determining staffing needs differed in the three projects. In one, needs were based on one nurse per 4,000-5,000 population plus two auxiliaries for each nurse. In another, it was stated that when personnel became available, plans were made for their utilization. In the third, local needs were set after group discussions and interviews and were followed by periodic evaluation of the results.

Development of staff through in-service education was considered an integral part of the service in all projects. However, an effective system of personnel evaluation existed in only one.

The wide variation in the development of supervisory techniques is seen in these three countries in the table.

Collection of data of this type is of value in orientation, planning, and reviewing results of nursing participation in integrated health programs. Also, such information gathered early in the development of a project will serve as a baseline for later evaluation of progress. It is anticipated that as this method is explored further in other countries a method will be developed for effective evaluation of nursing activities.

TABLE XVII. STATUS OF DEVELOPMENT OF SELECTED NURSING ACTIVITIES IN THREE PASB/WHO ASSISTED INTEGRATED HEALTH PROJECTS IN CENTRAL AMERICAN COUNTRIES, MAY 1958

Activity	Project		
	A	B	C
Administrative level of nursing section	Regionally established	Nationally established	Nationally planned, regionally established
Definition of nursing functions	Initiated	Completed	Completed in broad terms
Establishment of personnel policies	Being studied	Not defined	Established
Statement of clinic routine	Need for review under discussion	In preparation	Manual almost completed
Written nursing procedures	Review initiated	Being applied	In draft form; some approved
Definition of routine medical orders	Need study	Established	Planned
Referral systems	None reported	Being studied	Being tried
Caseload analysis	Projected for future	Not applicable yet	Not carried out
Nursing service evaluation	Being motivated	Not applicable yet	Not considered yet
Introduction of new methods or procedures	Simplification of present techniques considered of primary importance	Community survey techniques being tried out	Emphasis on putting existing methods in order and introduction of teaching techniques
Extension of services	Planned for future	Planned for future	Plans completed for extension of area

## Nutrition

Assistance of the Organization in the nutrition programs of Latin American countries was further amplified in 1958. Besides extensive aid to the Institute of Nutrition of Central America and Panama (INCAP) and its member countries, PAHO continued to assist nutrition programs in Argentina, Ecuador, and Mexico.

Furthermore, other technical agencies, particularly FAO, increased their collaboration with member countries. UNICEF assistance to programs aiming at the improvement of nutritional conditions of mothers and children was likewise initiated. Extensive joint consultation took place in some countries where the program has been developed or extended in areas of interest both to the Organization and FAO and where UNICEF was interested in providing equipment and supplies.

Thus, in Mexico the program of the Nutrition Institute received technical assistance of both PASB/WHO and FAO and the support of UNICEF. In Haiti and in Guatemala a joint WHO/FAO/UNICEF project for improved nutrition in mothers and children was developed, and in Peru a program for improved pre-school age and school age feeding was established as a joint WHO/UNICEF project.

This increasing assistance by PASB/WHO and other agencies is the result of the several governments' concern in improving the nutritional conditions of their populations. Within the health aspects of the nutrition program this involves the strengthening of programs at the national level, the development of local nutrition services as part of local health services, and the establishment of effective coordination with the national agricultural agency.

The Organization expects an increasing number of requests for consultation and assistance in program planning as a result of the interest of the member countries. Accordingly, PAHO is making provision for a larger staff of nutrition advisers to meet the needs of the expanded program. The nutrition advisers will serve particularly in the areas of public health nutrition programs and nutrition education. In addition, provision is made for short-term consultant services to cover requests in specialized areas of the nutrition programs and for fellowships for the training of national personnel.

### INCAP Activities

The work of the Institute of Nutrition of Central America and Panama was further extended during 1958. Expansion has been particularly important in the field of applied nutrition and assistance to the services of member countries, while programs of investigations are being increasingly oriented to those studies relating to the most fundamental

problems of the Central American countries and Panama. The INCAP program continues to receive close cooperation from the Technical Advisory Committee whose members have become well acquainted with the conditions of the area and are thus able to offer excellent program guidance for the consideration of the Director of PASB and the INCAP Council.

### *Program of Investigations*

Participating in this program are the divisions of clinical investigation, clinical biochemistry, clinical pathology, biology, bacteriology, statistics, and the division of food and agricultural chemistry. Some studies have been more exclusively developed in one of the divisions while others have been developed on a cooperative basis.

Investigations during 1958 were oriented toward the search for practical measures in the prevention of protein malnutrition and other nutrition deficiencies in children. These have included studies on the biological value of certain new sources of protein which can be used in supplementary child feeding, studies on the biological value and protein deficiencies encountered in foods currently used as sources of protein, and studies on vitamin A metabolism.

Results obtained with Vegetable Mixture INCAP 8 were described in last year's Report. This year Mixture INCAP 9 was put on trial and has proved to be so satisfactory that its production on an industrial scale could be recommended. Satisfactory biologic trials were first made in animals. The new mixture was further tried as the only source of protein in children who have recuperated from protein malnutrition (S.P.I.) and was given for a sufficiently long period to evaluate its acceptance, tolerance, and nutritional value. Also, nitrogen retention studies have shown this mixture to be slightly superior to Mixture INCAP 8 and to milk at equal levels of protein and caloric intake. Finally, a few children with protein malnutrition were successfully treated with the mixture.

The administration to children of beans added to corn meal was studied in an attempt to determine the possibility of recuperating moderate cases of protein malnutrition exclusively with this diet. These trials have not proved satisfactory. However, they do not exclude the possibility that the biologic value of the proteins of this mixture might be more acceptable in satisfying the needs of children without protein deficiency.

Studies of vitamin A metabolism and the value of green leaves as sources of this vitamin are still in the initial phase. These studies have been developed in order to determine to what extent the low blood serum values for vitamin A,

shown in a great number of children from low socioeconomic groups in Central America, are the result of a deficiency of this vitamin.

Extensive studies on supplementation of corn with amino acids were carried out. At present, similar studies are being devised for the enrichment of wheat; future studies will be developed on enrichment of rice with selected amino acids.

Studies related to the search for improvement in pasture and fodder or new sources of fodder supplementation have been carried out mainly in cooperation with SCIDA (Servicio Cooperativo Interamericano de Agricultura), including the determination of the protein value of tropic palm seed cakes, of cakes from Brazil nuts, and from other oleogenic seeds.

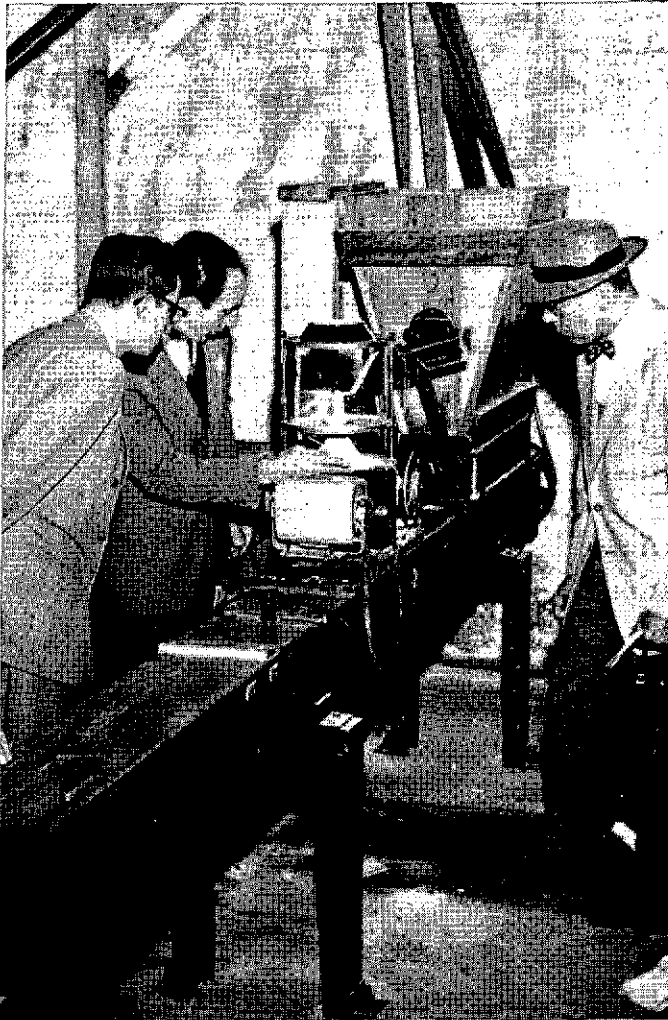
Investigations were conducted on the hyperproteinemias found in some areas in Panama and a few other places in

Central America. In an attempt to interpret these data, protein ingestion studies based on blood and urine samples were devised for children with poor dietary conditions placed in an institution in Guatemala City. The data are presently under analysis. Studies were also carried out on creatinine excretion as a possible index of development of the muscle mass. Finally, studies are being pursued on different fractions of urinary nitrogen in children from different socioeconomic groups. It is hoped that these studies might lead to obtaining an index for evaluation of nutritional status.

Further progress was made in the collection of aortas and coronaries from autopsies in Guatemala and Costa Rica. The specimens have been compared with those from New Orleans, and sizeable differences were found among the New Orleans, Costa Rica, and Guatemala material. Furthermore, studies were made of the atherosclerotic

Institute of Nutrition of Central America and Panama, Guatemala City. This building, inaugurated in 1954, houses the INCAP central laboratories





INCAP Directing Council members inspecting a pilot plant for iodization of crude salt with potassium iodate

lesions of coronaries and their respective aortas collected from Guatemala and New Orleans. Samples were obtained from persons in the decades between 30 and 80 years old to determine the correlation between atherosclerosis of the aorta and coronary disease in each age group, and to compare the severity of atherosclerosis in the two areas. In order to extend the collection of material for comparison, there is in preparation a special Latin-American atherosclerosis project, which will include investigators from USA, Colombia, and INCAP and would later involve other Latin American countries. The studies so far carried out have included chemical analysis of representative sites in aortas in order to determine the composition and content of the lipids in the intima in samples from New Orleans and Guatemala. In relation to the possible

influence of diet on atherosclerosis, studies were made of cholesterol levels at various ages in Guatemala, Panama, and Nicaragua. Newborn infants have been shown to have low cholesterol levels, contrary to adults. The exact periods when these cholesterol levels rise are not well determined, nor is the role of the diet in increasing the cholesterol level. However, diets with various levels of fat and calories have been tried in selected villages and have shown that it is possible to change the cholesterol level in the serum of school-age children through diet.

Studies have continued on the relationship between diarrheal disease and malnutrition and have included an investigation on prevalence of *Shigella* and *Salmonella*, confirming the importance of shigella infections. A new study on the etiology of diarrheal disease in children under six years of age includes *Shigella*, *Salmonella*, *Escherichia coli*, and intestinal parasites.

#### *Services to Member Countries*

In 1958 the division of applied nutrition was expanded to a division of services to member countries. The W. K. Kellogg Foundation made a considerable contribution to cover expenses for increases in personnel for the division and for their travel to member countries. This contribution, envisaged for a period of five years in annual contributions, will enable the division to utilize the service of additional nutrition specialists. They will dedicate much of their time to assisting program development in the countries and to promoting the application of knowledge made available by the investigations and practical demonstrations at INCAP.

The division includes a chief and an assistant chief mainly in charge of guiding the countries in their field nutritional studies. It further embraces a section on nutrition in agricultural extension, a section on nutrition education in school programs, and a section on training in nutrition. Considerable time was devoted to planning activities of the new division and on their subsequent organization and development.

INCAP has collaborated with the nutrition departments of each of the member countries in the epidemiological study of the size and importance of their malnutrition problem. The study includes the recollection and analysis of vital statistical data in order to develop nutritional maps for each of the countries, showing the distribution of the problem and the areas where action is most needed.

In a number of countries anthropometric measurements of healthy children from Central America have been made in order to obtain a base line for comparison and for later measurement of program results. Special emphasis was also given to the study of the epidemiology on malnutrition in pre-school age children.

A section on nutrition in agriculture plans to guide the agricultural extension activities of the countries through



the development of more uniform definitions and through the establishment of standards for nutrition programs in their health and agricultural phases. Promotion of close collaboration between both phases of the program will be stressed.

Within the division the aspects of nutrition education are receiving considerable emphasis and need to be carried out through the ministries of health and education of the member countries. It is considered that a nutrition education program of school children can be effectively developed with the collaboration of the Ministry of Education. For this reason a section on nutrition education for school children has been set up. In the latter part of the year the section developed new methods, teaching material, and a study program for school children through which certain basic concepts of nutrition and health may be incorporated in the teaching curriculum. The program was applied on a trial basis in a school program in Guatemala.

Another area of importance is the development of methods for education of mothers' diet preparation during the weaning and postweaning period. This will be one of the most effective programs in the fight against protein malnutrition in pre-school age children. In order to develop practical demonstrations of improved weaning, diet trial areas were established in Panama, El Salvador, and Guatemala.

The training program of the division has been very active. It has included courses for doctors, nurses, and other public health personnel, as well as courses for personnel working in agricultural extension programs. Of particular importance was a five-month course for training in nutrition of public health personnel working in nutrition programs in the member countries. Participants from El Salvador, Nicaragua, Guatemala, and Costa Rica attended, in various member countries, short courses in nutrition given by INCAP personnel as part of training courses for public health personnel and for home improvement agents and home economists.

The division has also realized that nutrition training in schools of medicine and nursing and in other professional schools does not always fully meet country needs in terms of the problems of the areas. Assistance was given to the Pediatric Department of the School of Medicine in Guatemala in relation to the teaching of child nutrition within this department. Assistance in teaching nutrition in the pediatric departments of schools of medicine, as well as in the departments of preventive medicine and internal medicine, will also be promoted in other countries.

The division has continued its program for preparation of reference and educational material for the benefit of member countries. In 1958, 20,000 copies of such material were distributed and sizeable numbers of this material are utilized for training activities within countries. A ques-

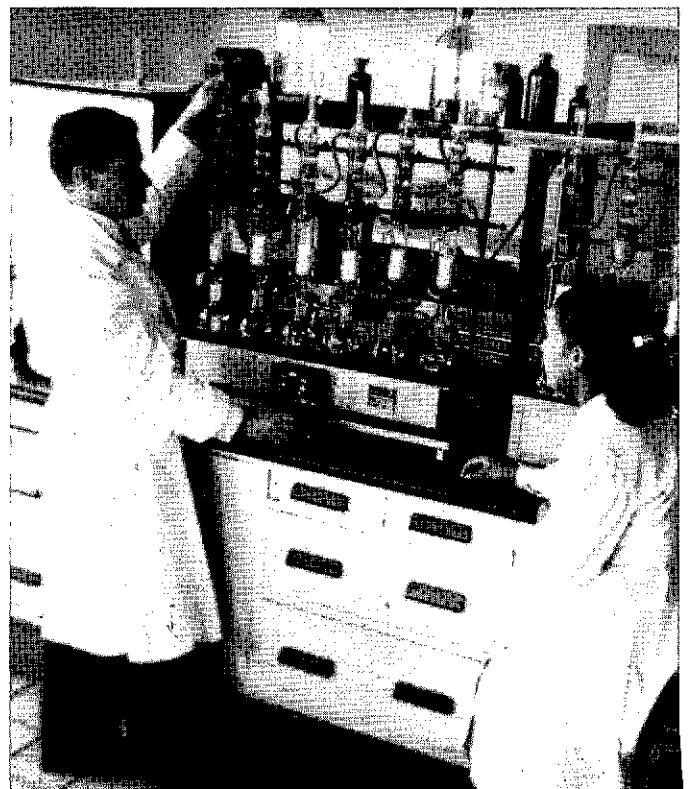
tionnaire was sent in order to evaluate better the usefulness of the material and its distribution.

INCAP has furthermore continued its active program of publications and with the assistance of the W. K. Kellogg Foundation, has strengthened its library facilities for the benefit of professionals, students, and the public in general.

### Assistance to Other Countries

In Ecuador the services of the consultant to the National Institute of Nutrition in Quito (INNE) and the Nutrition Department of the National Institute of Hygiene in Guayaquil have been continued through 1958. Furthermore, a short-term consultant visited INNE and the Nutrition Department in Guayaquil for discussion of program developments and needs of the Institute. During this year, the new Director of the Institute took office after a period of training in Europe and at INCAP. The Institute in Quito has been responsible for nutrient calculations and for interpretations of standards of adequacy relating to a survey of per capita food supply and production in the country under

A laboratory assistant experiments in the dissolving of fats with ether in the laboratory for food analysis at the National Institute of Nutrition, Quito, Ecuador





WHO consultant shows nutrition posters to biochemist at National Institute of Nutrition, Quito, Ecuador

the auspices of the Junta Nacional de Planificación y Coordinación Económica. The Institute has also cooperated with ICA in the teaching of health education. The Institute, with PASB and FAO cooperation, played an active role in teaching nutrition to the schools of the country. In June 1958 the first nutrition rehabilitation center was inaugurated in a Quito hospital. In addition, the Institute has continued the work of the laboratory of chemistry and food analysis and of the unit of dietary surveys. Investigations in clinical nutrition and food research have been continued as well as dietary surveys and nutrition education activities. There are plans for the organization of a nutrition hospital service and of an outpatient nutrition rehabilitation unit to work in close cooperation with the Institute. The nutrition department in Guayaquil has done simple anthropometric measurements of school-age children and expects to increase the surveys of the nutritional conditions of children in the coastland areas during 1959. A study on the incidence of endemic goiter among school children of the coastland and sierra areas was made. The Organization plans to give further assistance through short-term consultants and fellowships.

Assistance in the establishment of the National Institute of Nutrition in Mexico and in the development of its program was given jointly by PASB/WHO and FAO. UNICEF has allotted funds for supplies and equipment. The Insti-

tute plans to ascertain the magnitude of the nutritional problem in Mexico and to define food habits which determine the nutritional conditions of the people. The Institute is established for planning, advice, and supervision of the nutrition program of the country and will develop training of professional and sub-professional personnel in nutrition within and outside the Institute. PAHO will assist through the services of short-term consultants and fellowships over a period of years.

The assistance to the National Institute of Nutrition in Argentina was limited in 1958 because of local circumstances which have called for a postponement of proposed activities, namely the survey of nutritional conditions, training courses for personnel to do the survey, and strengthening of the facilities of the Institute. However, the Organization has helped in the initial planning of the courses and will assist in 1959 with short-term consultants and fellowships.

Recently, attention has been given to the possibility of improving maternal and child nutrition in the Latin American countries through joint projects developed mainly by WHO and FAO with the collaboration of other interested UN agencies and to which UNICEF could contribute equipment and supplies. These activities include a strong educational program in nutrition for school children and an educational program for mothers and families. Special reference is made to improved diets for pregnant and lactating women, and for infants and preschool age children; training of personnel to assist in this program; assistance in local production; and distribution of foods needed for the program. Combined WHO/FAO/UNICEF projects of this nature have been initiated in 1958 in Guatemala and Haiti, and it is expected that in 1959 other developments of this nature will occur.

It is obvious that through the work of INCAP a large amount of knowledge has accumulated, enabling the governments and PAHO to consider sizeable future expansion of national nutrition programs. This will be done as part of the basic health services within the countries.

The problem of nutrition has been recognized to be very important in many Latin American countries. In particular, the needs center around making better use of protein-rich foods and development of suitable vegetable protein foods for the family and especially for "vulnerable groups", namely pregnant women, lactating mothers, and young children.

Other specific problems have also been recognized in many areas such as goiter and the problem of avitaminosis "A".

By strengthening its regional advisory services in 1959 the Organization will be more able to comply with requests for cooperative projects in the countries of Latin America, practically all of which are demonstrating increasing interest in developing and strengthening their nutrition programs.

# Veterinary Public Health Services

A Bureau activity which has grown to major proportions during the last several years has been collaboration with various governments in integrated health projects. Many countries have been interested in reorganizing the ministries of health for a vertical integration of health services and for development of decentralized services to the local community. Involved in the reorganization has been the development of new services, one of which has been veterinary public health services.

The changing approach to communicable disease control, brought about by the development of integrated health services, has involved the use of many branches of the health service and personnel of various training, in lieu of isolated one-disease campaigns. In this evolution of the disease control services the need for veterinarians, trained in public health methods, has become evident, as the broad approach to communicable disease control has revealed the growing importance of those diseases and infections transmissible from animals to man, known as the zoonoses. Public health veterinarians, with medical training in which disease control of the group rather than of the in-

dividual is emphasized, are taking growing responsibilities in all of the countries for control of the zoonoses and supervision of the concomitant activities in food hygiene.

To serve the needs of the countries for technical guidance in this field PASB added a Regional Veterinary Public Health Adviser to its staff in 1949. As the need for consulting services increased, and as international teams for integrated health projects were appointed, additional public health veterinarians were added so that during 1958 all Zone Offices except Zone I had the services of a VPH Adviser.

While most of the Bureau's VPH assistance to countries has been provided through direct consultation to the ministries or via integrated health projects or other communicable disease control projects, certain activities have been assigned under separate projects for more concentrated attention. Some of these activities are described in another part of this Report, i.e., rabies (AMRO-61), brucellosis (AMRO-26), and the Pan American Zoonoses Center (AMRO-81).

## Dental Health

The Bureau program in the field of dentistry, planned for long-range results, successfully completed another stage in 1958.

The present status of dental public health, not only in this Hemisphere but in the world in general, is one of fluidity; crystallization of main ideas in a true school of thought or dental public health doctrine has not yet been accomplished. One step in this direction was realized last year with the inauguration of the first specialized course in public health for dentists. The course was given at the School of Public Health, University of São Paulo. PASB collaborated intimately in the planning and teaching phases and will continue giving assistance in the coming years.

The one-year course just finished in São Paulo is only one of a series of activities which have been planned as part of a true international training center in dental public health. Besides the Bureau, other agencies also collaborate in the

projects, mainly the W. K. Kellogg Foundation, the U. S. International Cooperation Administration, and the Special Public Health Service (SESP) of Brazil.

The mission to be fulfilled by the Center goes beyond the teaching of public health to dental students; it aims at the creation of a true school of thought, and a body of doctrine in the field of dental public health, assembling notions, which have been scattered until today, into an integrated whole. It aims at the applicability of this doctrine to countries in different stages of socioeconomic development. The broad perspective offered by international health work allows the Bureau the opportunity of invaluable collaboration with the Center at São Paulo in this phase of the work. Material assembled and utilized in the 1958 course is being compiled into textbook form to divulge the "realistic" school adopted by the Center.

As graduates from the São Paulo course assume impor-

tant positions in the national administrations of dental public health programs, it is expected that an impact will be made on the philosophy and orientation of these programs in the sense of: 1) logical assessment of priorities and utilization of preventive methods to their limit; and 2) increase in efficiency of dental care services.

To achieve this end the fellowship program acquires capital importance. Recruitment and follow-up of dental fellows constitute significant steps of the dental program in which all field personnel collaborate. In 1958, among the 15 students who completed the course in São Paulo, eight were WHO fellows from the following countries: Argentina; Brazil; Colombia; Costa Rica; the Dominican Republic; El Salvador; Paraguay; and Peru. Nine fellowships have already been granted for the course in 1959. There has been a great demand for this course since its beginning,

demonstrating that it was initiated at a very opportune time.

The Regional Dental Adviser was invited by WHO Headquarters to participate in an Expert Committee Meeting on Auxiliary Dental Personnel held at WHO Headquarters, Geneva in June.

At the request of the Government of British Guiana a survey was made on dental services in that country with recommendations for their improvement and expansion.

Plans for the coming years include continued assistance to the Training Center in São Paulo until its consolidation, not only in the area of teaching, but also in field research and preparation and dissemination of technical material for the countries in the Region. It is expected that in coming years projects will relate to improvement of teaching of public health dentistry in various countries and to expansion of national dental health services.

## Other Activities

### Health Education

The Bureau intensified its efforts in the field of health education training of public health personnel in 1958. Programs for long-range selection and training of professional health education staff were developed in several countries.

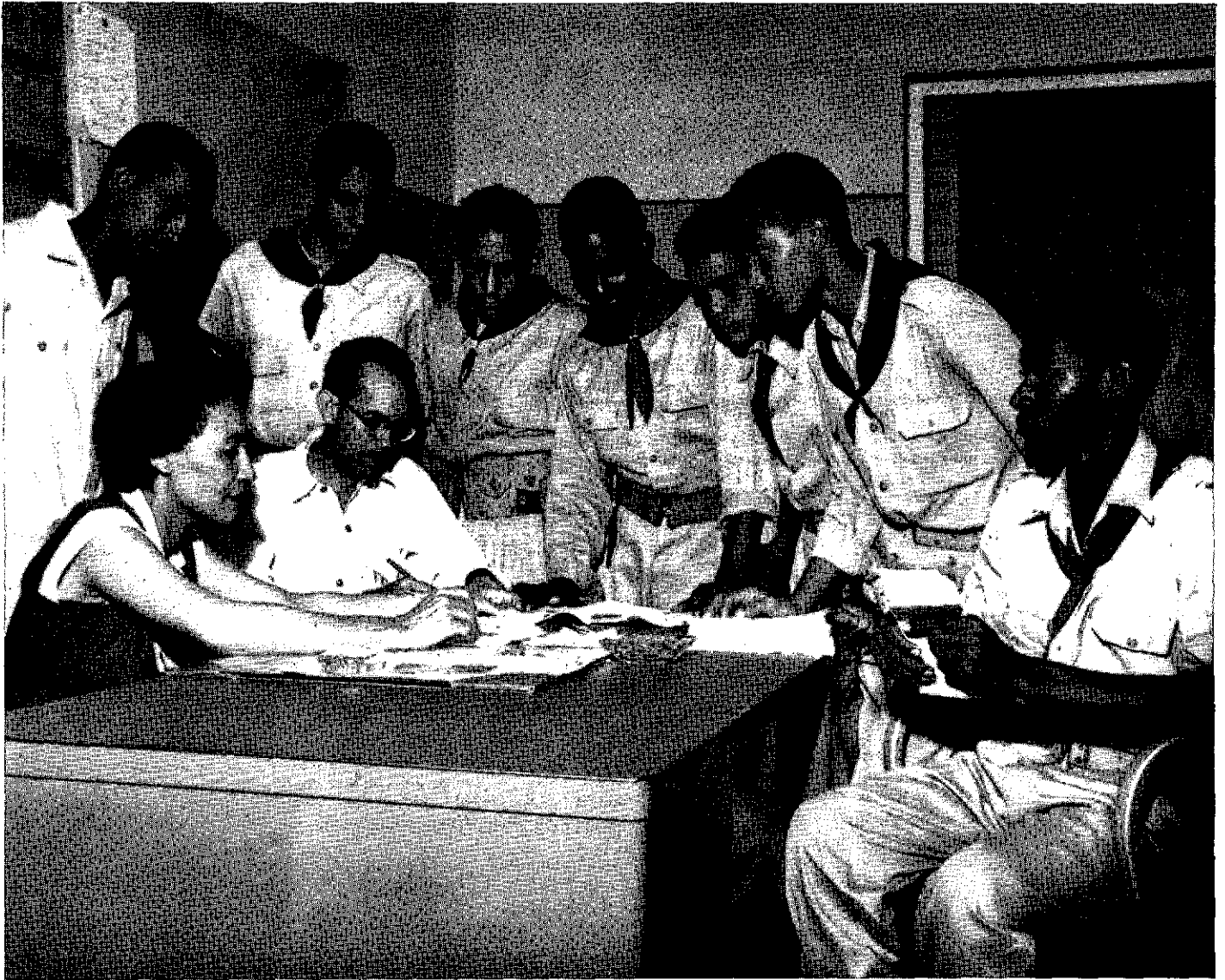
Assistance was provided to ministries of health throughout the Region in preparing preliminary reports for the Technical Discussions on Health Education, which will be held at the World Health Assembly in 1959. In several countries this assistance included the planning and development of national seminars, congresses, or study groups involving a number of other ministries and national agencies. In addition the Organization collaborated with other international agencies in a number of countries.

Additional posts were established for health education consultants attached to malaria eradication programs and to integrated health services projects. In Haiti a health education consultant attached to the malaria eradication

program worked with national health education personnel in training programs, selection and training of health education personnel, and in the development of health education materials for use in the campaign.

Health education services were provided to other countries of Zone II upon request. Major emphasis was in the area of health education training of public health personnel. A consultant participated in workshops and seminars, in planning, execution, and follow-up stages in the countries of the Zone and in British Honduras, where he took part in a teacher's health education workshop in the fields of nutrition, communicable disease control, environmental sanitation, and mental health.

Advisory services, with emphasis on health education training of personnel, were provided by the Zone consultant, in particular to project staff and national personnel in malaria eradication programs. The Zone consultant also prepared a working paper for the Expert Committee on Malaria Eradication, dealing with the role of health



Local Boy Scouts assist the Health Center's health education program, San Cristóbal, Dominican Republic

education in malaria eradication campaigns. With the Regional Center for Fundamental Education (CREFAL), he also developed a series of prototype materials for malaria eradication programs. Advisory services in health education were provided to the Ministry of Health of the Dominican Republic in the Round Table on National Planning for Public Health, which took place in Ciudad Trujillo, in March 1958.

Within the Zone I area, in the program for development of environmental sanitation, special attention was given to health education aspects. In-service training programs in health education were planned and carried out with public health workers. In one instance the consultant assisted in planning and presenting training programs

leading to qualification for technician grades. He also collaborated in the development of local advisory committees for community participation in environmental sanitation programs, and in the design and distribution of school health education materials and teachers' guides to be used with these materials. One of the outstanding results of this activity has been a developing interest leading to the establishment of health education sections in the national health departments.

Relative to collaboration with other agencies of the United Nations, the PASB/WHO Health Education Consultant participated in the United Nations Study Tour of Community Development, carried out in selected countries of Latin America during the year.

## **Mental Health**

Activities in this field were limited in 1958. A consultant visited Jamaica to assess mental health problems there and make recommendations to the government on the development of a mental health program, including the reorganization of the mental hospital. The consultant's recommendations have been submitted to the government for consideration.

It is expected that an increasing number of requests in this field will be made of the Organization in 1959. PAHO has made provision for the assignment of a mental health consultant in 1960 to deal with the needs and facilities in this field in Latin American countries and make recommendations to the Organization.

## **Hospital Planning and Organization**

During the year the Pan American Sanitary Bureau provided assistance in hospital planning and organization to national and provincial health ministries and to medical schools in Argentina.

At the national level a PASB/WHO consultant made a study of a Buenos Aires hospital and submitted a technical report for consideration by the Federal Government. This report was subsequently published and distributed to the health authorities. The consultant also made recommendations on the hospital situation of the Provinces of Chaco,

Salta, Santa Fé, and of the Pergamino area in the Buenos Aires Province. In addition, the consultant collaborated with the medical schools of the Universities of Buenos Aires and Rosario in studying the planning and organization of the teaching hospitals.

Steady progress was made in the training of hospital administration students in Argentina. Teaching and training activities were in the realm of conferences, courses, and seminars on hospital administration and organization.

The problem of hospital planning and organization, as part of the medical care program of the countries, is receiving increasing attention. For 1959, requests will be fulfilled through the utilization of short-term consultants. Provision has been made from 1960 on for a regional consultant in hospital planning and organization.

Assistance to countries will be provided particularly on the development, reorganization, or expansion of country programs for hospital planning and organization as part of their programs of medical care. This includes broad plans for hospital development in states, departments, or provinces, and hospital planning in major cities. Advice on specific plans for individual hospitals will be given, as far as possible, by the regional consultant, particularly with reference to teaching hospitals. Other requests for assistance to individual hospitals will be dealt with through short-term consultants assigned by the Organization within its financial possibilities.

# EDUCATION AND TRAINING

## Introduction

In this section are reviewed the activities relating to formal preparation of the technical personnel needed for the various health services of the member countries, as well as those relating to the general work of the Organization in the field of education. In a larger sense, educational aspects are, of course, included in practically every activity of the Organization, and outstanding instances are the training programs for sanitary inspectors and nursing auxiliaries carried out as part of the integrated health projects described in the chapter on public health. As specific evidence of this, for example, in Zone III, Central America and Panama, there were in 1958 a total of 119 fellowships of all types, awarded by the Organization, for study abroad, while a total of 335 persons, including physicians, nurses, sanitary inspectors, midwives, and laboratory technicians, received training within the integrated health projects being carried out within their own countries in collaboration with the Organization.

Major attention in the following pages is paid to basic medical and nursing education and to professional education in public health. There is also a review of the total fellowship program. More extensive description of educational efforts in specialized fields, such as statistics and veterinary public health, will be found in the respective sections.

Besides its activities relating to specific educational programs for health personnel the Bureau also collaborated during the year in certain meetings relating to basic education as preparation for professional studies. The Organization of American States (OAS), in collaboration with UNESCO, held its Sixth Inter-American Seminar on Overall Planning for Education, for which the Organization provided documentation on educational matters relating to health. The Chief of the Professional Educational Branch participated in the Seminar. The OAS also called together an Advisory Committee on Science Development, in which the Bureau collaborated in relation to the field of health sciences.

# Professional Education—Medical Education

Previous annual reports have noted the steadily widening interest throughout Latin America in fundamental reorganization and improvement of medical education. The year 1958 witnessed steady continuation of this trend. More countries and more schools have recognized that traditional methods and content in the education of physicians need drastic revision. This interest has been manifest in requests for assistance which have come to the Organization and to other agencies working in this field. Even more important, however, has been the evidence of critical self-analysis within individual countries and schools.

The role of the Bureau in assisting the reform of medical education is necessarily conditioned by the extensive and continuing programs being carried out by the Kellogg Foundation, the Rockefeller Foundation, and the International Cooperation Administration (ICA) of the USA. Correlation of programs is an obvious necessity, and the Bureau has continued to operate the Medical Education Information Center (MEIC), described at greater length below, to help fulfill its coordinating responsibilities.

Programs for direct assistance to individual countries have been developed in Mexico, Argentina, and Haiti. In the two former the assistance has been more general, including award of fellowships and review of teaching programs.

In Haiti a detailed long-range program, worked out in successive stages since 1956, has taken advantage of a series of evaluations by various staff members. The program aims to reorganize the basic curriculum, rebuild and expand basic science teaching laboratories in simple yet efficient form, and make an orderly plan for training needed professors over a period of several years. The agreement signed with the government calls for establishment of a departmental type of faculty organization and establishment of full-time teaching posts in the basic sciences. Interest of the government in this plan has been great and it has taken the initiative by using national funds to send a group of professors abroad for training. Collaboration has also been promised by the ICA, which plans to supply needed equipment for the teaching laboratories. The Organization has granted two fellowships in the basic medical sciences, and one in preventive medicine.

Preliminary visits and studies have been made, looking toward establishment of programs of assistance in medical education in the Dominican Republic, Nicaragua, and Venezuela (Universidad de los Andes). In Mexico descriptive and analytic reports have been prepared on a number of schools and will serve as a useful basis for future programs.

## Preventive Medicine

Improvement in the teaching of preventive medicine in medical schools continues as a high priority for the Organization. Effects of the seminars on this subject, which were held in 1955 and 1956, are still being felt, with reports of changes in teaching programs and requests for fellowship training from many schools. During the year 10 fellowships were awarded for training of professors for this subject. Two of these were for the academic course at the Harvard School of Public Health; another was granted for study at Columbia University. The others were for travel grants to visit centers with outstanding teaching programs.

Stimulated by a request from the Association of Teachers of Preventive Medicine in the USA, a revision was made of the Directory of Teachers of Preventive Medicine in Latin America. Comparison of this listing with that made years ago indicates considerable change and expansion of teaching staff in a good many Latin American schools.

Within any teaching program in preventive medicine, statistics plays an important role. A knowledge of statistical methodology is, of course, important for every student throughout the entire medical curriculum. Furthermore, an understanding of the importance of vital and epidemiological records is necessary for any critical study of disease. Considerable progress has been made in both these aspects, within the medical faculties, as detailed in the section on statistics.

Closely related to preventive medicine is the field of microbiology; fellowships for training teachers in this field were awarded in Argentina and Venezuela. In the field of mycology, a visiting professor was provided for Jamaica, where he gave a short course at the University College of the West Indies and technical advice in the organization of a Department of Mycology in the teaching hospital.

## Pediatrics

Building on the Survey started in 1956 (AMRO-68), continued emphasis has been placed on improvement in pediatric teaching. Pediatrics offers a natural bridge between the clinical sciences and preventive medicine as well as furnishing a close connection with the maternal and child health services responsible for the attack on infant mortality and morbidity, major health problems in the Americas.

The report of the Survey, of which the chief results had been presented in outline form at the Pan American Con-



gress in Lima in 1957, was published in final form in Spanish in the April 1958 issue of the *Boletín* of the Pan American Sanitary Bureau. With the aid of a special appropriation by the American Academy of Pediatrics, which had collaborated in the Survey itself, the report was also published in English as a special supplement to the July 1958 issue of *Pediatrics*, official organ of the Academy.

Highlights of the findings of this Survey were presented in the Quadrennial Report of the Director, 1954-1957. In the published reports, the individual schools are unidentified, but each school has since received specially marked copies to indicate its own position. In several instances these copies have been used in telling fashion to convince local authorities that improvement was necessary. For example, in one large university the Rector had not realized the inadequacy of the clinical teaching facilities used by the medical school until he saw the data in comparison with other schools in the continent.

To complement use of the Survey Report within the schools, they were supplied with additional copies of the report of the WHO Study Group on Pediatric Education. Additional efforts in the pediatric field included visits to Colombia and Venezuela by a short-term consultant who reviewed teaching programs in the 10 medical schools of the two countries, made rounds in the hospitals, and suggested methods for improvement. These visits also served to prepare for the Seminar on Pediatric Education (AMRO-102), held in Paipa, Colombia, November 17-21, for the two countries.

This Seminar was designed for participation of deans, professors of pediatrics, professors of preventive medicine, and representatives of the maternal and child health services and pediatric societies of the two countries. The total in attendance came to 42; these were divided into three groups, each of which considered all three major subjects: 1) content of pediatric teaching; 2) methods of instruction; and 3) organization and relations of the department of pediatrics. Preparation for the Seminar had been based on prior study of the Survey and the WHO Study Group report. It was possible through the seminar technique to obtain close examination of the principles of sound pediatric education and to highlight the weaknesses which each school could define for itself. The final report of the Seminar thus emphasized the standards as noted by the WHO Study Group and indicated ways these standards could be achieved within the participating schools.

#### *Collaboration with UNICEF*

Exploratory studies have been made regarding selection of a suitable school for a pilot project in the Americas similar to that undertaken in 1956 by WHO and UNICEF to assist the University of Madras, India to establish a full-time department of pediatrics closely linked to the child health services of the community. The Rockefeller Foundation is

collaborating in the effort to develop a project in the Americas particularly through selection of key personnel for training. It is expected that the time necessary for this training will make it unlikely that a project can actually get under way before 1960.

### **Basic Sciences**

A proper foundation for any career in modern medicine, whether it be in curative medicine, preventive medicine, or administration, requires a grounding in the basic sciences. Today such preparation needs to have a completely different character from that of just a few generations ago. Former emphasis on the static concepts of morphology has been reflected in the great number of hours devoted to gross anatomy, usually predominantly theoretical. In recent years recognition of the far greater significance of the functional, dynamic approach has resulted in much greater attention to the physiological sciences—physiology, biochemistry, and pharmacology. A few outstanding centers for teaching and research in the physiological sciences have been developed in recent years in Latin America, and it is only natural that this development was followed by establishment of a Latin American Society of the Physiological Sciences. The Society is collaborating with the Organization in a continent-wide study of basic science teaching—similar to that undertaken in pediatrics—in order to evaluate the present situation in the medical schools of Latin America. Although considerable difficulty has been encountered in assembling accurate data, by the end of 1958 usable information had been obtained from more than 60 schools, and analysis of the results had begun. Ascertaining of the facts will lay the basis for a broad program of improvement in this essential part of medical education.

### **Teaching Hospitals**

Just as the teaching laboratory is the heart of instruction in the basic sciences, so the teaching hospital is the heart of clinical instruction. No matter how excellent theoretical and didactic instruction may be, the quality of clinical teaching depends directly on the quality of care in the teaching hospital. Interest in help in relation to design, organization, and staffing of teaching hospitals has been expressed by several countries. Assistance provided by the Organization has taken the form of fellowships and of preparation of informative material on planning and principles of construction and organization.

### **Dissemination of Information**

Selected literature in regard to medical education and related subjects, including several Technical Reports and the WHO World Directory of Medical Schools, the PASB booklet, *Mortalidad Infantil en las Américas*, the translation from the English edition of the *Atención del Recién Nacido en Hospitales* manual published by the American Academy of

Pediatrics, bibliographies, and selected studies concerning educational methods continued to be distributed to the schools of medicine.

The PASB *Boletín* continues to be an effective means for the transmission of information regarding professional education and training. Several original articles in this field, especially from Latin American sources, were published. Summary information was also published on educational programs of special value, on national and international medical training conferences, and on seminars in medical education held in Latin America.

### Second World Conference on Medical Education

In London, in 1953, the World Medical Association, in collaboration with the World Health Organization, the Council of International Organizations of the Medical Sciences, and the International Association of Universities, held the First World Conference on Medical Education. For 1959 a second conference is projected, to deal chiefly with problems of graduate training both for general practitioners and specialists. The conference will be held in Chicago, Illinois, USA. Although the World Medical Association had begun planning for it in 1956, the tempo of preparatory activities increased during 1958. The Chief of the Division of Education and Training has represented the Pan American and World Health Organizations on the program committee and has served as a consultant to the Executive Group, which has done most of the program planning. The basic pattern of international participation in the program has been set by the World Medical Association, and the role of the Organization has been to bring to bear its knowledge of persons and situations in order to procure the best coverage of the individual subjects as drawn up in the program.

### Medical Education Information Center

This Center, which has functioned at the Bureau since 1952, held two meetings during the year. Through its regular meetings, quarterly reports on fellowships, and its provision of a mechanism for easy exchange of information the Center continues to serve its purposes as a coordinator.

One measure of increased usefulness is evident in participation of three new groups in the work this year. One is the Educational Council for Foreign Medical Graduates (ECFMG), a U. S. group organized to establish a system of standards and testing for all physicians desiring advanced training in approved U. S. hospitals and institutions. Examinations by the ECFMG are being given in various centers throughout the world. Since this program is of great utility to the Organization in its attempts to obtain the best possible placement for its fellows, it has collaborated through making the work of the Council known and in supporting its goals.

Another new participant is the Pan American Union, which is administering the expanded fellowship program of the Organization of American States. This program covers many fields, including medicine. As a Specialized Agency of the OAS, the Pan American Health Organization has acted as consultant on these fellowships.

The third new group is the Committee on International Exchange of Persons of the Conference Board of Associated Research Councils, USA (Fulbright Program). While for several years funds under this program have been used to bring scholars to the USA, it is now being extended to provide visiting professors in certain countries. Through discussing proposals at the MEIC meeting, representatives of the Committee were able to form a better idea of need and utility of visiting professors in the fields which have been requested.

At the January meeting of the MEIC an analysis was presented of the total fellowship picture as reflected in the activities of the participating groups. Although the story is quite incomplete, in view of the many fellows who go abroad for study on their own resources or on other fellowships not reported to MEIC, certain trends were significant. No fellowship in the field of medical education has been reported from four countries and most of the fellowships which have been awarded were concentrated in five countries, including most of the populous ones. The member groups agreed to make efforts with their field staffs and with related organizations to improve the data, particularly regarding completeness.

## Professional Education in Public Health

As in the past years, the three schools of public health in Latin America—São Paulo, Santiago, and Mexico—which receive international students carried a large load of the international academic training supported by the Organization. During 1958 a total of 116 fellowships were

awarded for study at these schools in various fields, including general public health administration, communicable diseases, environmental sanitation, nursing, statistics, and others.

To assist the schools as feasible beyond the payment of

tuition fees, assistance is offered in the form of visiting professors, fellowships for faculty members, and teaching supplies and equipment. In 1958 two visiting professors in the field of statistics visited the three schools and gave lectures and consultation services. At Araraquara, Brazil (the Training Center of the Faculty of Hygiene at São Paulo) the full-time services of a junior engineer continued to be provided to strengthen supervision of the practical training experience at the Center. Special teaching materials were supplied to the schools during the year, particularly for training in environmental sanitation and in nutrition.

The general problem of adjusting the teaching program in a school of public health to the needs of students from other countries was the subject of a WHO Study Group during the year. The Bureau collaborated in regard to preparatory materials and was represented at the meeting by the Chief of the Division of Public Health.

In addition to those schools receiving international students, several countries in the Americas have established schools solely for the training of their own nationals. Two of these, the National School in Rio de Janeiro and the projected school for Argentina, have been the subject of special programs (Brazil-19 and Argentina-17).

In Rio de Janeiro courses in public health for personnel of the National Department of Health have been offered for more than 30 years, and courses on a similar graduate level for personnel of the National Department of the Child have been offered for 15 years. In 1954 the government proposed that these two be brought together and a new national institute be set up, which would establish a high standard of instruction and have qualified full-time personnel in the major departments. After the necessary enabling legislation had been passed the Organization provided a full-time consultant who entered on duty toward the end of 1957. Needed books and laboratory equipment were also provided for the projected school. The necessity for following a series of legal steps to change existing laws has made progress of this project very slow, particularly in drawing up for issuance the regulations under which the school will operate.

In Argentina the government wishes to reform and expand the School of Public Health which previously existed as part of the University of the Littoral, functioning first in Santa Fe and more recently in Rosario. A National Commission was appointed to study the standards for such a school and its methods of operation. The Organization provided the means for this Commission to visit the Schools of Public Health in São Paulo and Santiago in order to make comparative studies. Subsequently the Organization also provided the services of a short-term consultant who met with the Commission, investigated the local situation, and prepared a report outlining what should be a sound basis for the school. This project is expected to continue and to include provision for training of faculty members.

The Escuela Superior de Higiene, in Bogota, has had ad-



PASB/WHO fellowship student operates a manual apparatus used in taking dust counts in the study of air pollution and airborne diseases

vice through the group working in the integrated health project in Colombia (Colombia-4), since the school has been the center for the training of public health nurses, physicians, and sanitary inspectors needed in this program. Toward the end of 1958 appointment of a new, highly qualified director of the school resulted in consultations with the Bureau concerning future reorganization of the teaching program, training of personnel, and possibly visiting professors. The ICA has indicated strong interest in helping future developments at this school.

Visits of faculty members of all the schools receiving international students to the countries from which their students come have been encouraged for several years. It is expected that this program will continue on a long-range basis in order to provide constant stimulus and ideas to the various faculties. During 1958 three faculty members received travel grants under this program.

### Environmental Sanitation

The Organization's special program for the training of professional sanitary engineers and of teachers of sanitary inspectors has continued along the lines of previous years. The schools of public health of Chile and Brazil continue to offer courses for both groups and have continued to receive students from most of the other Latin American countries. In Mexico, training for the professional group has been provided in the School of Sanitary Engineering of the Faculty of Civil Engineering. The three schools have been aided with needed teaching supplies and equipment, and the latter school also was provided with the services of a visiting professor for the subject of production and final

disposition of radioactive materials, especially in connection with water supply.

Additional information on the training of sanitary engineering will be found under the section on environmental sanitation activities.

### **Radiological Health Course**

In collaboration with the United States Public Health Service a special short course on Health Aspects of Ionizing Radiation was organized in San Juan, Puerto Rico, October 7 to 15. The course was designed for leaders in national health administrations and the group included one Director of Health, two Sub-Directors, a Special Adviser to a Minister of Health, and several directors of major divisions, such as Rural Health Services, Epidemiology, and Environmental Sanitation.

The following countries were represented: Argentina; Bolivia; Brazil; Chile; Colombia; Ecuador; Guatemala; Honduras; Paraguay; Peru; Uruguay; and Venezuela.

The faculty was provided in the main by the United States Public Health Service. Staff from the School of Medicine of the University of Puerto Rico, along with the personnel of the Puerto Rico Nuclear Center, also participated as members of the faculty.

Advantage has also been taken of the possibilities of this Center, which is under the sponsorship of the Atomic Energy Commission of the United States, and which teaches in Spanish, to award nine fellowships in medical aspects of the use of radioisotopes.

### **Dental Health**

The course in dental public health, developed as the result of the preliminary studies and survey by the dental public health consultant and organized with the collaboration of the Kellogg Foundation, went through its first year at the School of Public Health in São Paulo. The course created great interest, and 16 dentists, coming from eight Latin American countries, participated. An auspicious beginning in the first year will result in more realistic programs within the countries from which the students have come. The Organization's dental health consultant concentrated most of his time in participating in the course and assisting its progress. Fuller details will be found in the section on dental health activities.

### **Veterinary Medicine and Public Health**

Veterinarians are being accepted for MPH training in all of the schools of public health in the Americas which are receiving students from other countries. Assistance has been furnished to these schools in the development of elective subjects of the MPH course most suitable for veterinary candidates.

While the United Nations Food and Agriculture Organization (FAO) is concerned with the entire field of veterinary medical education, the international health organizations have a direct interest in the improvement of teaching of basic principles of public health to all veterinarians in their undergraduate studies. A number of requests have come from veterinary medical schools for assistance in this important field.

During 1958 the services of a special consultant (AMRO-67) were provided to the schools of veterinary medicine located in Bogota and in Manizales, Colombia; in Quito and in Guayaquil, Ecuador; and in Maracay, Venezuela. In each case the consultant, himself dean of a school of veterinary medicine, visited the school to study existing teaching facilities and methods and to discuss with the dean and the faculty members the curriculum changes necessary to provide the students a proper orientation in the subjects basic to public health. His report contained recommendations not only as to additions to the curriculum for the teaching of public health, but included changes that should be made in other courses, such as microbiology, parasitology, and biochemistry, to teach students those phases of pertinent interest to public health.

In addition to the broad and general type of consultation referred to above, specific assistance has been provided the schools in the field of microbiology, involving cultures, sera, antigens, and laboratory techniques concerning many of the zoonoses, e.g., salmonellosis, brucellosis, rabies, leptospirosis, and the viral encephalitides.

Extent of the interest of the schools of veterinary medicine throughout the Americas in the teaching of public health to their undergraduate students has reached the point where it has become opportune to plan a seminar on the subject. Based on the successful experience with similar seminars for medical schools, a seminar on the teaching of public health and preventive medicine in schools of veterinary medicine has been scheduled for August 1959. During 1958 extensive preparations have started with the collaboration of the American Veterinary Medical Association, the Association of Deans of Schools of Veterinary Medicine, and the Public Health Service of the United States which will act as host country. Advantage will be taken of the holding of the Pan American Congress of Veterinary Medicine in Kansas City to have this seminar include representation from all the Americas.

It is planned to invite to the seminar from each school the dean and the professor most closely related to the teaching of public health. Using the technique of prior distribution and study of background documents, the seminar will concentrate on group discussion of what should be taught and how best to organize and carry out the instruction.

# Nursing Education

A great ferment of ideas for improvement of nursing education in all the countries of Latin America has been stimulated by exchange of information between leaders of the profession during seminars (AMRO-46) and congresses (AMRO-23) sponsored by the Organization. Besides direct assistance to schools of nursing for the strengthening of nursing education, of which there are projects in eight countries (see Basic Nursing Curriculum), the Organization's efforts have continued to be directed to other broad areas: post-basic nursing education; seminars; training of auxiliary nursing personnel; and surveys in individual countries to determine realistic goals for each of the above. The national nurses associations in several countries have been prompted to carry on these studies and surveys, from which has come a growing realization of the main problems in nursing and even of the main solutions to be sought.

One of the major problems faced in every field of nursing in Latin America, and one which has concerned the Organization for many years, is the fact that nurses are being called upon immediately after graduation to perform functions for which their training in school did not prepare them. As in any nursing school elsewhere, graduate nurses in Latin America are prepared to give direct care to the patient and, in some cases, to the community as well. On graduation, however, they assume positions which call for teaching, supervision, and administration, and for these functions they are totally unprepared except through native ability.

At the same time experience has shown that auxiliary nursing personnel may be trained in six to nine months to carry on creditable work in all health services, whether bedside care in the hospitals or preventive care in homes and public health units. As a result, nursing educators are convinced that two main groups of nursing personnel must be carefully prepared—the graduate nurse and the nursing auxiliary.

The movement that is taking place can better be understood when it is considered that the functions of teaching and administration, which formerly were carried out in the field of nursing by physicians, are now gradually being assumed by nurses themselves. In only three of the countries in this Region (Argentina, Cuba, and Mexico) are the majority of institutions which are called "schools of nursing" still being directed by physicians, with practically no teaching being done by graduate nurses. In all the rest of the countries, nurses plan and direct all nursing education, while in one Latin American country a nurse is even Dean

(Decano) of a university school of nursing (Facultad de Enfermería). In 14 countries nurses administer some type of nursing unit within the national public health structure and in all countries they direct nursing services, at least in one or two of the larger hospitals.

## Professional Nursing Education

In all schools receiving PASB/WHO assistance, changes are being made in the basic nursing curriculum to reflect the needs of the recent graduate. Supplementary courses for graduate nurses are also being planned in many countries. Short courses in principles of teaching and supervision (AMRO-100) are taking on greater importance and urgency as health authorities become more aware of the gap between the functions nurses are expected to carry out and those they have been prepared to perform.

As a result of the enlarging role of nurses in teaching and administration, changes are being made in basic nursing education to meet the situation.

## Basic Nursing Curriculum

The new pattern of basic nursing education which is slowly evolving in Organization-assisted projects (Argentina-3 and 23, Bolivia-5, Dominican Republic-3, Ecuador-16, Mexico-14, Nicaragua-5, and Venezuela-14) shows the following major changes:

- 1) General preparation for leadership rather than for automatic accomplishment of orders is emphasized. The former prohibition of questioning and of display of initiative during the years in the school of nursing tends to disappear. On the contrary, efforts are being made to provide experiences which will enable students to exercise to the full their potentials for leadership. Modern methods of teaching, such as group discussion and individual case studies, reflect the trend away from autocratic lecture and examination methods;

- 2) Greater emphasis is placed on social sciences. An understanding of the individual and of social behavior has always been necessary in a career where establishment of good relationships and communication with people from every walk of life is a prime factor in success. This has not always been recognized but, now that leadership functions are being undertaken, a good grounding in the social sciences is more than ever a necessity for nurses;

- 3) Since it is inadvisable to keep on adding years to the education of nurses, the increase in emphasis on social

sciences leads to a decrease in hours spent on biological and physical sciences. These hours therefore need to be planned carefully to prepare a nurse who understands the scientific principles behind the procedures she carries out but not to drill her in details which, while necessary to the physician in his task of diagnosis and therapy, are soon forgotten by the nurse who is not called upon to use them. Just what balance should be struck between the hours devoted to social sciences and those to natural sciences is the subject of empirical experimentation;

4) Specific preparation for positions of leadership in schools, in hospitals, and in public health services has been added to the curriculum since even recent graduates are being employed to teach and supervise auxiliary nursing personnel and to organize and administer nursing services.

### Post-basic Nursing Education

Now that there exists at least one school of nursing following or preparing to follow modern trends in nursing education in each country of the Region, efforts to meet the need for advanced preparation of nurses constitute a priority in many countries. Argentina, Brazil, Chile, Colombia, Costa Rica, Haiti, Mexico, Panama, Peru, Uruguay, and Venezuela have either established permanent centers or are planning four to six months' courses on an emergency basis prior to setting up permanent centers for post-basic nursing education.

The Organization continued to collaborate in maintaining two of the first to be established (Chile-29 and Colombia-4), to which nurses from other countries have also been sent. Demand for advanced nursing study carried on in the Spanish language far exceeds the space available, which has led to the planning of additional assistance to provide at least one center of post-basic education in each Zone.

### Training of Auxiliary Nursing Personnel

Recently a study carried out in Venezuela to serve as a basis for planning educational programs (AMRO-63) revealed a shortage of graduate nurses typical in Latin America. In the public health service, the proportion of graduate nurses to auxiliary nursing personnel was one to seven. Of the auxiliaries, only 50 per cent had even a short formal course of training, and a negligible number of the graduate nurses had received preparation for supervision.

Of the 75 official general hospitals, 36 have up to 100 beds; of these 31 have four or less graduate nurses. Four hospitals have no graduate nurse, and 10 hospitals with 50 to 99 beds have four nurses each. Estimating the nurses' working day at eight hours and their working week at  $5\frac{1}{2}$  days, this means that there is only one graduate nurse in the hospital on each shift for the greater part of the time, since the fourth nurse will either be substituting for others on their days off or will be having free time herself.



Using a doll as a model, nun demonstrates infant care to trainees in a course for nursing auxiliaries, San José, Costa Rica

Direct care of the patients is of necessity left entirely in the hands of the nursing auxiliaries.

This example illustrates clearly that the principal role of the graduate nurse is that of instructor and supervisor of auxiliary personnel and administrator of nursing services. It also serves to emphasize the importance of training the auxiliary nursing personnel who, for the next generation at least, will be charged with direct nursing care either in the hospitals or in the community.

Argentina, Bolivia, Chile, Guatemala, Panama, Paraguay, and Venezuela, among others, are planning to set up permanent national centers for preparing instructors who will train auxiliary nursing personnel throughout the country. During the last three years such a center in Guatemala (Guatemala-6), established and maintained with the collaboration of the Organization, has received nurses on PASB/WHO fellowships from most of the above countries, to prepare them to organize similar centers of training for their own health services.

### Surveys in Nursing

When a history of nursing in Latin America is written, 1958 will be known as the year in which nurses from many countries began to lend reality to the "shopworn" phrase "planning for nursing programs within the social, cultural, and economic possibilities of a country".

The Brazilian Survey of Nursing Resources and Needs in which the Organization collaborated (Brazil-22) was completed early in the year, and nurses from nine countries other than Brazil were invited to a workshop held in Salvador, Bahia (AMRO-46.5) to discuss the reasons for making the survey and how it was made. At the same time 14 Brazilian nurses, leaders in their respective branches of the profession, met to discuss the findings of the Survey and to formulate recommendations for future action. This is the first time in Latin America that national plans for nursing will be based on realistic data. The idea has been eagerly grasped by several countries, notably Chile and Mexico, which are planning similar surveys to be undertaken in the next few years. Nurses from Panama, who already had completed a survey, realized that not enough use was being made of the data which had been obtained,

and therefore the Survey planned to establish a follow-up committee to see that more of the recommendations were carried out.

A formal recommendation was made by the workshop participants that PASB/WHO carry out a survey of schools of nursing in Latin America similar to the one completed in 1949. Not only would this serve to show the progress in nursing education during the last decade, but it would also point up the countries where, because nursing education programs were more advanced, nurses from other countries might go for post-basic study.

These are but the first examples of a trend which it is anticipated will affect more and more countries until finally all nursing education programs in Latin America will be based on demonstrable needs for service.

## Fellowships

Consistent increase both in the number of fellowships awarded in the Americas and in the number of fellows from other regions placed for training in this Region was again evident in 1958. Employment of international funds to finance training in a country other than the fellow's own is rewarded handsomely as personnel are thus properly prepared for health programs.

In total, the increase in awards in the Americas was approximately 30 per cent, with 560 issued in 1958 as against 432 in 1957. A substantial part of this increase was in personnel trained for the expanding malaria program, in which field there were 203 awards in 1958 as against 111 in 1957, a rise of more than 80 per cent. Increase in all other fields was more modest, approximately 11 per cent.

Analysis of fellowships by field of study is subject to the difficulties which have been mentioned in previous annual reports regarding classification. Overlapping interests make it necessary to adopt some arbitrary decisions, illustrated best in relation to two categories—public health administration and communicable diseases. Many fellows take general courses in public health at a school of public health but have as a major interest one or several communicable diseases. Under such circumstances, the classification rules provide that the fellow be listed under communicable diseases; yet the training has obviously been of broader character, applicable to other health services as well as

communicable disease. Similar observations are true for several other categories, particularly nursing and maternal and child health.

PASB/WHO fellowships students discuss international public health problems. The two gentlemen at the end of the table (center of photograph) are the Director of the Johns Hopkins University School of Hygiene and Public Health (left) and the Chief of the Fellowships Branch, PASB



While keeping these reservations in mind study of the tables shows that concentration in the field of communicable disease continues to be felt, with more than 50 per cent of all awards in this field (Table XVIII). When, however, one discounts the awards for malaria, 203, the proportion of the remaining awards devoted to communicable diseases is under 24 per cent as compared with the figure of 38 per cent for the same proportion in 1957. There was actually an absolute decline in number of awards for communicable diseases other than malaria, from 121 to 85. In 1958, on the other hand, almost every other field showed an increase, most striking proportionally in the field of sanitation and in medical sciences and education.

A special group activity in the field of poliomyelitis was carried on for the second consecutive year. A group of eight fellows coming from Nigeria, French Equatorial Africa, the USSR, Austria, Poland, Egypt, Lebanon, and Chile, spent eight weeks at various centers in the United States and Canada to study the isolation and identification of viruses and preparation of poliomyelitis vaccine.

TABLE XVIII. FELLOWSHIPS AWARDED IN THE AMERICAS IN 1958<sup>a</sup> AND FELLOWS FROM OTHER REGIONS COMMENCING STUDIES IN THE AMERICAS IN 1958, BY FIELD OF STUDY

Field of study	Awarded in the Americas	Arriving from other regions
Total	560	144
Public health administration	42	17
Sanitation	62	12
Nursing	69	18
Maternal and child health	7	7
Other health services	57	37
Mental health	1	10
Health education	8	6
Occupational health (industrial hygiene)	—	2
Nutrition	5	4
Health statistics	29	2
Dental care and hygiene	11	5
Rehabilitation	3	3
Control of pharmaceutical preparations	—	5
Communicable diseases	288 <sup>b</sup>	35
Medical sciences and education	25	8
Clinical medicine	10	10

<sup>a</sup> Corresponds to the period December 1, 1957–November 30, 1958.

<sup>b</sup> Including 203 in the field of malaria, of which 127 were awards for courses organized or assisted by PAHO/WHO and 76 other arrangements.

In terms of type of award (Tables XIX, XX, and XXI), there was a sharp increase in the number of individually prepared "travel grants", which rose from 106 to 189, nearly 80 per cent, and in the number of awards for special courses organized or assisted by PAHO/WHO, which increased approximately 55 per cent, from 152 to 235. Although a large part of this increase was related to training for malaria, the rise in non-malaria awards was considerable, 66 per cent for "travel grants" and 37 per cent for special courses.

TABLE XIX. FELLOWSHIPS AND SEMINAR PARTICIPANTS IN THE AMERICAS BY COUNTRY OF ORIGIN AND TYPE OF TRAINING, 1958<sup>a</sup>

Country of origin	Fellowships					Seminar participants
	Total fellowships	Courses organized or assisted by PAHO/WHO		Other courses	Other arrangements	
		Special	Academic			
Total	560	235	57	79	189	57
Argentina	50	14	13	11	12	5
Bolivia	22	14	—	2	6	—
Brazil	65	39	1	3	22	20
Canada	—	—	—	—	—	—
Chile	23	5	—	5	13	1
Colombia	66	13	2	8	43	3
Costa Rica	10	8	1	—	1	—
Cuba	2	2	—	—	—	2
Dominican Republic	5	—	1	—	4	—
Ecuador	9	6	—	3	—	—
El Salvador	11	10	—	—	1	1
Guatemala	21	12	4	4	1	1
Haiti	8	2	—	2	4	—
Honduras	12	7	1	1	3	—
Mexico	51	6	7	8	30	4
Nicaragua	9	8	—	1	—	—
Panama	27	18	5	4	—	—
Paraguay	21	8	8	4	1	3
Peru	46	16	11	14	5	2
United States	4	—	—	—	4	3
Uruguay	11	5	3	1	2	4
Venezuela	15	7	—	—	8	2
British Territories	62	32	—	8	22	3
Depts. of France in the Americas	5	—	—	—	5	2
Surinam and Netherlands Antilles	5	3	—	—	2	1

<sup>a</sup> Corresponds to the period December 1, 1957–November 30, 1958.



An important type of award, since it represents basic training, is the formal academic year of study in public health. Because of the difference in the starting dates of the academic year in northern America and Latin America, variation exists in regard to the year in which these awards are made. For this reason a special analysis was made of the number of fellows in regular academic study, as of the month of October, for the master's degree in public health or its equivalent. In 1958 there were 69 as against a comparable figure of 56 in 1957, a gratifying increase.

All of the countries in the Region, except Canada, received awards, but, as has been true in previous years, there was considerable variation in utilization from one country to another. This variation does not always correspond to size but reflects rather the interest of the country in seeking training abroad under PAHO/WHO auspices.

More fellows also came from other regions of the world to study in the Americas. The total of these in 1958 was 144 as compared with 120 in 1957, a rise of 20 per cent (Table XXII). The increase was true for all other regions

TABLE XX. FELLOWSHIPS AWARDED BY COUNTRY OF ORIGIN, FIELD OF STUDY AND TYPE OF TRAINING IN THE AMERICAS, 1958<sup>a</sup>

Field of study and type of training	Total	Country of origin of fellow																								
		Argentina	Bolivia	Brazil	Canada	Chile	Colombia	Costa Rica	Cuba	Dominican Republic	Ecuador	El Salvador	Guatemala	Haiti	Honduras	Mexico	Nicaragua	Panama	Paraguay	Peru	United States	Uruguay	Venezuela	British Territories	Depos. of France in the Americas	Surinam and Netherlands Antilles
Total	560	50	22	65	—	23	66	10	2	5	9	11	21	8	12	51	9	27	21	46	4	11	15	62	5	5
Public health administration	42																									
Courses organized or assisted by PAHO/WHO	13	1	1	2	—	1	1	—	—	—	1	—	2	—	1	—	—	—	1	—	—	1	1	—	—	—
Other courses	18	4	—	1	—	—	5	—	—	—	—	—	—	1	1	—	—	—	3	3	—	—	—	—	—	—
Other arrangements	11	2	—	—	—	3	—	—	—	—	—	—	—	—	—	3	—	—	—	1	—	—	—	1	1	—
Sanitation	62																									
Courses organized or assisted by PAHO/WHO	40	4	—	—	—	—	—	—	—	—	—	3	—	1	1	—	3	6	4	—	—	—	—	18	—	—
Other courses	5	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	3	—	—
Other arrangements	17	—	—	—	—	—	—	—	—	—	—	—	—	—	12	—	—	—	—	1	—	—	—	4	—	—
Nursing	69																									
Courses organized or assisted by PAHO/WHO	37	4	—	10	—	3	2	1	—	—	—	—	—	1	2	—	4	—	3	—	5	2	—	—	—	—
Other courses	19	1	—	1	—	3	—	—	—	—	1	—	3	1	—	1	—	—	3	—	—	—	—	4	—	—
Other arrangements	13	—	—	1	—	2	1	—	—	—	—	—	—	1	—	—	—	—	—	2	—	—	—	3	3	—
Maternal and child health	7																									
Other courses	3	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—	1	—	—
Other arrangements	4	1	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—
Other health services	57																									
Courses organized or assisted by PAHO/WHO	37	8	—	2	—	—	3	—	—	1	—	—	2	1	—	5	1	4	3	7	—	—	—	—	—	—
Other courses	6	2	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	1	1	—	—	—	—	—	—
Other arrangements	14	3	—	3	—	—	1	—	—	1	—	—	—	1	—	—	—	—	—	—	1	1	—	2	—	—
Communicable diseases	288																									
Courses organized or assisted by PAHO/WHO	165	10	13	26	—	1	9	8	2	—	5	10	9	1	5	5	7	12	6	13	—	2	4	14	—	3
Other courses	19	4	2	1	—	—	2	—	—	—	2	—	—	—	—	—	—	2	—	6	—	—	—	—	—	—
Seminar and other arrangements	104	1	6	16	—	1	4	1	—	3	—	—	1	3	2	9	—	—	1	1	—	1	5	9	1	2
Medical science and education	25																									
Other courses	4	—	—	—	—	1	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—	—
Seminar and other arrangements	21	5	—	1	—	4	—	—	—	—	—	—	—	—	5	—	—	—	—	—	3	—	2	—	—	—
Clinical medicine	10																									
Other courses	5	—	—	—	—	1	—	—	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—
Other arrangements	5	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	2	—	—

<sup>a</sup> Corresponds to the period December 1, 1957–November 30, 1958.

TABLE XXI. FELLOWSHIPS AWARDED FOR COURSES ORGANIZED OR ASSISTED BY PAHO/WHO AND PARTICIPANTS IN SEMINARS, BY COUNTRY OF ORIGIN AND FIELD OF STUDY, 1958<sup>a</sup>

Field of Study and Project <sup>b</sup>	Country of Origin of Fellow or Participant																									
	Total	Argentina	Bolivia	Brazil	Canada	Chile	Colombia	Costa Rica	Cuba	Dominican Republic	Ecuador	El Salvador	Guatemala	Haiti	Honduras	Mexico	Nicaragua	Panama	Paraguay	Peru	United States	Uruguay	Venezuela	British Territories	Dept. of France in America	Surinam and Netherlands Antilles
Total fellows	292	27	14	40	—	5	15	9	2	1	6	10	16	2	8	13	8	23	16	17	—	8	7	32	—	3
Public health administration																										
AMRO-142.1	13	1	1	2	—	1	1	—	—	1	—	2	—	1	—	—	—	1	—	—	1	1	—	—	—	—
Sanitation																										
AMRO-1	22	4	—	—	—	—	—	—	—	—	—	3	—	1	1	—	3	6	4	—	—	—	—	—	—	—
AMRO-17.4	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18	—	—
Nursing																										
AMRO-46.5	26	2	—	10	—	3	2	—	—	—	—	—	—	—	—	2	—	2	—	2	—	1	2	—	—	—
Guatemala-6	5	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	1	—	—	—	—
AMRO-28	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	3	—	—	—	—
El Salvador-5	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Colombia-4	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other health services																										
AMRO-72	10	2	—	1	—	1	—	—	1	—	—	1	—	—	—	—	—	1	1	2	—	—	—	—	—	—
AMRO-10	14	5	—	—	—	1	—	—	—	—	—	—	—	—	3	—	1	1	3	—	—	—	—	—	—	—
AMRO-85.4	13	1	—	1	—	1	—	—	—	—	—	1	1	—	2	1	2	1	2	—	—	—	—	—	—	—
Communicable diseases																										
AMRO-114	58	4	10	18	—	1	2	—	—	2	2	4	—	1	—	1	4	2	7	—	—	—	—	—	—	—
AMRO-127	9	—	—	—	—	—	2	—	—	—	2	2	—	—	—	—	2	—	—	—	—	—	—	1	—	—
AMRO-128.1	14	2	2	2	—	—	2	—	—	2	—	—	—	—	—	—	—	—	2	—	—	—	2	—	—	—
AMRO-128.2	11	—	—	—	—	—	2	—	—	—	1	2	1	—	—	—	2	3	—	—	—	—	—	—	—	—
AMRO-128.3	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9	—	3
AMRO-134	5	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	3	—	—
AMRO-137.1	6	2	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—	—	1	—	—	—	—	—	—
AMRO-137.2	4	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	2	—	—	—	—	—	—
AMRO-192	8	—	—	—	—	2	—	—	—	1	1	—	—	1	—	1	—	1	—	—	—	—	—	1	—	—
AMRO-61	14	—	—	—	—	—	2	—	—	—	3	—	—	3	—	3	3	—	—	—	—	—	—	—	—	—
AMRO-81	5	—	—	—	—	2	—	—	—	—	—	—	—	—	2	—	—	—	—	1	—	—	—	—	—	—
AMRO-77.10	9	1	—	4	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1	1	—	—	—	—
AMRO-92	10	1	—	1	—	1	1	—	2	—	—	1	—	—	—	—	—	—	—	1	—	1	1	—	—	—
Total participants	57	5	—	20	—	1	3	—	2	—	—	1	1	—	4	—	—	3	2	3	4	2	3	2	2	1
Medical science and education																										
AMRO-18	2	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—
AMRO-166	13	1	—	7	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	2	—	—	—	—
Communicable diseases																										
AMRO-149	42	4	—	13	—	—	2	—	2	—	—	—	—	—	4	—	—	3	1	3	2	2	3	2	2	1

— None. <sup>a</sup> Corresponds to the period December 1, 1957–November 30, 1958. <sup>b</sup> See Table XXV for explanation of project designation.

except Africa, which sent approximately the same number in 1958 as in the previous year. Some of the change in number of fellows from other regions was also due to the expanded malaria program. Eight fellows, principally from the Eastern Mediterranean region, attended the special training course at the Malaria Eradication Training Center

in Jamaica. Otherwise there was little change in the distribution of fields of study for fellows coming from other regions of the world (Table XVIII).

As in other years almost all of the countries received fellows for study (Table XXIV). Naturally, those with academic institutions admitting students from other countries

TABLE XXII. FELLOWS FROM OTHER REGIONS COMMENCING STUDIES IN THE AMERICAS IN 1958,<sup>a</sup> BY TYPE OF TRAINING

Region of origin	Total	Courses organized or assisted by PAHO/WHO	Other courses	Other arrangements
Total	144	8 <sup>b</sup>	62	74
Europe	43	—	11	32
South East Asia	31	1	21	9
Western Pacific	28	1	14	13
Eastern Mediterranean	21	6	11	4
Africa	21	—	5	16

<sup>a</sup> Corresponds to the period December 1, 1957–November 30, 1958.

<sup>b</sup> Attended Malaria Eradication Training Center in Jamaica.

had far higher totals. Certain countries were also affected by the location of special training courses in connection with the expanded malaria program.

Emphasis continues to be placed on sending fellows for study or observation to areas which are relatively similar in conditions to those to which the fellows return in their own countries. Almost 80 per cent of the fellowships awarded were for study or observation within Latin America, a number roughly similar to that in 1957. Furthermore, three-quarters of the fellows who attended academic courses did so in schools where the language of instruction was Spanish or Portuguese. It may be noted that in certain countries fellows attended courses within their own countries; these are instances in which the country happened to be the site of an international course.

Support of the increased fellowship activity came from all sources of funds at the disposition of the Organization. This is illustrated in Table XXIII. Some increase was observed in all funds except Technical Assistance. It is again evident that it is essential to have full coordination of procedures under which fellowships from the various funds are administered.

One of the important points in arranging for international study is assurance that the fellow can speak the language of the country of study. It is gratifying to note that the arrangement for having the English Language Institute of the University of Michigan test fellows coming to English-speaking institutions has been highly successful and a distinct improvement over previous methods. The testing scheme has been considerably more objective and thus has resulted in a high degree of accuracy.

At a meeting of the fellowships officers at WHO Head-

quarters in Geneva, in February 1958, experiences in the Americas were exchanged with those from other regions to substantial mutual advantage.

### Discussion at the XV Pan American Sanitary Conference

In accordance with Resolution XV of the X Directing Council, the Director prepared a special report on the fellowships activity, examining exhaustively the various phases of the fellowships program (Doc. CSP15/22). The following sections were covered: (a) purpose; (b) priorities; (c) commitments inherent to fellowship awards; (d) selection of fellows; (e) duration of fellowships and facilities furnished; (f) processing of fellowship applications; (g) program and placement; (h) notification of fellowship awards and travel arrangements; (i) orientation and guidance during courses of study; (j) contact with the fellow after completion of studies; (k) scope and financing of the program; (l) coordination with other organizations; (m) evaluation; and (n) general considerations. The Conference expressed particular approval at the emphasis on the tripartite responsibility, i.e., of the fellow, of the government, and of the Organization, in relation to each fellowship.

The resolution adopted by the Conference congratulated the Director on the report; asked him to continue broadening the program and coordinating it with those of other organizations; requested that he study the possibility of special types of fellowships for high officials which would include greater facilities, in accordance with the rank of such officials; recommended to the governments that they draw up their fellowship programs in advance, in accordance with national needs, that they adopt the most appropriate procedures for the proper selection of candidates, that they make available to the fellows the necessary means to enable them to complete their studies effectively, and without anxiety, and that, on completion of their training, fellows be given an appropriate position that will ensure the utilization of their knowledge in the best interest of public health; and asked that the Director put into practice the necessary measures for a continuing evaluation of the fellowship program.

TABLE XXIII. FELLOWSHIP FUNDS IN THE AMERICAS, 1957 AND 1958<sup>a</sup>

Year	Total	PAHO			WHO	
		Regular	Special Malaria Fund	Other	Regular	Technical Assistance
1957	\$760,470	72,689	103,462	6,666	245,417	332,236
1958	\$909,840	155,395	206,610	7,590	393,420	146,825

<sup>a</sup> Calendar year.

TABLE XXIV FELLOWSHIPS AWARDED IN THE AMERICAS AND FELLOWS ARRIVING FROM OTHER REGIONS, BY COUNTRY OF ORIGIN AND OF STUDY, 1958<sup>a</sup>

Country of origin of fellow	Country of study in the Americas																			Other region of study									
	Argentina	Bolivia	Brazil	Canada	Chile	Colombia	Costa Rica	Cuba	Dominican Republic	Ecuador	El Salvador	Guatemala	Haiti	Honduras	Mexico	Nicaragua	Panama	Paraguay	Peru	United States	Uruguay	Venezuela	British Territories	Depts. of France in America	Surinam and Netherlands Antilles	Western Pacific	European	Eastern Mediterranean	South East Asia
Total fellowships <sup>b</sup>	6	—	102	6	52	9	11	—	—	3	33	42	1	20	149	—	18	2	19	119	—	96	49	4	4	1	17	2	2
Total, Region of the Americas	560																												
Argentina	50	—	11	1	17	1	1	—	—	1	—	2	—	—	5	—	2	—	2	9	—	3	—	—	—	—	1	—	—
Bolivia	22	—	3	—	—	—	—	—	—	1	—	—	—	—	10	—	—	—	2	2	—	12	—	—	—	—	—	—	—
Brazil	65	—	15	—	—	—	—	—	—	1	11	7	—	—	32	—	1	2	1	11	—	17	1	—	—	—	4	1	—
Canada	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chile	23	—	3	—	—	2	—	—	—	—	—	2	—	—	1	—	—	—	—	15	—	—	—	—	—	—	7	—	—
Colombia	66	2	8	—	4	—	—	—	—	—	2	—	—	42	—	—	3	—	4	3	—	42	2	—	—	—	—	—	—
Costa Rica	10	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—	—	1	—	1	—	—	—	—	—	—	—
Cuba	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dominican Republic	5	—	2	—	—	—	—	—	—	—	1	—	—	—	2	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Ecuador	9	—	—	—	1	—	—	—	—	—	1	—	—	—	2	—	1	—	2	2	—	—	—	—	—	—	—	—	—
El Salvador	11	—	—	—	—	—	—	—	—	—	1	3	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Guatemala	21	—	6	—	—	—	—	—	—	—	—	—	—	—	3	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Haiti	8	—	1	—	—	—	—	—	—	—	1	1	—	—	4	—	—	—	—	1	—	1	—	—	—	—	—	—	—
Honduras	12	—	—	—	1	—	—	—	—	—	4	5	—	—	3	—	—	—	—	2	—	1	—	—	—	—	—	—	—
Mexico	51	2	10	—	6	3	—	—	—	—	2	—	—	—	—	—	2	—	1	26	—	5	—	—	—	—	2	—	1
Nicaragua	9	—	—	—	—	—	—	—	—	—	1	3	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—
Panama	27	—	7	—	1	—	—	—	—	—	1	3	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—
Paraguay	21	—	5	—	7	—	—	—	—	—	1	1	—	—	4	—	1	—	2	3	—	2	—	—	—	—	—	—	—
Peru	46	1	13	—	8	2	3	—	—	—	3	3	—	—	10	—	2	—	—	9	—	7	1	—	—	—	—	—	—
United States	4	1	4	—	2	—	1	—	—	—	—	—	—	—	1	—	1	—	2	—	—	1	—	—	—	1	2	1	1
Uruguay	11	—	2	—	4	—	—	—	—	—	—	2	—	—	2	—	—	—	—	2	—	—	—	—	—	—	—	—	—
Venezuela	15	—	7	—	1	—	—	—	—	—	3	3	—	—	5	—	—	—	3	4	—	—	—	—	—	—	—	—	—
British Territories	62	—	4	—	—	—	—	—	—	—	1	2	—	—	6	—	1	—	—	22	—	2	37	4	—	—	—	—	—
Depts. of France in the Americas	5	—	—	4	—	1	—	—	—	—	1	1	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Surinam and Netherlands Antilles	5	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total other Regions	144	—	6	15	1	—	—	—	—	1	—	5	—	—	8	—	—	—	—	126	1	1	9	—	—	—	—	—	—

<sup>a</sup> Corresponds to the period December 1, 1957–November 30, 1958. <sup>b</sup> May not coincide with totals by country or region of study since some fellowships are awarded for study in several countries.

TABLE XXV. FIELD OF STUDY, PROJECT NUMBER, NAMES, PLACES AND DATES OF COURSES AND SEMINARS ORGANIZED OR ASSISTED BY PAHO/WHO IN 1958\*

Field of study and project number	Course, seminar or visit	Place	Date
Public health administration AMRO-142.1	Course on medical and biological aspects of radiation	Puerto Rico	Oct. 7-15, 1958
Sanitation AMRO-1	Environmental sanitation training: Two courses for sanitary inspectors	University of São Paulo, Brazil	Feb.-Dec., 1958
AMRO-17.4	Course for sanitary engineers	Chile	June-Dec., 1958
Nursing AMRO-46.5	Waterworks training course	Chile	March-Dec., 1958
Guatemala-6		Trinidad	April 14-May 3, 1958
AMRO-28 (for Chile-29)	Workshop on nursing surveys	Bahia, Brazil	July 6-16, 1958
El Salvador-5	Course for instructors and course for nursing auxiliaries	Guatemala	Nov. 1958-Oct. 1959
Colombia-4	Advanced nursing education	University of Chile	March-Dec., 1958
Other health services AMRO-72	Visit made by one nurse	Health Demonstration Area, El Salvador	Aug. 1-Sept. 15, 1958
AMRO-10	Course in public health nursing	School of Hygiene, Colombia	Jan.-Dec., 1958
AMRO-85.4	Public health dentistry course	University of São Paulo, Brazil	Feb. 1958-Jan. 1959
Communicable diseases AMRO-114	Inter-American program for education in biostatistics	University of Chile	March-Dec., 1958
AMRO-127	Classification of diseases course	Caracas, Venezuela	May 19-31, 1958
AMRO-128.1	Malaria eradication: Two courses for sector chiefs	Mexico	April-June, 1958 Sept.-Dec., 1958
AMRO-128.2	Two courses for physicians and engineers	Mexico	Feb.-June, 1958 July-Oct., 1958
AMRO-128.3	Course on administrative methods and practices	Honduras	Oct. 20-31, 1958
AMRO-134	Course on vehicle management and maintenance	Peru	April 7-19, 1958
AMRO-137.1	Course on vehicle management and maintenance	Honduras	April 21-May 3, 1958
AMRO-137.2	Course on vehicle management and maintenance	Trinidad	Aug. 11-23, 1958
	Course of physicians, engineers and entomologists	Jamaica	Aug.-Oct., 1958
	Course for sanitarians	Jamaica	Sept.-Nov., 1958
	Medical entomology (course oriented towards malaria)	University of São Paulo, Brazil	Aug. 1958-Jan. 1959
	Course on malaria eradication techniques	São Paulo, Brazil	Nov. 17, 1958-Feb. 14, 1959

TABLE XXV.—Continued

Field of study and project number	Course, seminar or visit	Place	Date
AMRO-192	Course on entomology for auxiliary personnel	Panama and El Salvador	Oct. 6–Nov. 14, 1958
AMRO-61	Regional rabies training course	Guatemala	Sept. 28–Oct. 11, 1958
AMRO-81	Visits made by five fellows to Pan American Zoonoses Center	Azul, Argentina	Dec. 1 1957–Nov. 30, 1958
AMRO-77.10	Tenth course of the Pan American Foot-and-Mouth Disease Center	Rio de Janeiro, Brazil	May 12–June 20, 1958
AMRO-92	Courses on virus techniques	Mexico	Jan. 19–Feb. 4, 1958
AMRO-149	Leprosy seminar	Belo Horizonte, Brazil	June 30–July 7, 1958
Medical science and education			
AMRO-18	Seminar on teaching of medical statistics	San Luis Potosi, Mexico	Aug. 11–15, 1958
AMRO-166	South American conference on the teaching of medical statistics	São Paulo, Brazil	July 22–29, 1958

\* Corresponds to the period December 1, 1957–November 30, 1958.

# INFORMATION AND PUBLICATIONS

## Public Information

During 1958 closer contacts were developed with the press, radio, television, and local and international magazines, which provided the Organization with valuable publicity in making its objectives and accomplishments better known. International wire-service coverage and interest in Hemisphere health news was encouragingly greater than in previous years.

Press releases generally received good coverage, and the press independently developed and published other stories on the work of the Organization as a result of this heightened interest.

More than 1,000 photographs of PASB/WHO Headquarters and field operations were placed with free-lance writers, professional and lay magazines, text-book authors and publishing houses, civic groups, teachers, health administrations, health educators, and persons wishing to use them for illustration and demonstration purposes.

Toward the close of the year a policy of holding more press conferences was established. A conference, arranged for a group of virologists studying poliovaccine production in the Americas under WHO fellowships, was well attended by representatives of large newspapers and the wire services.

Taped interviews gave continent-wide coverage in English, Spanish, and Portuguese to the Pan American Sanitary Conference, the World Health Assembly, Executive Committee Meetings, and speeches and talks by Bureau officials. These recordings reached large audiences in all countries of the Hemisphere, as they went out over local stations as well as national networks, the United Nations Radio System, and the Voice of America.

The Bureau worked with a local university and a television producer-announcer in producing 16 half-hour TV programs on international health work. The series was

selected by the Educational Radio and Television Center of Ann Arbor, Michigan for kinescoping and circulation during the next three years to some 40 educational television stations in the United States. This assures the series will reach millions of viewers in this country during the next few years.

With the help of the United Nations Information Center in Washington, D. C., and the Center for Mass Communications of Columbia University, New York, an arrangement was made for 100 showings of films on PAHO/WHO programs before civic and professional groups, schools and universities, and over various local television stations.

Assistance was given to groups in the United States and Canada in locating lecturers on the work of the Organization. These speakers included Bureau staff members and present and former members of WHO Expert Committees. The Bureau furnished information material and films to supplement the speakers' presentations.

The observance of World Health Day in 1958 was very successful. Leading newspapers throughout the Americas gave it full coverage in news stories, feature stories, and editorials. The ministries of public health and other governmental agencies, both national and local, private foundations, and hundreds of civic groups helped in organizing the observance.

Production of the Spanish edition of WHO's bi-monthly magazine *World Health*—which appeared in its present format for the first time with May/June 10th Anniversary issue—was transferred to Geneva. Only the Portuguese edition is now produced in this Hemisphere. Circulation of this last edition rose to 5,500 in 1958, an increase of 1,000 over the 1957 figures. Current circulation in the Hemisphere's other languages are: Spanish 21,000; English 20,000; and French 2,200.

In 1958 the Bureau mailed more than 3,000 information kits on PASB/WHO to individuals who requested them. An estimated 200,000 pieces of information material were distributed through the mails, national health services, Bureau Zone Offices, and during the display of exhibits.

### Visual Aids

The Organization concentrated on using more communications materials within program activities in 1958, particularly in connection with malaria eradication. Wide distribution of PAHO exhibits was effected through 62 showings in the Hemisphere. They were displayed at the Pennsylvania Railroad Station in Philadelphia, Pennsylvania; important functions; centers, such as schools of medicine and public health; the Annual Meeting of the American Medical Association, San Francisco, California; the Eleventh World Health Assembly, Minneapolis, Minnesota; and the XV Pan American Sanitary Conference, San Juan, Puerto Rico.

Ninety-six exhibit overlay panels were prepared and 48 were supplied to PAHO Zone Offices. A special exhibit and pamphlet on environmental sanitation, highlighting the need for community water supply, were prepared for the AIDIS Conference in Puerto Rico and then circulated among the countries of Central America. It was shown again at the XV Pan American Sanitary Conference and forwarded to Mexico for display at several places. Duplicate exhibits were prepared for Zones IV and VI. The results of a pediatric education study, prepared in display form, were shown in the Zones. The National Health Education Service of Brazil kept a PASB exhibit as a part of its travelling display throughout the year.

### Publications

In the field of publications, the monthly *Boletín* of the Pan American Sanitary Bureau entered its 37th year. Its press run has been increased progressively to a total of 8,400 copies per issue. In 1958 it published 79 articles. In addition, summaries of 274 articles on medicine and public health, published in other specialized journals, appeared in this PASB publication. The *Boletín* has increased its attention to PASB/WHO technical activities by publishing more detailed reports on them.

The Spanish edition of the PAHO *Quarterly*, entitled *Informaciones de la OPS*, was published for the first time in April. This semi-technical publication, which has appeared in English since January 1956, furnished information on Bureau programs and other activities to public health agencies, teaching centers, the press, and other interested groups and individuals. The editions are printed in 1,000 copies in each language. *The Weekly Epidemiological Report*, the quarterly *Health Statistics*, and the *Monthly Calendar of Selected International Meetings* continued to appear regularly. A bi-monthly bulletin, *Erradicación de la Malaria*, prepared

under the technical supervision of the Malaria Eradication office, is designed to keep PASB staff in antimalaria programs abreast of technical and administrative developments. This publication first appeared in January 1958 in 500 copies.

As in previous years, the Bureau continued to publish the series of Official Documents of PAHO: *Proposed Program and Budget*; *Annual Report of the Director* and *Quadrennial Report of the Director*; and *Financial Report of the Director and Report of the External Auditor*. The *Proceedings* of the X Meeting of the Directing Council also appeared.

The Publications Committee met twice in 1958 to determine the program of scientific publications for the year, and to evaluate the scientific literature published by the Bureau. Publications issued by the Bureau in 1958 are listed in Table XXVI. The Zone Offices, as usual, assisted in the distribution of these publications so that they will reach a greater number of interested persons. Not including public information materials already mentioned, the number of publications distributed amounted to 183,518 copies, an increase of 36,933 copies as compared with the previous year.

### Conference and Language Services

Secretariat services were furnished to meetings of the Governing Bodies of the Organization, seminars, and other meetings. These services included translation, interpreting, the editing and processing of documents, the preparation of minutes and final reports, and the editing of the proceedings of conferences and meetings.

The staff worked on the planning and operation of the XV Pan American Sanitary Conference, in collaboration with a committee appointed by the United States Government and with the authorities of the Commonwealth of Puerto Rico. This and the organization of the three meetings of the Executive Committee were the main tasks in 1958.

In addition, secretariat services were furnished for the II Meeting of Directors of National Malaria Eradication Services (NMES) of South America (Lima, Peru, in April), the VI Meeting of Directors of NMES of Mexico, Central America, and Panama (Mexico City, Mexico, in April) the Seminar on the Susceptibility of Insects to Insecticides (Panama City, Panama, in June), and the IX Meeting of the Council of INCAP (San Salvador, El Salvador, in December). Staff members provided secretariat services at the 16th Annual Meeting of the U. S.-Mexico Border Public Health Association (El Paso, Texas, in April), and the Seminar on Leprosy Control (Belo Horizonte, Brazil, in July). Collaboration was also given in connection with the Eleventh World Health Assembly at Minneapolis, Minnesota, in May. The Conference on the Inter-American Exchange of Persons, organized by the Organization of American States and the Institute of International Education, and the Training Course on Public Health Aspects of Radiation, both



held at San Juan, Puerto Rico in October, were furnished assistance.

## Library

The Headquarters Library is composed of two principal units—processing and reference. In addition to supplying answers to simple inquiries, the Library carries out research

in a wide range of topics. Bibliographies on different subjects are compiled; films and film strips are obtained for use in training programs and symposia. In 1958 the Library initiated arrangements whereby films and other audio-visual materials will be placed in the Pan American Zoonoses Center in Azul, Argentina. It also continued to prepare the section on public health in the "Revista Interamericana de Bibliografía" and the section "Biblioteca" for the *Boletín*.

TABLE XXVI. PUBLICATIONS ISSUED IN 1958

Serial Number	Title	Number of pages	Number of copies
<i>1. Official Documents</i>			
22	X Reunión del Consejo Directivo de la OSPA (Actas, Resoluciones y Documentos)	307	1,000
22	X Meeting of the Directing Council of the PASO (Minutes, Resolutions, Documents)	295	1,000
23	Documentos Básicos de la Organización Panamericana de la Salud (3a edición) (in press)	87	600
23	Basic Documents of the Pan American Health Organization (3rd edition) (in press)	83	400
24	Proyectos de Programa y Presupuesto: OMS, Región de las Américas, 1960; OSPA, Anteproyecto, 1960	271	550
24	Proposed Program and Budget Estimates: WHO, Region of the Americas, 1960; PASO, Provisional Draft, 1960	271	535
25	Informe Cuadrienal (1954-1957) e Informe Anual (1957) del Director de la Oficina Sanitaria Panamericana	256	2,000
25	Quadrennial Report (1954-1957) and Annual Report (1957) of the Director of the Pan American Sanitary Bureau	238	2,000
26	Informe Financiero del Director e Informe del Auditor Externo, 1957	46	600
26	Financial Report of the Director and Report of the External Auditor, 1957	46	600
<i>2. Scientific Publications</i>			
34	Lista de Categorías Tomada del Manual de la Clasificación Estadística Internacional de Enfermedades, Traumatismos y Causas de Defunción	19	10,000
34	List of Categories Taken from the Manual of International Statistical Classification of Diseases, Injuries, and Causes of Death	19	500

TABLE XXVI—CONTINUED

Serial Number	Title	Number of pages	Number of copies
35	Informe de la Primera Reunión del Grupo Mixto OMS/FAO de Expertos en las Zoonosis (Serie de Informes Técnicos de la OMS, No. 40)	45	2,000
36	Seminarios sobre Diarreas Infantiles	46	1,500
37	Casos Notificados de Enfermedades de Declaración Obligatoria en las Américas, 1946-1955	44	2,000
38	Reported Cases of Notifiable Diseases in the Americas, 1946-1955	44	2,000
39	Procedimiento para la Investigación de los Brotes de Enfermedades Transmitidas por los Alimentos	36	3,000
40	Resumen de los Informes Cuadriennales sobre las Condiciones Sanitarias en las Américas	127	2,000
40	Summary of Four-Year Reports on Health Conditions in the Americas	123	2,000
<i>3. Miscellaneous Publications</i>			
42	"Yellow Fever—Unfinished Business"	8	5,000
43	"Agua—Llave del Progreso Urbano e Industrial y de la Salud de las Américas"	8	5,000
44	Informe Anual del Centro Panamericano de Fiebre Aftosa, 1957 (in press)	30	500
45	Annual Report of the Pan American Foot-and-Mouth Disease Center, 1957 (in press)	30	300
46	Relatório Anual do Centro Pan Americano de Febre Aftosa, 1957 (in press)	30	500
47	XVI Curso Internacional de Malaria y otras Enfermedades Metaxénicas	13	600
<i>4. Other Publications</i>			
—	"Estuche de Laboratorio para la Leptospirosis" (includes report No. 113 of the WHO Technical Reports Series)	21	100

# ORGANIZATIONAL MEETINGS AND TRANSACTIONS

The Governing Bodies of the Organization held the following meetings in 1958: XV Pan American Sanitary Conference, and 34th, 35th, and 36th Meetings of the Executive Committee.

## **XV Pan American Sanitary Conference**

The XV Pan American Sanitary Conference, X Meeting of the Regional Committee of WHO, was held in San Juan, Puerto Rico, in accordance with Resolution XXXVIII of the XIV Conference, which accepted the invitation extended by the Government of the United States at the request of the Commonwealth of Puerto Rico.

The sessions of the Conference took place at the Hotel San Juan Intercontinental from September 21 to October 3. With the exception of Bolivia and the Dominican Republic, all member countries were represented, as were France, the Kingdom of the Netherlands, and the United Kingdom. Canada sent an official observer. Also attending were the Director-General of WHO and the Assistant Director-General, Department of Administration and Finance. Observers were present from the Organization of American States, the United Nations, the Technical Assistance Board, UNICEF, the International Committee on Military Medicine and Pharmacy, the Inter-American Child Institute,

and 12 non-governmental organizations. The inaugural session was held on September 21. Dr. Guillermo Arbona, Secretary of Health of the Commonwealth of Puerto Rico, was elected President of the Conference.

The Conference held a preliminary session, an inaugural session, 15 plenary sessions, three sessions of the Committee on Credentials, nine of the General Committee, six sessions of Committee I, and six sessions of Committee II. Forty resolutions were adopted in plenary session.

The topics discussed and resolutions adopted are summarized below.

### *Annual Report of the Chairman of the Executive Committee*

Mr. Humberto Olivero, delegate of Guatemala and Chairman of the 33rd, 34th, and 35th Meetings of the Executive Committee, presented the report on the activities of that Governing Body during the period September 1957 to September 1958.

The report described the topics discussed and resolutions approved during the meetings, with reference to both content and planning of PAHO programs and the establishment of work methods.

The Conference approved the report and congratulated the Chairman and the members of the Committee on the work accomplished.



The San Juan Intercontinental Hotel, San Juan, Puerto Rico, site of the XV Pan American Sanitary Conference, September 21-October 6

#### *Quadrennial Report and Annual Report of the Director*

The Director presented to the Conference the four-year report on the activities carried out since the XIV Pan American Sanitary Conference, together with the annual report for 1957.

The two reports, published in a single volume (Official Document No. 25), reflected the continuous strengthening and expansion of the international public health work directed by the Pan American Sanitary Bureau or conducted with its cooperation.

The Conference examined in detail and approved these reports, which described the work carried out in the fields of communicable diseases, public health administration, and education and training.

#### *Financial Matters*

The program and budget of the Pan American Health Organization for 1959 was approved in the amount of \$3,600,000, out of which \$2,106,374 are for "Field and Other Programs."

The Conference also resolved to transmit to the Director-General of WHO the proposed program and budget of WHO for the Region of the Americas for 1960 in the amount of \$1,720,810, and recommended that in future programs special attention be given to the activities of public health administration, environmental sanitation, training of personnel, maternal and child health, and tuberculosis.

The Conference took note of the provisional draft of the

proposed program and budget of PAHO for 1960, amounting to \$4,100,000.

It also approved the Financial Report of the Director and Report of the External Auditor for 1957, and took note of the reports on the collection of quota contributions and on the Emergency Revolving Fund.

#### *Amendments to the Constitution and Other Basic Documents*

The Conference studied in detail the amendments to the Constitution proposed by the Executive Committee and agreed: to replace the name "*Pan American Sanitary Organization*" by "*Pan American Health Organization*"; that each year, at the first meeting of the Executive Committee following the election of its new members, the Committee shall elect from among its members a Chairman and Vice-Chairman, who shall hold office until their successors are elected; and that in the future the Executive Committee shall submit to the Conference or to the Directing Council the proposed budget prepared by the Director, with such recommendations as the Committee deems advisable.

It was agreed to instruct the Executive Committee to undertake, with legal counsel, a thorough study of the Constitution of the Organization and the Rules of Procedure of the Conference, in order that it may prepare suggestions for improving their clarity and the equivalence of meaning between the English and the Spanish texts. The Committee was also instructed to present a proposal to the XIII Meeting of the Directing Council on the procedure governing the election of the Director.

#### *Eradication Programs*

The Conference gave special attention to the eradication programs being carried out in the Americas. The following three were examined as separate topics on the agenda:

**Aedes aegypti Eradication.** The fifth plenary session was devoted to the study of this topic. In his introductory statement the Director pointed out how important it is that the continent-wide eradication program be completed as soon as possible so as to keep costs at a minimum and prevent reinfestation of areas already clean. It is therefore highly advantageous that now, and in the next two or three years, all efforts be intensified and all the required financial resources mustered in order to bring this campaign to completion.

Reports were then presented by the delegates of Brazil, Ecuador, Paraguay, Peru, Chile, Guatemala, Uruguay, Colombia, Panama, El Salvador, Argentina, Venezuela, Honduras, United Kingdom, and Nicaragua on the status of the campaign in their respective countries and territories.

**Malaria Eradication.** This topic was examined at three plenary sessions of the Conference. Reports were presented by the delegates of Brazil, Mexico, Venezuela, Colombia, Costa Rica, Ecuador, Peru, Paraguay, the United Kingdom, Haiti, the United States, Guatemala, Chile, Panama,

Nicaragua, France, Honduras, El Salvador, Argentina, and the Kingdom of the Netherlands. A statement was made also by Mr. Davée, Director of the UNICEF Regional Office for the Americas.

The Conference expressed its satisfaction with the work carried out; expressed its appreciation to UNICEF and to the United States International Cooperation Administration for the assistance provided for the development of the continent-wide eradication program; expressed its appreciation to the Governments of Venezuela, Haiti, the United States, and the Dominican Republic for their voluntary contributions to the Special Malaria Fund of PAHO; recognized the importance of international collaboration for the success of the program; and expressed its appreciation to Brazil, Mexico, Venezuela, Guatemala, and Jamaica for their effective cooperation in the training of personnel for the campaign.

**Smallpox Eradication.** Considering the fact that smallpox is still an important public health problem in some countries of the Americas, the Conference declared the eradication of smallpox to be a public health necessity that urgently requires the attention of all countries of the Hemisphere, and urged that the governments of countries where smallpox still exists to carry out nationwide plans for the eradication of this disease.

The Conference also requested the cooperation of Member Governments in supplying smallpox vaccine and technical advice and recommended that the Pan American Sanitary Bureau: 1) take all necessary measures to achieve eradication on a continent-wide scale; and 2) undertake the necessary studies to establish a definition of eradication suitable for uniform application in the different countries.

#### *Election of the Director*

The Conference elected Dr. Abraham Horwitz Director of the Pan American Sanitary Bureau for a period of four years to begin February 1, 1959. It also agreed to apprise the Executive Board of the World Health Organization of the designation of Dr. Horwitz, for appointment as Regional Director for the Americas.

#### *Designation of Dr. Soper as Director Emeritus*

Recognizing that the work done by Dr. Fred L. Soper as head of the Pan American Sanitary Bureau, since his initial appointment in 1947, deserves the gratitude, affection, and admiration of all countries of the Hemisphere, the Conference resolved: 1) to declare Dr. Soper Director Emeritus of the Pan American Sanitary Bureau; 2) to recommend to the XI Meeting of the Directing Council that, in an official ceremony, it present to Dr. Soper a scroll in which that designation is recorded; and 3) present to Dr. Soper a gold medal, the obverse of which will bear his likeness and the reverse will bear an inscription reading "Fred L. Soper, Director of the Pan American Sanitary

Bureau, 1947-1959," in the center, encircled by the words "In recognition of his work in behalf of continental health."

#### *Election of Three Member Countries to Fill the Vacancies on the Executive Committee*

The Conference elected the Governments of Brazil, the United States of America, and Honduras to membership on the Executive Committee for a period of three years, on the termination of the periods of office of Nicaragua, Cuba, and Bolivia, and at the same time expressed its thanks to the governments of the latter three countries for the services rendered to the Organization by their representatives on the Committee.

#### *Technical Discussions*

The Conference took note of the report presented by Dr. Héctor Abad Gómez (Colombia), Rapporteur of the Technical Discussions on the topic, "The Prevention of Accidents in Childhood." These Discussions, to which the Conference devoted an entire day, were presided over by the Moderator, Dr. Félix Hurtado (Cuba). The introductory paper on the topic selected was presented by Dr. James L. Goddard, Chief of the Accident Prevention Program, United States Public Health Service.

After detailed study, the Conference also approved a set of rules to govern the Technical Discussions to be held in the future at meetings of the Conference and the Directing Council.

Finally, the Conference selected the general topic "Water" for the Technical Discussions to take place at the XI Meeting of the Directing Council, requesting the Executive Committee to determine the aspects of this general topic that should be examined.

#### *Organization and Work of INCAP*

The Director of the Institute of Nutrition of Central America and Panama presented in plenary session a report on the organization and work of that institution. Participating in the discussion on this topic were the delegates of Guatemala, Cuba, Peru, Argentina, Chile, the Kingdom of the Netherlands, Ecuador, Venezuela, Haiti, Colombia, Panama, El Salvador, Honduras, the United Kingdom, Costa Rica, Nicaragua, Uruguay, and Mexico, as well as the Director of the Pan American Sanitary Bureau.

The Conference congratulated the Director of INCAP on the work accomplished by the Institute, declared nutrition to be a fundamental public health problem in the countries of the Americas, and recommended to the Director of PASB that regional plans for the study of nutrition problems in countries having similar conditions be prepared and that the necessary technical advice be provided.

#### *Reports on Health Conditions in Member Countries*

The Conference deemed that the *Summary of Four-Year Reports on Health Conditions in the Americas* represented an obvious advance in providing data for the planning of national and international public health programs. In view of the need to continue the progress made in preparing such reports, several recommendations were made to the Member Governments for improving the statistical information which they furnish as the basis for the summary.

#### *Other Decisions*

Among other decisions taken by the Conference were the resolutions on the following: conduct of surveys on the incidence of endemic goiter and development of preventive campaigns; planning of programs to intensify early diagnosis of diabetes; approval of regional projects to be implemented in 1959 with funds of the United Nations Expanded Program of Technical Assistance; recommendation that PASB continue broadening the fellowship program; and acceptance, in principle, of the desirability of holding Inter-American Congresses of Public Health once every four years.

Note was taken of the report on the work done toward the establishment of minimum sanitation standards for hotels, restaurants, transportation facilities, and tourist centers. Also, the Director was instructed to include on the agenda of the XI Meeting of the Directing Council a topic on the problems arising from the advertising of medicinal products, and recommendations were made on the control of foods and drugs.

Finally, the Conference took note of the amendments to the Staff Rules of PASB, as approved by the Director and confirmed by the Executive Committee; made recommendations on new conditions of employment for personnel; took note of the Director's action in obtaining Zone Office accommodations; instructed the Director to continue negotiations with respect to a site for PASB Headquarters; and recommended to those member states that have not already done so that they establish a system of full-time employment for health personnel.

#### *The XVI Conference*

The XV Pan American Sanitary Conference accepted with appreciation the invitation of the Government of the Republic of Argentina to have the XVI Pan American Sanitary Conference held in the city of Buenos Aires in 1962.

#### **Meetings of the Executive Committee**

During 1958 the Executive Committee held its 34th, 35th, and 36th Meetings.

The 34th Meeting, held in Washington, D. C., May

15-20, was attended by representatives of Bolivia, Cuba, Guatemala, Mexico, Nicaragua, Peru, and Venezuela, and by observers from the Kingdom of the Netherlands, the United States, and the Organization of American States. Dr. M. G. Candau, Director-General of WHO, and Mr. M. P. Siegel, Assistant Director-General, were also present. Important recommendations on administrative and financial matters were adopted for transmittal to the XV Pan American Sanitary Conference, and the proposed budget of PAHO for 1959 was prepared.

The 35th Meeting took place in San Juan, Puerto Rico, September 17-18, with representatives of Cuba, Guatemala, Mexico, Nicaragua, and Venezuela attending. Two members, Bolivia and Peru, were absent. Observers were sent by France, the Kingdom of the Netherlands, Panama, the United Kingdom, and the United States. The meeting was devoted to the study of matters that were to be submitted to the Conference.

The 36th Meeting took place in San Juan, Puerto Rico,

on October 3, with representatives of Brazil, Guatemala, Honduras, Mexico, Peru, the United States, and Venezuela attending. Observers were sent by Chile, Colombia, France, the Kingdom of the Netherlands, and Panama. Dr. Carlos Díaz Coller (Mexico) was elected Chairman and Dr. Daniel Orellana (Venezuela) Vice-Chairman. The Committee gave special attention to the topics referred to it by the Conference, and in compliance with instructions from the Conference appointed a sub-committee, composed of the representatives of Brazil, Mexico, and the United States, to make a study of the Constitution of PAHO and the Rules of Procedure of the Conference. It was also agreed that the Permanent Sub-committee on Buildings and Installations would be composed of the representatives of Mexico, the United States, and Venezuela. Finally, it was decided that the Technical Discussions during the XI Meeting of the Directing Council will deal with the technical, financial, and administrative aspects of water supply in the urban environment in the Americas.

# ZONE AND FIELD OFFICES

The system of Zone and Field Offices provides an effective structure for carrying out the objectives of PAHO/WHO through close relationships and consultation with health authorities of Member Governments. It allows successful planning and implementation of programs, designed within available resources to meet health problems at the national, interzone, and regional levels. Activities are decentralized geographically and administratively through these offices.

The active program of organizational decentralization was undertaken by the Bureau in 1951. By 1952 six Zone and two Field Offices had been established. This structure remained the same until May 1, 1958, when the Field Office of the Caribbean at Kingston, Jamaica, was elevated to Zone Office status. With this change the Organization's activities in Venezuela were transferred to the jurisdiction of the new Zone I from that of Zone IV and the Zone I Office was moved to Caracas, Venezuela on July 1.

Headquarters is directly responsible for the activities in the United States and Canada, and supervises the activities of the Field Office established in El Paso.

Zone I includes Venezuela and lands in the Region not responsible for the conduct of their foreign affairs, with the exception of British Honduras. Zone II is responsible for activities in Cuba, the Dominican Republic, Haiti, and Mexico. Zone III serves Central America, including British Honduras, and Panama. Bolivia, Colombia, Ecuador, and Peru fall under Zone IV. Brazil is the jurisdiction of the Zone V Office. Zone VI includes Argentina, Chile, Paraguay, and Uruguay.

## *Field Office, El Paso*

The Field Office, El Paso (FEP) is making efforts to promote an improved and coordinated public health program along the 2,000 mile border between Mexico and the United States.

Permanent personnel consist of the medical officer, who is Chief of the Office; a rabies adviser; and two clerk stenographers. The addition of an administrative officer is anticipated in 1959.



The past year was one of transition as a result of the appointment of a new Chief at the end of 1957. Preparations were made for a considerable expansion of activities in 1959 and future years. A series of technical and administrative steps was taken to increase efficiency and utility of the Office for international public health activities along the frontier.

In 1958 FEP succeeded in establishing and developing close and harmonious working relations with public health officials of both countries at local, state, and federal levels, as well as with many voluntary and official organizations. The Office serves as permanent Secretariat of the United States-Mexico Border Public Health Association. It introduced various reforms in the Association's administration, organized its annual meeting in 1958, and initiated preparations for the 1959 meeting.

The Field Office, El Paso interzone program covers a wide range of activities, coordinating rabies control (AMRO-61), venereal disease control, and a border health survey (AMRO-107). It also covers education and training, a field in which FEP has attempted to stimulate new programs for the frontier area. Among them are the survey of needs and training resources in the area and the use of frontier health services for the field practice of PASB fellowship recipients.

### Zone I

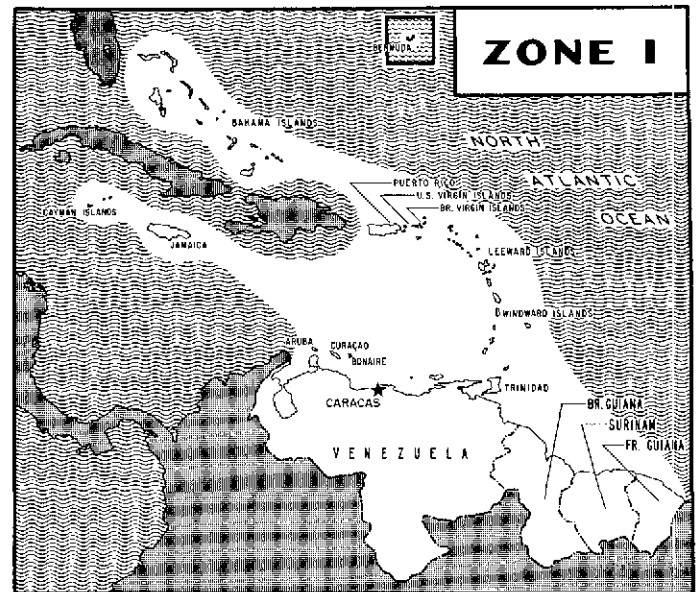
The Zone I Office serves a total of 26 widely separated health departments. Efforts of the Zone concentrated on the collaboration with governments in programs of control and eradication of communicable diseases, environmental sanitation, and basic health services, as well as in the expansion and improvement of auxiliary and professional education.

The most important event concerning technical aspects of malaria eradication was the discovery of resistance to dieldrin of *A. aquasalis* in Trinidad and of *A. albimanus* in Jamaica. However, these two species of anophelines have been found susceptible to DDT, which has been applied in both islands since the end of World War II.

Two courses for sanitarians and two for senior officials were completed at the Malaria Eradication Training Center in Jamaica. The Center is a cooperative effort of the Government of Jamaica, PASB/WHO, and ICA.

The campaign of *Aedes aegypti* eradication is progressing in the area according to previous estimates. Negativity was maintained in French Guiana, British Guiana, Grenada, St. Croix, and Nevis. St. Vincent and Bonaire apparently became negative during 1958, but no formal confirmation has yet been given by the Organization.

An agreement was signed early in 1958 between Venezuela and PASB/WHO regarding an *Aedes aegypti* eradication program. Beginning July 1, funds for the new expansion program were appropriated. Preparatory work began in July including training of personnel, purchasing of supplies



and equipment, a survey of a position in various parts of the country, and plans for the future. On the international side of the program, consultants were provided, as were vehicles. Expanded operations are scheduled to begin in Venezuela in January 1959.

Yaws eradication activities continued in the Caribbean area under the intercountry project AMRO-47. Mass phases of the campaigns in Dominica, St. Lucia, and Trinidad-Tobago, covering a population of 917,900, were finished in 1958. Adding this to the population of the British Virgin Islands, St. Kitts-Nevis-Anguilla, St. Vincent, and Grenada gives a total of 1,153,660 inhabitants covered since 1956.

It is hoped that the project will expand to other areas of the Zone where yaws is known to exist. Surveys are necessary to evaluate the magnitude of the problem and to decide what measures should be taken to attain eradication of the disease from the Caribbean.

Mass programs of BCG vaccination have been completed in Barbados, British Guiana, Grenada, Jamaica, Surinam, St. Kitts-Nevis-Anguilla, and Trinidad-Tobago.

The Seminar on Leprosy Control in Belo Horizonte, Brazil was attended by professionals from Jamaica, Trinidad, British Guiana, Martinique, French Guiana, Surinam, and Venezuela. Three medical officers on PASB/WHO fellowships from the leprosy service of Jamaica visited Brazil, Surinam, and Venezuela to observe the campaigns in these countries.

The environmental sanitation project AMRO-95 serves French Guiana, British Guiana, Surinam, and the British, French, and Dutch islands of the Greater and Lesser Antilles. Its activities are concerned with water supply, sewage disposal, insect control, refuse disposal, housing, and other environmental factors. Sanitation surveys were carried out in 1958 at the request of the Governments of the British Virgin Islands, British Guiana, and Montserrat. Meeting



requests from the various governments for advice on sanitation problems is one of the most valuable services provided by AMRO-95 consultants.

A refresher course for waterworks operators of the British territories in the Caribbean was held in Port of Spain, Trinidad with the cooperation of the Government of Trinidad. The course resulted in increased knowledge of water-supply problems. One of the territories has already set up a laboratory using modern techniques for bacterial analysis of water. Another territory has expressed interest in setting up a similar laboratory and has requested assistance from PASB/WHO in training a technician.

As part of the integrated health services, jointly assisted programs in maternal and child health are in progress in Barbados, French Guiana, Trinidad-Tobago, and Venezuela. Nursing services are developing and expanding throughout the Zone. In Venezuela the expansion of services has far outstripped the supply of nursing personnel. In other fields attention was given to dental health, mental health, and hospital and medical care during the year.

In education and training, considerable interest in the collaboration of the Organization was shown by the medical schools of Venezuela. This country now has four schools of medicine, and there is need for improvement of methods of teaching, unification of curricula, and general interchange of ideas among them. Since the Venezuelan nursing schools have been unable to keep pace with the rapid expansion of public health and medical services of the country, the Organization provided a nurse educator consultant for two months in late 1958 to collaborate in a survey and to advise on the betterment of those schools.

Fellowships represented a substantial part of services to countries during the year. More than 90 awards were made in a wide range of fields, including maternal and child health, veterinary public health, radiation, and medical education.

## Zone II

The malaria eradication program in the Dominican Republic, Haiti, and Mexico continued to demand major attention of the Zone Office. A plan has been drawn up for a survey on the extent of malaria in Cuba. At the request of the Government of Haiti, the Bureau assumed direct responsibility for execution of the eradication program in that country. The Sixth Annual Meeting of the Directors of the National Malaria Eradication Services of Central America, Panama, and Mexico was held in Mexico City, in April 1958.

Approximately three and one-half million houses were sprayed in 1958 in the Mexican malaria eradication campaign. An event of great importance for the future of the program is the discovery of *Anopheles pseudopunctipennis* resistance to dieldrin in several parts of the country.

After eight years of work, eradication of yaws in Haiti is almost a reality. Less than 1,500 infectious cases were

found in the last survey. All present efforts are directed and concentrated on locating these cases. It is anticipated that yaws can be declared eradicated in Haiti by the end of 1959. In the Dominican Republic the number of cases and contacts treated has surpassed all expectations and at the end of 1958 totaled more than 300,000.

Smallpox was eradicated in Mexico in 1952, while in Cuba, the Dominican Republic, and Haiti no cases have been reported for about 20 years. Nevertheless the Zone Office has promoted anti-smallpox vaccination in the four countries. A high degree of interaction has been achieved. Cuba gave the Zone Office 500,000 doses of glycerinated vaccine to use in the vaccination program in Haiti. Mexico gave the Zone Office 5,000,000 doses, and Venezuela also contributed.

Control of other communicable diseases is receiving attention. Haiti and Mexico have shown strong interest in the preparation of national programs for tuberculosis control. PASB/WHO has contributed to this development by affording an interchange of ideas through technicians and by offering training opportunities abroad. A BCG vaccination campaign of national proportions was initiated in the Dominican Republic at the end of the year with the collaboration of the Organization and UNICEF. Venereal diseases continue to be a major concern in the field of communicable diseases. Mexico offers training facilities in field programs for public health officials from other countries of the Americas. The Dominican Republic is reorganizing all venereal diseases control services in the country in accordance with a "National Plan of Venereal Diseases Control 1958-1962," prepared with the collaboration of the Bureau consultant in the Dominican Republic.

The Zone Office has cooperated with national health administrations in the strengthening of their basic structures, including planning, operations, organization, and training. A National Planning Office has been established in Haiti. The Bureau consultant collaborates with the Ministry of Public Health and Population in the planning of health activities in the country. Round tables of national and international technical personnel are used to resolve problems. Mexico has put emphasis on training in the field of health administration, giving many technicians who occupy key posts in the health administration of the country



the opportunity to study abroad. PASB/WHO is collaborating with the Dominican Republic on matters of planning. The Bureau participated in a Round Table on National Health Planning in Ciudad Trujillo at the beginning of the year. Key national public health personnel, international officials assigned to the country, and Zone Office and Headquarters staff participated in the discussions.

Education and training of health services personnel is an essential Zone activity. The Zone Office has divided education and training into nine categories: 1) medical schools; 2) nursing schools; 3) sanitary engineering; 4) School of Health of Mexico; 5) veterinary education; 6) fellowships and travel grants; 7) courses, round tables, and seminars; 8) the program for special malaria courses; and 9) arrangements and preparation of observation programs for visitors from other Zones.

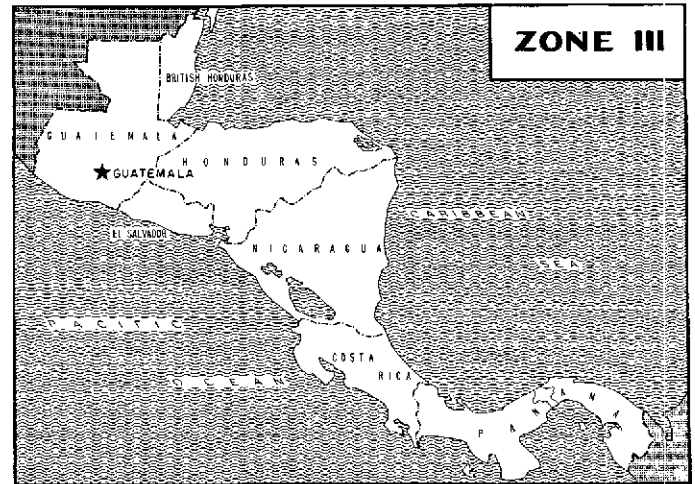
Fellowships and travel grants receive the greatest attention in the sphere of education and training. Other activities of great importance have been courses, round tables, and seminars, in which Zone international personnel have participated.

In respect to personnel and administration, 64 of 73 authorized posts for the Zone Office and projects were filled as of December 31, 1958. The impact of organizational decentralization on fiscal matters made itself felt early in the year, with a consequent increase of responsibility and work. Project activities and expenditures have continued to rise.

Close working relationships were maintained with the Specialized Agencies of the United Nations, especially UNICEF and the Technical Assistance Board. The new UNICEF Representative in Mexico extended his area of coverage in 1958 to include all the countries of Zone II. This UNICEF administrative arrangement is permitting a better solution of common problems. Coordination with ICA was maintained in Haiti. In the other three countries of the Zone, ICA has no health program. The Cooperative for American Remittances Everywhere (CARE) furnished important assistance by providing textbooks for the schools of medicine and nursing. Relations with CREFAL have been maintained, and cooperation with FAO has received a new stimulus through nutrition programs in Haiti and Mexico.

### Zone III

The Zone III Office continued to collaborate with the governments for improvement and strengthening of national health services, through cooperative programs for the establishment and development of local health services in demonstration areas. By uniting program and technical direction, an effort is made in each country to combat the most urgent health problems. After a reasonable time, the experience acquired will serve as a model for planning adoption and extension of such services. Programs of this



kind have been in operation for several years in Guatemala, El Salvador, Honduras, and Panama.

The process from installation of local health services in demonstration areas to their generalization throughout the country goes through five different stages: 1) establishing and organizing basic services; 2) consolidating and broadening established services, and regulating and increasing the local training program; 3) incorporating the specialities of the local services in national health planning; 4) reorganizing the national health services and, in most cases, restructuring the systems at central levels; and 5) consolidating the changes by legal provisions.

In 1958 the projects were directed toward the development of stage four. Efforts to improve structure and organization at central levels were made by El Salvador, Guatemala, Honduras, and Panama, where integrated health programs are in operation, and by British Honduras through advice of Zone Office personnel. The national personnel participated actively and effectively in all stages of reorganization of the central services as well as on planning specific programs for all levels. Guatemala, Honduras, Panama, and British Honduras are quite advanced in the formulation of long-term health programs, all of national scope.

The Government of Costa Rica requested the cooperation of the Bureau in evaluating its national health program. Personnel of the Zone Office worked with a team of consultants under special contract to evaluate the health services. The experience gained will be useful for planning evaluation of other programs in which the Bureau collaborates. At the end of the year the Health Demonstration Area program in El Salvador was being evaluated.

Governments continued to give high priority to their malaria eradication programs. The countries of the Zone have an area of 538,569 square kilometers, of which 437,262 are considered malarious areas and contain 6,609,640 inhabitants, or 57 per cent of the total population of the area. At the end of the year El Salvador and Guatemala were developing their third year of coverage with insecticide, British Honduras terminated its second year, Costa

Rica and Panama were in their second year, and Honduras was concluding its first year. Nicaragua initiated its first spraying. In 1958, anopheles resistance to insecticides was reported in several countries of Central America. Investigations led to the discovery of strains of *A. albimanus* physiological resistance to dieldrin in El Salvador (in six localities); Guatemala (in four localities); and Nicaragua (in six localities). Resistance to DDT was also found in El Salvador (in three localities).

Technical advisory services on malaria were intensified. The rolls of national malaria personnel were being filled in all countries. Of the fellowships awarded in the Zone, 38 per cent were used for training in different aspects of malaria eradication. The national directors of the programs, and their international counterparts, attended the annual meeting held in Mexico City.

Since 1956, no presence of *A. aegypti* has been recorded in Zone III. Nicaragua, Panama, the Canal Zone, and British Honduras have been declared free of the mosquito. Final verification was concluded in Guatemala and was in process in El Salvador and Honduras at the end of the year. It is hoped that in 1959 *Aedes aegypti* can be declared eradicated from those countries.

Tuberculosis continues to be given a high priority by the countries of the Zone. BCG vaccinations were carried on in Guatemala and Honduras. The campaign in Guatemala started in July 1956 and ended in July 1958, with 2,286,940 persons tuberculin tested, and 1,250,551 vaccinated. The campaign in Honduras began in June 1957. By the end of 1958 approximately three-quarters of a million persons were tested and almost half a million were vaccinated.

As a consequence of an outbreak of poliomyelitis in Nicaragua, mainly in the city of Managua, the government requested participation in the experimental studies fostered by the Bureau on oral vaccine with attenuated live polio viruses. Technical advisory services as well as the vaccine and laboratory materials were provided. In September 1958 the administration of the oral vaccine to children under 10 years of age in Managua was begun and the program was continuing as the year ended.

Special attention was given in 1958 to technical problems, organization of services, and training of personnel connected with zoonoses and veterinary public health. Nicaragua and El Salvador established special services at central levels, and local activities were started in Guatemala and Panama. National programs were broadened in Costa Rica, Guatemala, and Panama, with a substantial increase of veterinarians and auxiliary personnel.

Twenty fellowships in the general field of public health were awarded, 53 fellowships for regular courses in different specialties, and 66 grants for special courses, seminars, and observation and study trips. A special course on rabies for the countries of Central America and Panama was attended by 24 participants, including doctors, veterinarians, and

laboratory technicians. The percentage of trained personnel at all levels, though still insufficient, has increased in all the countries, and trained personnel were awarded more posts in the ministries.

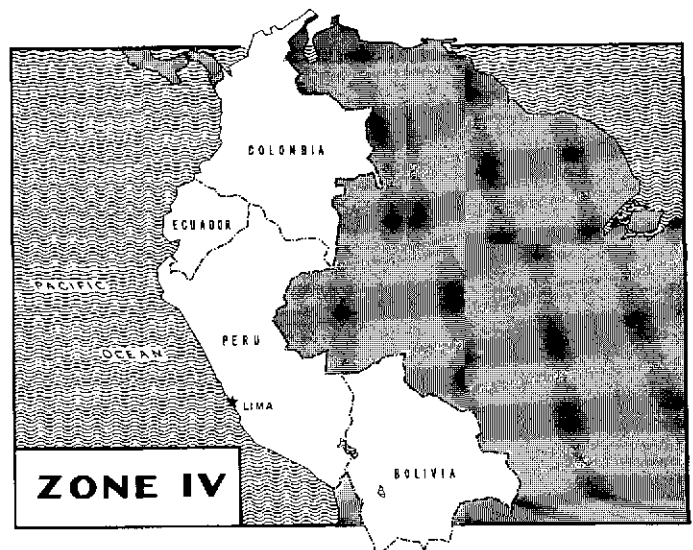
## Zone IV

There was intense activity and positive progress in 1958, as countries devoted great efforts to the control and eradication of communicable diseases, the strengthening of their basic health services, and the training of professional, sub-professional, and auxiliary personnel.

Slow but sure progress was achieved in integrated public health programs at both central and local levels. Advances like the promulgation of a Sanitary Code in Bolivia are providing the roots of better public health services for the countries. The training of national personnel continued to grow in size and importance. In 1958, 182 fellowships were apportioned among the four countries of Zone IV, a considerable increase over the 125 awarded in 1957 in the five countries, including Venezuela, which then was within the Zone. Past seminars on the teaching of preventive medicine and Headquarters support of other branches of medicine, especially pediatrics, have made possible a tightening of the bonds between the Organization and the schools of medicine, which has led to improved instruction in the schools. The Schools of Medicine of Arequipa and Trujillo, Peru began to function in 1958.

Activities in environmental sanitation were limited to the development of integrated health programs and studies to obtain data and figures for the planning of such programs. Veterinary public health personnel was increased in some of the countries, which permitted special studies on some of the zoonoses. Nursing activities were broadened with the creation and functioning of the Postgraduate Institute of Nursing in Peru.

When the year came to an end, Peru had terminated first



total coverage against malaria in one area of the country and had begun second coverage in three other areas. Ecuador was in its second year of total coverage and will begin its third year in March 1959. Bolivia finished a geographical reconnaissance of its territory and began its first total coverage September 1. Colombia began its first total coverage September 29. In each of the four countries the Zone Office stimulated the development of evaluation operations and the study of the susceptibility of malaria vectors to insecticides.

PASB/WHO personnel verified that *Aedes aegypti* was no longer present in Ecuador and Peru, and these countries were officially declared free of the urban vector of yellow fever. In Bolivia eradication was terminated in 1948 with the aid of the Rockefeller Foundation. In Colombia the eradication program is in an advanced stage.

The smallpox eradication program in Colombia progressed so well in 1958 that there is hope of immunizing 80 per cent of the population within five years. An eradication program was initiated in Ecuador during the year, and SCISP continued to develop the eradication program in Bolivia. Smallpox has not been present in Peru for the past four years.

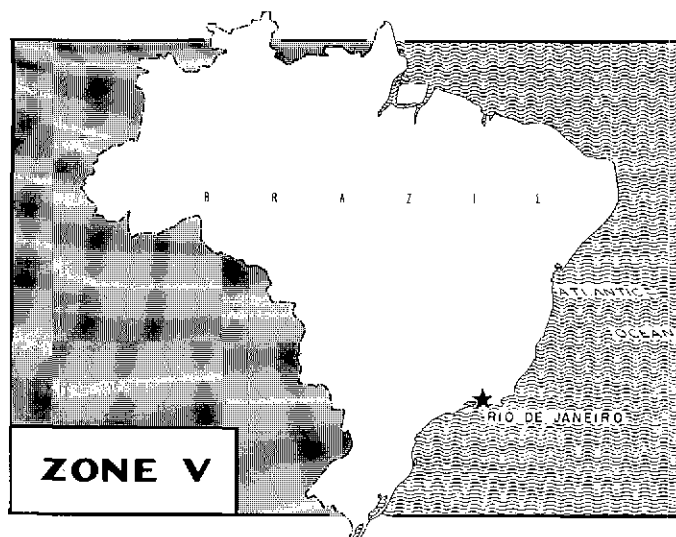
Outbreaks of rural plague appeared in the south of Ecuador and in the north of Peru, with greater intensity in the latter country. The Zone Office coordinated activities against the epidemics in the two countries. It also engaged in work concerning other communicable diseases. The Office circulated widely the conclusions of the Leprosy Seminar in Belo Horizonte, which promoted interest in the organization of modern services against the disease. The countries demonstrated great interest in the attenuated live virus vaccination program against poliomyelitis, begun in Colombia in 1958, and requested the development of similar programs. The Office collaborated in planning programs against tuberculosis in Bolivia and Peru. It stimulated active programs against rabies in the different countries, especially Colombia and Peru, and promoted surveys on brucellosis and hydatidosis in order to arouse interest in these problems.

A border meeting was realized between the health ministries and officials of Colombia and Venezuela, who studied the bases for a border agreement to permit exchange of knowledge, experience, and assistance in the struggle against different communicable diseases.

Substantial efforts were devoted to the development of public health services and especially to the sound organization of central services. In Peru attention was directed toward strengthening the central organization and aiding in the organization of the different health services. In Ecuador a Communicable Diseases Division and an Environmental Sanitation Division were established.

## Zone V

In contrast with other Zone Offices, the Zone V Office



serves only one country, Brazil, containing an area one-tenth greater than the United States, a population of 70 million, and quite a diversity of both public health problems and services.

During 1958 the government and the Organization signed agreements covering projects for malaria eradication at the national level, malaria eradication in the State of São Paulo, establishment of dental public health training at the São Paulo School of Hygiene, verification of *Aedes aegypti* eradication, and a malaria eradication course at the São Paulo School of Hygiene.

Other interesting developments were the establishment of an orientation course in veterinary public health at the School of Veterinary Medicine in São Paulo, the establishment of an Inter-Ministerial Commission on Brucellosis, the placement of a WHO consultant in physical medicine to act as UN team leader for the Rehabilitation Training Center in São Paulo, and the creation of a National Advisory Commission on Rabies Control.

A laboratory for the production of dried smallpox vaccine in Recife was partially installed and another, was being constructed at Porto Alegre but was not completed in 1958.

The São Paulo School of Hygiene was very active during the year. Besides the regular course in public health administration, there were courses in veterinary public health, dental public health, entomology, and sanitary inspection. The first malaria course for physicians and engineers took place from April to June.

The Brazilian National Leprosy Service and the schools of veterinary medicine developed further. The Leprosy Service played host to eight fellows from various parts of the Americas and Africa. The Brazilian authorities provided training and observation in modern diagnosis, treatment, and control of the disease. The schools of veterinary medicine showed interest in the introduction of veterinary public health instruction, and two began work in this discipline before the end of the year.

Fellowships were awarded to residents of Zone V for study throughout the Americas and in Europe and Africa. The number of fellows coming to Zone V from other parts of the Americas and Africa increased. Brazil has shown great interest in training and education in health administration, malaria eradication techniques, communicable disease control, dental public health, and veterinary public health. Three major technical meetings took place in the Zone during 1958, namely, the Seminar in Nursing Surveys, the South American Conference on the Teaching of Medical Statistics, and the Seminar on Leprosy Control.

The OAS Secretary-General and the OAS/TA Executive Director visited the Pan American Foot-and-Mouth Disease Center in Rio de Janeiro.

Close working relationships were maintained with the Representatives in Brazil of UNICEF and the UN Technical Assistance Board, as well as the ICA personnel.

Collaboration continued with private foundations. A nursing survey, jointly undertaken by the Brazilian Nurses Association, the Rockefeller Foundation, and the Organization, terminated in 1958. The financial support and interest of the Rockefeller Foundation contributed greatly to the success of this project. The Kellogg Foundation provided salaries and equipment for the development of the dental health training program at the São Paulo School of Hygiene.

## Zone VI

The Countries of the Zone made advances in the technical reorganization of their public health services. In Argentina, a project of public health services in the province of Chaco was carried out with the aim of serving as a demonstration area for future efforts in other provinces. In Chile, the Organization assisted in the elaboration of a plan of operations for the public health program in the provinces of Ovalle and Copiapó. There was progress in the organization of public health services in Paraguay, as evidenced by the promulgation of a five-year public health plan, the elaboration of the national program of rural sanitation, and the preparation of a project on the Public Health Code. In Uruguay, a technical coordinating commission was organized in the Ministry of Health and plans were elaborated for activities to be carried out in several departments of the country.

A high priority was given to education and training, with special emphasis on development of teaching centers, granting of fellowships, and promotion of local training.

Fellowship activities moved forward with the granting of 130 awards, compared to an average of 80 in past years. Twenty-six were for regular public health courses; 60 were for special nursing courses, statistics, sanitation, nutrition, malaria, and other fields. The remaining 44 were for short-term fellowships and seminars. Argentina received 51 awards; Chile, 21; Paraguay, 39; and Uruguay, 19.

In regard to special courses for personnel and in-service training, more than 500 public health officials were trained

or were receiving training in the 21 courses and seminars promoted by PASB/WHO personnel.

An increase was registered in the number of consultations and requests for technical information from health officials in relation to problems connected with communicable diseases.

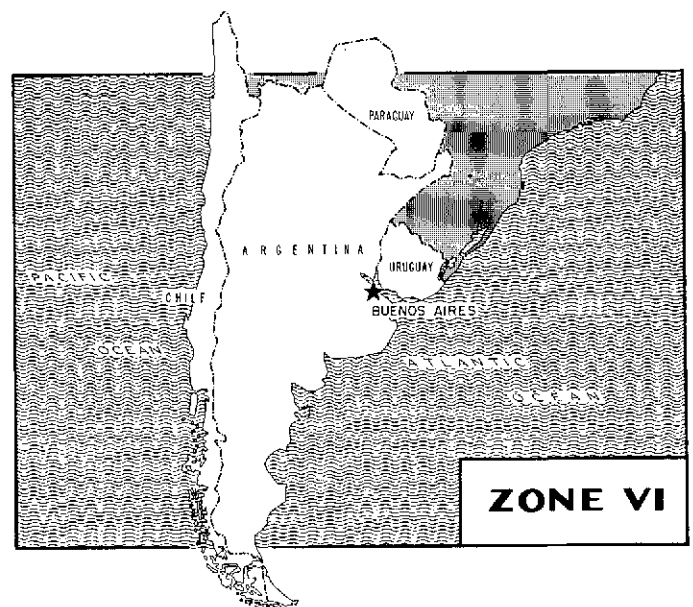
*Aedes aegypti* has been officially declared eradicated from Paraguay and Uruguay. In Argentina and Chile work has progressed on eradicating the mosquito from sections bordering other countries so that it will not infest their neighbors.

Regarding malaria, the Government of Argentina has requested the collaboration of the Organization in writing a plan of operations for the eradication program. In Paraguay the program continued according to plan, the first cycle of spraying being completed November 15.

Negotiations have been started for an agreement between Argentina and PAHO on smallpox eradication. Steps were taken to acquire equipment for the production of dried vaccine in Chile. In Paraguay, an agreement was signed and the work is being carried out using vaccine from neighboring countries. Laboratory equipment was provided for the production of smallpox vaccine in Uruguay.

Activities on leprosy control continued in Paraguay and were initiated in Argentina according to a plan of operations which will embrace six provinces in the first stage.

The Pan American Zoonoses Center continued to give special attention to those zoonoses considered most important from the socioeconomic point of view, such as brucellosis, hydatidosis, rabies, and tuberculosis. A post-graduate course on zoonoses was held with the attendance of seven doctors and veterinarians, specialists in public health, and four professionals sent by international organizations for refresher work. The program of the Center was reviewed and evaluated by a technical advisory group especially appointed by the Director of PASB/WHO.



Appreciable advances have been made in giving to sanitation problems a place of proper priority in the countries of the Zone. This has been accompanied by the preparation of national plans of wide scope in Chile and Argentina to approach the problem of supplying large urban centers with drinking water. Sanitation activities in rural areas have also been promoted. The training of professional and auxiliary sanitation personnel is a permanent activity.

Nursing activities were oriented toward creating and consolidating the technical and administrative structures of the nursing services at the local and national levels. Nurses were prepared by means of programs of basic and advanced professional education, auxiliary nursing courses, in-service training, and fellowships for specialized study. In health centers, nursing services were initiated or improved, and emphasis was placed on the preparation and better utilization of midwives. Attention was also given to coordination

and advice regarding professional matters of national and international scope.

In Argentina an agreement was prepared for seminars and surveys on nutrition, in which FAO and the Inter-American Institute of Agricultural Sciences are to cooperate. In Chile, advice was given to the program of nutrition and nutritional education, which contains a plan for school lunches and education on nutrition at the school and community levels. In Paraguay initial steps were being taken for a similar program.

The National Institute of Microbiology of Argentina became self-sufficient and established a competitive system to recruit technical personnel on a fulltime basis. In Paraguay the Public Health Laboratory achieved national status through a reorganization permitting it to serve a greater number of smaller centers. Preparation of laboratory technicians continued with the granting of three fellowships in bacteriology, laboratory techniques for leprosy, and organization and operation of public health laboratories.

# ORGANIZATION AND ADMINISTRATION

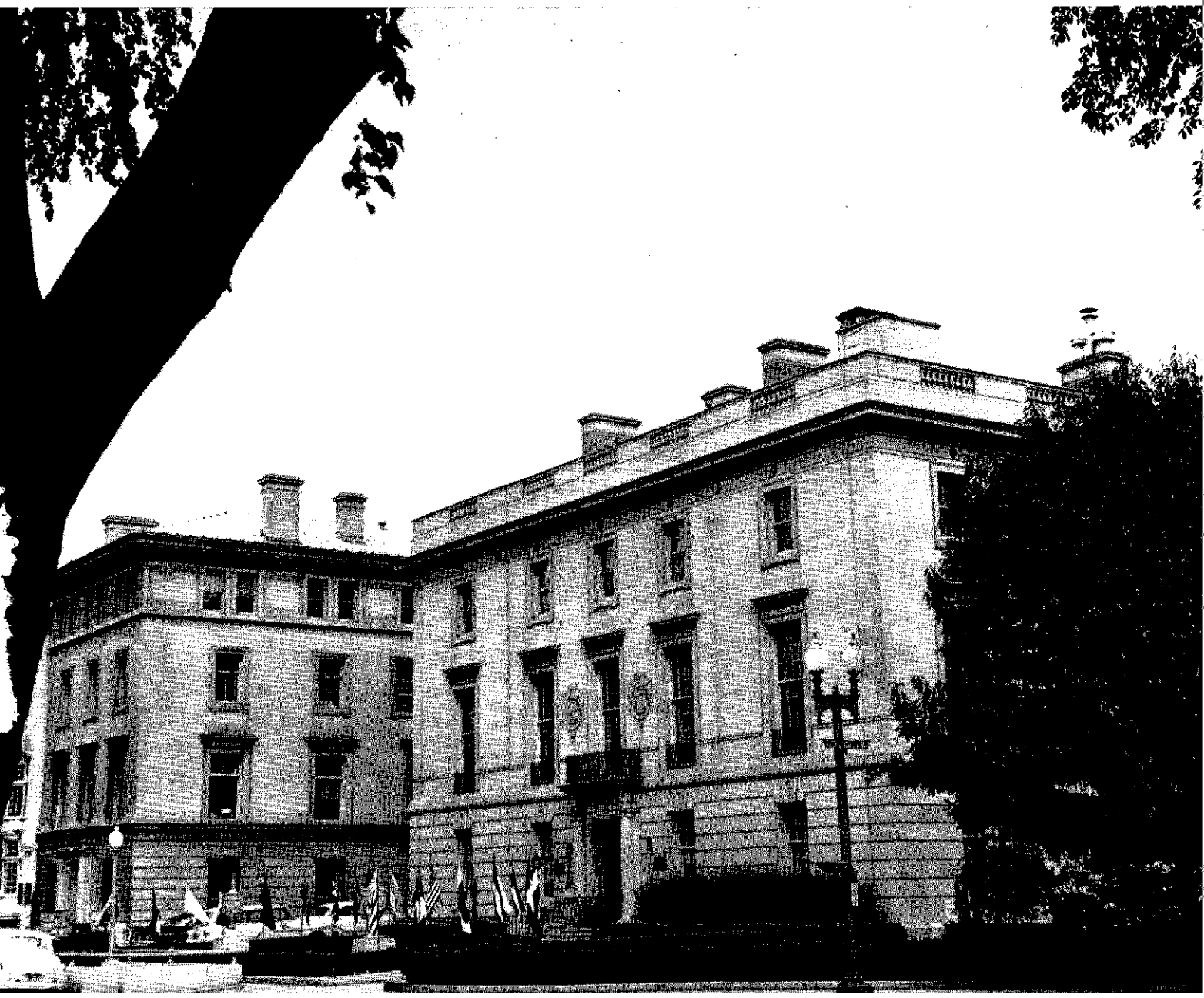
## Organizational Structure

Washington Headquarters in 1958 was comprised of the Office of the Director, and three major divisions—the Division of Public Health, the Division of Education and Training, and the Division of Administration. This organizational structure is described more fully below.

### Office of the Director

The Director, who is also the WHO Regional Director for the Americas, the Assistant Director and the Secretary General, are in the Office of the Director. The Office of the Director also includes the Information and Publications Branch and the Library.

Main buildings of PASB Headquarters, Washington, D. C.



## Headquarters Divisions

### Division of Public Health

This Division's activities during the year were mainly in planning, advisory services, and evaluation. The Division's activities in 1958 were greatly handicapped by the shortage of personnel. It is possible to single out major contributions to the Regional Program made by the Division in the following six principal areas.

In the field of program planning, the overriding priority of community water supplies has been established among environmental sanitation activities. Such a priority should prove, in years to come, an inspiring force toward the solution of a fundamental health problem, and provide a unique opportunity for PASB/WHO leadership and coordination.

The steps in the development of the new program, reported at length elsewhere, may offer to Zone and country personnel a valuable experience. Beginning with discussions among leaders in the field at the end of 1957; activities led to a presentation of "First Things First in Environmental Sanitation" to the Zone Representatives' meeting in March, when an Advisory Committee was established by the Director. The first meeting of the Committee was held late in April and two of its members explained the new policy at a meeting held by PASB/WHO and ICA engineers in May, at the time of the VI Congress of AIDIS in San Juan.

The Report of the Advisory Committee was circulated in August and its recommendations were incorporated in the joint program planning with Zone Offices, initiated in October. At the XV PASC, the subject of water supply in the urban environment was selected as the topic for the 1959 Technical Discussions.

Significant large trials with attenuated live polio virus vaccine began this year in Colombia and Nicaragua, with the cooperation of the Bureau. The Division staff participated actively in the planning, organization, and execution of new trials. More detailed information will be found in another section of this Report.

The June Meeting of Advisers to Integrated Health Projects in Paracas, with Washington and Zone Office personnel, was the result of prolonged efforts to develop policies and guides for this complex, ultimate objective of the Organization, i.e., strengthening of national health services. The meeting was also an ideal means of in-service education of the staff toward enabling them to collaborate more effectively with governments in planning, operation, and evaluation of generalized health programs. The first meeting of this type in Antigua Guatemala, in 1956, was decisive in shifting emphasis in our collaboration from the local demonstration to the regional and national level. This year's meeting confirmed such an approach and further

stressed national health planning as a major opportunity for international collaboration. These two meetings represent a considerable investment for the Organization in time, effort, and money, as can be appreciated from the reports given elsewhere. Preparation of the 1958 meeting took almost two years and involved many staff members, including the Division personnel. Over 60 doctors, nurses, engineers, and others from different technical and cultural backgrounds have had the opportunity to clarify procedures and establish a clear line of action in this important field.

In promoting the exchange of technical information, the Seminar on Leprosy Control (Belo Horizonte) in July filled a great need explicitly recognized by the IX Meeting of the Directing Council (Resolution 15). The attendance of several Zone Representatives stressed the value of the Seminar as a tool for planning country and regional leprosy programs, thus fully justifying the enormous amount of effort devoted by the Communicable Diseases Branch to preparation of the Seminar and processing of the report.

The Division carried out the major planning of the course on "Public Health Aspects of Radiation" (San Juan, October 7-15). This course was planned to stimulate and enable countries to plan their activities more efficiently in a new field of great potentiality.

Another important function of the Division was the compilation and analysis of statistical data, including health conditions in the countries and the requirements for health programs. The most important contribution in this field was the preparation and release of the document, "Summary of Four-Year Reports on Health Conditions in the Americas", (Scientific Publications No. 40), prepared for the XV Pan American Sanitary Conference, which is the second such summary of health conditions for the Americas. Discussions at the Conference stressed the progress achieved. Resolution XXXVII recommended that all countries provide complete information for the next Conference and improve data for determination of problems as well as resources available, factors essential for effective planning of national and international health programs. The publication of the document, "Reported Cases of Notifiable Diseases in the Americas 1946-1955", (Scientific Publications No. 38) was a step forward in the release of information for the Americas. Important contributions to the improvement of statistical information were several developments in the field of teaching of medical statistics. These subjects are covered in the chapters on health statistics and education and training.

Other Division responsibilities of quite a different nature carried out during 1958 included preparation for the Tech-



nical Discussions on "Prevention of Accidents in Childhood" which took place at the XV PASC, and the presentation to the Conference of special documents on malaria, smallpox, and *Aedes aegypti* eradication, nutrition, and sanitation of travel centers.

Structurally, the Division of Public Health continued to function during the year with three Technical Branches—Communicable Diseases, Health Promotion, and Environmental Sanitation. In addition, it included the Malaria Eradication office.

The malaria program continued to receive high priority, to the point of assigning to ME the only engineer available in the Division since April. Such assignment was particularly needed in view of the necessity of lending the Assistant Chief of ME to a joint WHO/ICA program in Indonesia for four months. The Chief of ME was appointed Chief of the Malaria Division in Geneva Headquarters in October. He was replaced by the Zone IV Representative.

A sanitary engineer and a medical officer, both with long and varied experience in the field program of the Organization, were assigned for two and five months, respectively, to the Environmental Sanitation and Health Promotion Branches, bringing useful points of view to Washington Headquarters activities.

A full account of the work of the Division in the Bureau program can be found elsewhere in this Report.

## Division of Education and Training

While education and training of health workers are a significant part of almost all the Organization's work, the Division of Education and Training is concerned with those aspects dealing with organized educational activities for all types of health personnel.

Organized in its present form in 1952, the Division is composed of two branches: 1) the Professional Education Branch; and 2) the Fellowships Branch.

Specifically, the efforts of the Bureau in this field fall under the following categories: 1) basic medical education; 2) education in public health administration and its various specialties, including dental public health; 3) education in environmental sanitation; 4) veterinary public health education; and 5) nursing education.

Through country and intercountry projects assistance is given in raising standards of educational institutions, improving teaching quality and increasing quantity, and insuring that the latest ideas are incorporated into training programs. Intercountry seminars and surveys of various phases of training programs and personnel provide indices for evaluating existing structures and allow interchange of ideas among countries and individual institutions. Provision of short-term and long-term advisers to educational institutions and governments helps to start new programs and improve existing ones. Fellowships help prepare national personnel to establish stable programs of high

quality. More fellowships were awarded in the Americas in 1958 than in any previous year. A substantial part of the increase was in personnel trained for the expanding malaria program. Also, in 1958 a record number of fellows came from other regions of the world to study in the Americas.

Other activities of the Division are the Medical Education Information Center (MEIC), which collects and reports data, from the various public and private agencies, on activities fostering medical education and related disciplines throughout Latin America.

A full description of the work accomplished in the field of education and training is presented elsewhere in this Report.

## Division of Administration

The steady growth in programs and activities of PASB/WHO in 1958 created a substantial increase in workload for the administrative staff. The PAHO regular budget increased by \$600,000 or 25 per cent for 1958 over 1957, and the PAHO Special Malaria Fund budget increased from approximately \$1,000,000 to \$2,500,000. The PASB/WHO staff increased by 122 or 20 per cent over 1957. The administrative staff of the Organization, however, increased by only four, which represents a slight reduction in the per cent of total PASB/WHO personnel assigned to administrative posts.

PASB/WHO was able to effect continued reduction in administrative costs compared to total costs through decentralization of administrative services, inaugurated late in 1957 and brought to full realization during 1958. Large segments of the accounting work, allotment control, personnel processing, property control, and related administrative services were assumed by the Zone Offices.

From July 7 to 21, the first meeting of the Zone administrative officers with the senior staff of the Division of Administration was held in Washington, D. C., in order to achieve standardization and maximum efficiency in work performance. The agenda included a detailed study and review of all basic administrative procedures of the Bureau. The purpose of the review was to improve procedures and practices, clarify instructions, and uncover and remedy omissions or errors in existing procedures. Sixty-four specific action items resulted from the meeting. In addition, nine working parties were appointed to resolve detailed issues regarding such administrative problems as education grant determinations, decentralization of basic personnel records, fiscal procedures for seminars, and commitment and obligation procedures.

### *Organizational Developments*

The only significant organizational development during the year was the elevation of the Field Office of the Caribbean to Zone Office status on May 1, 1958. With this change the Organization's activities in Venezuela were

transferred to the jurisdiction of the new Zone I. Formerly they had been part of the jurisdiction of Zone IV. On July 1, the Zone I Office was moved to Caracas, Venezuela. The cost of the move was met by the Government of Venezuela. In addition, the Government is making a special voluntary contribution to the cost of the Zone Office operations in Caracas up to \$53,000 annually. This is in addition to Venezuela's regular quota contribution to the Organization.

#### *Legal Matters*

The XV Pan American Sanitary Conference adopted three amendments to the Constitution. The first of these changed the name of the Organization to *Pan American Health Organization* in English; *Organisation panaméricaine de la Santé* in French; *Organização Pan-Americana da Saúde* in Portuguese; and *Organización Panamericana de la Salud* in Spanish. The change in name was adopted to express more fully and accurately the character of the Organization and its functions in the broad field of health, as established in Article I of the Constitution.

The second constitutional amendment clarified the term of office for the Chairman and Vice Chairman of the Executive Committee. Article 15 of the Constitution was amended to provide that these officers shall hold office for a full year instead of being elected "at each meeting . . ."

The third amendment changed the procedure for preparation and submission of the annual proposed program and budget. Previously, this had been prepared by the Executive Committee with the cooperation of the Director. Article 12-c was changed by the XV Pan American Sanitary Conference to require the Executive Committee to consider and submit to the Conference or to the Council the proposed program and budget prepared by the Director, with such recommendations as it deems advisable.

The XV Pan American Sanitary Conference also recommended that the Executive Committee establish a subcommittee or working party, with legal counsel, to study 1) the problems inherent in the election of the Director and 2) the Constitution and Rules of Procedure of the Conference to improve their clarity and equivalence of meaning between the English and Spanish texts. A subcommittee, composed of representatives of Brazil, Mexico, and the United States, was appointed by the 36th Meeting of the Executive Committee to make the study. The Director, in accordance with instructions of the Executive Committee and with the cooperation of the Secretary General of the Organization of American States, arranged for legal counsel to the subcommittee by the Director and staff of the Department of Legal Affairs of the Pan American Union. In the meantime, the staff of both the Division of Administration and Conference and Publications Section jointly began a preliminary analysis of the problems involved in achieving the objectives established for the subcommittee.

During 1958, negotiations were completed on privileges and immunities agreements with the governments of Guatemala, Peru, and Venezuela, all three host governments for PASB/WHO Zone Offices. The agreements with Guatemala and Peru are substantially similar and are based on the WHO agreement with Denmark. For constitutional reasons, Venezuela was unable to adopt a similar agreement and instead extended the national law on diplomatic privileges and immunities to PASB/WHO.

These three agreements completed host government agreements on privileges and immunities with all Member Governments within whose territory the Bureau maintains a permanent office.

#### *Administrative Aspects of Malaria Eradication*

The Division continued its close collaboration in the development of the Bureau malaria eradication program through frequent consideration of policy and operational questions with the staff of the Malaria Eradication office (ME) and field trips to review program progress in the countries.

Division of Administration and Zone Office administrative staff participated in a number of training courses, workshops, and seminars for national and international malaria eradication personnel. The staff lectured on the administrative aspects of malaria eradication at the Malaria Eradication Training Center in Kingston, Jamaica; organized and lectured at the first course for national malaria eradication administrative officers held in collaboration with the Government of Honduras and ICA in Tegucigalpa; and organized and participated in three workshops for national malaria eradication transport officers held in Lima, Tegucigalpa, and Port of Spain.

In connection with the motor vehicle workshops, the Division cooperated with UNICEF and ME in producing in Spanish and English the *UNICEF-PASB/WHO Transport Manual for Malaria Eradication Programs*.

Jointly with ICA and UNICEF, the Division organized a Procurement Coordinating Committee to take all measures necessary to plan carefully the procurement of insecticides and other malaria supply items.

#### *Headquarters and Zone Office Accommodations*

Considerable progress was made during the year in efforts to obtain a site in Washington, D. C. for the proposed Headquarters building. In addition, the Director took action for the purchase of Zone Office space in Buenos Aires following notice that an option to purchase must be exercised or the Bureau be obliged to find space elsewhere. The purchase action followed an unsuccessful effort to find other suitable accommodations. A price of \$20,610 was paid for the suite of offices which the Bureau had been renting for \$2,400 per annum. The XV Pan American Sanitary Con-

ference in Resolution XXIX took note of this action of the Director.

In respect to a permanent Headquarters site, the chief of the United States delegation to the XV PASC stated that the Department of State, in collaboration with other departments of the Government, has agreed to present to Congress in January, 1959 a proposal for the allocation of funds to purchase a centrally located site in Washington, D. C. He declared that the site in question is very appropriate for a Headquarters building and situated in a location in keeping with the prestige of the Organization. This land is to be given to the Organization without cost by the U. S. Government. The Conference instructed the Director to continue negotiations with the United States Government with the objective of solving at the earliest possible time the matter of a site for the Headquarters of the Bureau and to prepare suggestions on the financing of and construction plans for the permanent Headquarters building.

#### *Personnel*

The Director-General of the World Health Organization invited the XV Pan American Sanitary Conference, acting as the WHO Regional Committee for the Americas, to express its views on suitable conditions of employment for international health organizations. A survey was made in Washington and the field to ascertain the adequacy and suitability of the existing conditions of employment. This information was forwarded to WHO Headquarters.

The XV PASC approved a statement of basic personnel principles, with the exception of the statement on family allowances, previously approved by the 34th Meeting of the Executive Committee. The Conference urged action on the part of the World Health Organization to:

- 1) adopt a policy of non-implementation of minus post adjustments;
- 2) undertake prompt action in increasing salaries of professional personnel;
- 3) devise means for facilitating the rotation of professional personnel; and, if necessary,
- 4) deviate from the United Nations scale of salaries and allowances.

Total staff strength of PASB/WHO rose from 603 at the end of December 1957 to 725 to December 1958, an increase of 20 per cent.

Fifteen cost-of-living surveys were completed during 1958. PASB/WHO serves as "lead agency" for the entire United Nations group of organizations in making cost-of-living surveys in many of the major cities in the Americas to determine post-adjustment allowances. These surveys resulted in six changes in post-adjustment allowances. In the other nine instances, PASB/WHO found that no change was warranted.

Local salary surveys were carried out in nine areas resulting in salary changes for staff in four localities. These

surveys are required under the staff rules in fixing salaries of local personnel so that PASB/WHO scales are in accordance with the best prevailing wages for comparable skills in each locality.

#### *Management Studies*

The management staff conducted organizational and procedural analyses of the Headquarters Malaria Eradication office, PASB/WHO seminar activities, and the Headquarters Reproduction Unit.

The PASB/WHO Procedural Manual was expanded. New sections on financial accounts and seminars were added. Many revisions were made to bring procedures up-to-date and to describe better decentralized activities. This Manual has proved a most useful tool in implementing the Bureau's decentralization program and in operating the Washington Office.

#### *Budget and Finance*

During 1958 there was close and effective coordination of program and budget execution at all levels. Just prior to the beginning of the year a complete review was made in Zones and in Washington to establish an operating budget which would reflect the latest known requirements for PASB/WHO assistance to governments. By careful initial planning and periodic analyses of the rate of utilization of funds it was possible to finance a maximum of well-planned programs.

The 34th Meeting of the Executive Committee approved a proposal to group the several allowance and statutory travel items (but with a concurrent segregation of the duty travel item). This will permit a better review of field projects and will reduce the size and cost of the budget document. These changes in no way affected the basic presentation of the budget as recommended by the Governing Bodies.

During 1958 the Dominican Republic contributed another \$100,000 to the PAHO Special Malaria Fund, the second installment on a \$500,000 special contribution announced in 1957. The Government of Haiti also made a contribution of \$5,000 to the Special Malaria Fund.

The XV Pan American Sanitary Conference approved an appropriation for the PAHO Regular budget at the level of \$3,600,000 for 1959.

A proposed program for the WHO Regular Budget in 1960 in the Region of the Americas was recommended by the XV Pan American Sanitary Conference in the amount of \$1,720,810.

#### *Supply*

The Supply activities of PASB/WHO continued at a heavy volume. Purchases on behalf of Member Governments amounted to \$404,659, representing 322 orders and 853 line items. In addition, proforma invoices for Member Governments who desired to obtain current and accurate

TABLE XXVII. PAHO 1958 QUOTA ASSESSMENTS AND WHO ASSESSMENTS IN THE AMERICAS, BY COUNTRY

Country	Amount	
	PAHO	WHO
Total	\$2,931,247	\$5,774,650
Argentina	215,760	177,570
Bolivia	8,990	6,660
Brazil	218,660	170,910
Canada <sup>a</sup>	—	425,060
Chile	60,320	44,390
Colombia <sup>b</sup>	74,820	—
Costa Rica	7,250	5,760
Cuba	54,810	35,520
Dominican Republic	8,990	5,760
Ecuador	8,990	5,760
El Salvador	11,020	7,760
Guatemala	12,760	8,880
Haiti	7,250	5,760
Honduras	7,250	5,760
Mexico	140,360	91,000
Nicaragua	7,250	5,760
Panama	8,990	5,760
Paraguay	7,250	5,760
Peru	29,290	21,090
United States	1,914,000	4,666,480
Uruguay	29,580	21,090
Venezuela	66,410	52,160
France <sup>c</sup>	6,965	—
Netherlands <sup>c</sup>	3,568	—
United Kingdom <sup>c</sup>	20,714	—

<sup>a</sup> Not a member of PAHO. <sup>b</sup> Not a member of WHO. <sup>c</sup> On behalf of its territories in the Western Hemisphere.

information on price and availability of goods and services used in health and related activities amounted to \$3,466,165, representing 2,224 line items.

Procurement for PASB/WHO activities was \$667,142; 916 orders; and 4,648 line items.

At the request of the Government of Trinidad, the Chief of the Supply Office surveyed the central stores of the Trinidad Health Department, and recommended their re-

TABLE XXVIII. PAHO AND WHO EXPENDITURES IN 1958, BY SOURCE OF FUNDS

PAHO	
PAHO—Regular Budget . . . . .	\$2,823,474
PAHO—Special Malaria Fund . . . . .	1,815,812
PAHO—Special Appropriations . . . . .	35,414
Grants and other Contributions to PAHO . . . . .	163,114
Organization of American States—Technical Cooperation Program . . . . .	278,308
INCAP Regular Budget . . . . .	104,678
Grants and other Contributions to INCAP . . . . .	220,890
PAHO Subtotal . . . . .	\$5,441,690
WHO	
WHO—Regular Budget . . . . .	1,521,383 <sup>a</sup>
WHO—Technical Assistance . . . . .	1,289,467
WHO Subtotal . . . . .	\$2,810,850
Total . . . . .	\$8,252,540

<sup>a</sup> Includes WHO Malaria Eradication Special Account \$4,199.

organization. The Ministry of Health of Jamaica requested a similar survey, but shortage of staff prevented servicing this request in 1958.

Emergency purchases on behalf of Member Governments under the Organization's Emergency Revolving Fund during 1958 included: 1) two mechanical heart lungs for Argentina; 2) diphtheria and tetanus toxoids and pertussis vaccine for Nicaragua; 3) rabies vaccine for Nicaragua; 4) strychnine for Venezuela; and 5) three shipments of rabies vaccine for Venezuela.

# APPENDIX

## Project List

The project list presents alphabetically by country certain essential information on projects in operation during 1958.

The column headed "Zone" indicates in which of the six PASB Zones the particular project is functioning. Zone designations for the inter-regional projects are left blank

as these are worldwide projects with PASB giving general supervision insofar as they concern the Americas.

The column "Technical Branch" shows the unit at the Washington Headquarters primarily concerned with the project.

Abbreviations used in the Appendix are listed below.

### Abbreviations

DA	Assistant Director	NIH	National Institutes of Health
EFS	Fellowships Branch	OAS	Organization of American States
EOC	Division of Education and Training	OAS/TA	Organization of American States Technical Assistance
EPE	Professional Education Branch	PAHO	Pan American Health Organization
HCD	Communicable Diseases Branch	PASB	Pan American Sanitary Bureau
HCE	Epidemiological and Statistics Section	PAU	Pan American Union
HES	Environmental Sanitation Branch	RF	Rockefeller Foundation
HHP	Health Promotion Branch	SMF	Special Malaria Fund of PAHO
ME	Malaria Eradication	UNESCO	United Nations Educational, Scientific, and Cultural Organization
WO	Washington Office	UNICEF	United Nations Children's Fund
IACI	Inter-American Child Institute	USPHS	United States Public Health Service
FAO	Food and Agriculture Organization	UN/TAA	United Nations Technical Assistance Administration
GML	Gorgas Memorial Laboratory	WHO	World Health Organization
ICA	International Cooperation Administration	WHO/TA	World Health Organization United Nations Technical Assistance
ILO	International Labor Organization		
INCAP	Institute of Nutrition of Central America and Panama		
KF	W. K. Kellogg Foundation		

### Project List

Code	Title	Duration	Funds in 1958	Cooperating Agency	Technical Branch	Zone
Argentina-2	Smallpox Eradication (Part of AM-RO-60 until 1958)	1954-	PAHO	—	HCD	VI
Argentina-3	Nursing Education	1957-	WHO/TA PAHO	—	EPE	VI
Argentina-6	WHO Public Health Administration Fellowships	1954-	WHO	—	HHP/EFS	VI
Argentina-7	Public Health Services	1957-	WHO/TA	UNICEF	HHP	VI
Argentina-8	Malaria Eradication	1957-	SMF	—	ME	VI
Argentina-11	Rabies Control	1958-	WHO	—	HCD	VI
Argentina-12	Survey of Health Services	1956-58	PAHO	—	HHP	VI
Argentina-13	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	VI
Argentina-15*	Nutrition	1957-	WHO	—	HHP	VI
Argentina-16	Polio Rehabilitation	1958-	WHO PAHO	E. Kenny Founda- tion	HCD	VI
Argentina-17	School of Public Health	1958-	WHO	—	EPE	VI
Argentina-18*	Medical Education	1956-	WHO	—	EPE	VI
Argentina-23	Nursing Education (Rosario)	1958-	PAHO	—	EPE	VI
Argentina-51	Aedes aegypti Eradication	1950-	PAHO	—	HCD	VI
Bahamas-2	Tuberculosis Survey	1958	PAHO	—	HCD	I
Barbados-2	Local Health Services	1955-	WHO/TA	UNICEF	HHP	I
Bolivia-4	Malaria Eradication	1954-	WHO/TA SMF	UNICEF ICA	ME	IV
Bolivia-5	Nursing Education	1953-	WHO	—	EPE	IV
Bolivia-10	Public Health Services	1955-	PAHO	UNICEF	HHP	IV
Bolivia-11	Joint Field Mission on Indigenous Populations (Survey)	1952-53 1955-	WHO/TA	FAO ILO UN UNESCO	HHP	IV
Bolivia-13	WHO/TA Public Health Administration Fellowships	1957-	WHO/TA	—	HHP/EFS	IV
Brazil-3	Public Health Services (Northeast)	1958-	WHO	UNICEF	HHP	V
Brazil-17†	Hydatidosis Control	1956-	WHO/TA	—	HCD	V
Brazil-18	National Food and Drug Services	1955-	WHO	—	HCD	V
Brazil-19	School of Public Health (Rio de Janeiro)	1957-	WHO	—	EPE	V
Brazil-22	Nursing Education	1956-58	WHO/TA	RF	EPE	V
Brazil-24	Malaria Eradication	1957-	SMF	ICA	ME	V
Brazil-28	PAHO Public Health Administration Fellowships	1957-	PAHO	—	HHP/EFS	V
Brazil-30	Plague Investigation	1957-58	WHO/TA	—	HCD	V
Brazil-31	Rehabilitation Training Center	1958-	WHO/TA	ILO UN/TAA	HHP	V
Brazil-35	School of Public Health (São Paulo)	1958-	WHO	—	EPE	V
Brazil-37*	Dental Health Education	1958-	PAHO	KF	EPE	V

\* Zone and/or Washington Office advice only in 1958.

† Under previous years' awards.

**Project List—Continued**

Code	Title	Duration	Funds in 1958	Cooperating Agency	Technical Branch	Zone
Brazil-38	Smallpox Eradication (Part of AM-RO-60 until 1958)	1956-	PAHO	—	HCD	V
Brazil-40	Verification of <i>Aedes aegypti</i> Eradication	1958	PAHO	—	HCD	V
Brazil-41	Malaria Eradication (São Paulo)	1958-	SMF	—	ME	V
Brazil-51	Yellow Fever Laboratory	1950-	PAHO	—	HCD	V
British Guiana-3†	WHO Public Health Administration Fellowships	1955-57	WHO	—	HHP/EFS	I
British Guiana-4*	Reorganization of Municipal Health Services	1957-	WHO	—	HHP	I
British Guiana and West Indies-1	<i>Aedes aegypti</i> Eradication	1952-	WHO/TA	—	HCD	I
British Guiana and West Indies-5	WHO Public Health Administration Fellowships	1957-	WHO	—	HHP/EFS	I
British Honduras-1	Malaria Eradication	1950-	SMF	UNICEF	ME	III
British Honduras-4†	WHO Public Health Administration Fellowships	1955-	WHO	—	HHP/EFS	III
British Honduras-5	Rural Health Services	1957-	WHO	UNICEF	HHP	III
British Honduras-6	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	III
Canada-1*	WHO Public Health Administration Fellowships	1954-55 1957-	WHO	—	HHP/EFS	WO
Chile-16*	Rural Health Services (Linares)	1955-	WHO	UNICEF	HHP	VI
Chile-18	WHO/TA Public Health Administration Fellowships	1955-	WHO/TA	—	HHP/EFS	VI
Chile-19	Food and Drug Control	1958-	WHO/TA	—	HCD	VI
Chile-20	Midwifery Education	1956-	WHO	—	EPE	VI
Chile-25	WHO Public Health Administration Fellowships	1955-	WHO	—	HHP/EFS	VI
Chile-26	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP	VI
Chile-27†	Public Health Services (Ovalle-Copiapó)	1958-	PAHO	UNICEF	HHP	VI
Chile-28†	WHO/TA Fellowships in Various Health Fields	1957-	WHO/TA	—	HHP/EFS	VI
Chile-29	Advanced Nursing Education	1955-	WHO	—	EPE	VI
Chile-31	School of Public Health	1953-	WHO	—	EPE	VI
Chile-32	Smallpox Eradication (Part of AMRO-60 until 1958)	1954-	PAHO	—	HCD	VI
Colombia-4	Public Health Services	1951-	WHO/TA	UNICEF ICA	HHP	IV
Colombia-5	Malaria Eradication	1951-	WHO/TA SMF	UNICEF ICA	ME	IV
Colombia-17	Smallpox Eradication (Part of AMRO-60 until 1958)	1950-	PAHO	UNICEF	HCD	IV

\* Zone and/or Washington Office advice only in 1958.

† Under previous years' awards.

Project List—Continued

Code	Title	Duration	Funds in 1958	Cooperating Agency	Technical Branch	Zone
Colombia-19	Leprosy Control	1958-	WHO/TA	—	HCD	IV
Colombia-21	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	IV
Colombia-22	Aedes aegypti Eradication	1950-	WHO/TA	—	HCD	IV
Colombia-23	Live Poliovirus Vaccine Studies	1958-	PAHO	Lederlé Laboratories	HCD	IV
Colombia-52	Yellow Fever, Carlos Finlay Institute	1950-	PAHO	—	HCD	IV
Costa Rica-2	Malaria Eradication	1950-	SMF	UNICEF	ME	III
Costa Rica-13†	WHO Public Health Administration Fellowships	1954-	WHO	—	HHP/EFS	III
Costa-Rica-15	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	III
Costa Rica-17	Evaluation of Public Health Program	1957-58	PAHO	—	HHP	III
Cuba-1	Aedes aegypti Eradication	1953-	PAHO	—	HCD	II
Cuba-5	Malaria Eradication	1957-	SMF	—	ME	II
Cuba-6	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	II
Cuba-7†	WHO Public Health Administration Fellowships	1957-	WHO	—	HHP/EFS	II
Cuba-8*	Smallpox Eradication (Part of AMRO-60 until 1958)	1955-	PAHO	—	HCD	II
Dominican Republic-2	Malaria Eradication	1952-	SMF	UNICEF	ME	II
Dominican Republic-3	Nursing Education	1958-	WHO	—	EPE	II
Dominican Republic-4	Reorganization of Local Health Services	1953-	PAHO	UNICEF	HHP	II
Dominican Republic-8	Aedes aegypti Eradication	1952-	WHO/TA	—	HCD	II
Dominican Republic-9	WHO Public Health Administration Fellowships	1957-	WHO	—	HHP/EFS	II
Dominican Republic-52	Venereal Diseases Control	1953-	PAHO	—	HCD	II
Ecuador-4	Public Health Services	1953-	WHO	UNICEF	HHP	IV
Ecuador-11*	National Institute of Health	1952-	PAHO	—	HCD	IV
Ecuador-14	Malaria Eradication	1956-	WHO/TA SMF	UNICEF	ME	IV
Ecuador-16	Nursing Education	1957-	WHO	—	EPE	IV
Ecuador-17†	WHO/TA Public Health Administration Fellowships	1956-58	WHO/TA	—	HHP/EFS	IV
Ecuador-19	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	IV
Ecuador-20	Smallpox Eradication (Part of AMRO-60 until 1958)	1954-	PAHO WHO/TA	—	HCD	IV
Ecuador-53	National Institute of Nutrition	1950-	WHO/TA	KF	HHP	IV

\* Zone and/or Washington Office advice only in 1958.

† Under previous years' awards.



Project List—Continued

Code	Title	Duration	Funds in 1958	Cooperating Agency	Technical Branch	Zone
El Salvador-2	Malaria Eradication	1950-	WHO/TA SMF	UNICEF	ME	IV
El Salvador-5	Health Demonstration Area	1951-	WHO/TA	UNESCO ILO FAO	HHP	III
El Salvador-9	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	III
French Antilles and Guiana-1	WHO/TA Public Health Administration Fellowships	1958-	WHO/TA	—	HHP/EFS	I
French Antilles and Guiana-2	Aedes aegypti Eradication	1952-	WHO/TA	—	HCD	I
French Guiana-1*	Maternal and Child Health	1956-	WHO	UNICEF	HHP	I
Guatemala-1	Malaria Eradication	1950-	WHO/TA SMF	UNICEF ICA	ME	III
Guatemala-6	Training of Nursing Auxiliaries	1955-	WHO	—	EPE	III
Guatemala-7†	WHO/TA Public Health Administration Fellowships	1955-	WHO/TA	—	HHP/EFS	III
Guatemala-8	Public Health Services	1954-	WHO	UNICEF	HHP	III
Guatemala-11	Tuberculosis Control	1956-	WHO/TA	UNICEF	HCD	III
Guatemala-12	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	III
Haiti-1	Yaws and Smallpox Eradication	1950-	PAHO WHO	UNICEF	HCD	II
Haiti-2†	Local Health Services (Survey)	1951- 1954-	WHO/TA	—	HHP	II
Haiti-4	Malaria Eradication	1953-	WHO/TA SMF	UNICEF ICA	ME	II
Haiti-9	Public Health Laboratory	1953-	PAHO	—	HCD	II
Haiti-12	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	II
Haiti-14	Aedes aegypti Eradication	1953-	WHO/TA	—	HCD	II
Haiti-15	WHO Public Health Administration Fellowships	1957-	WHO	—	HHP/EFS	II
Haiti-16	Public Health Services	1958-	PAHO	—	HHP	II
Honduras-1	Malaria Eradication	1950-	WHO/TA SMF	UNICEF ICA	ME	III
Honduras-4	Public Health Services	1955-	WHO/TA	UNICEF	HHP	III
Honduras-5	BCG Vaccination	1957-	WHO/TA	UNICEF	HCD	III
Honduras-6	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	III
Honduras-7	WHO/Public Health Administration Fellowships	1958-	WHO	—	HHP	III
Jamaica-2	Malaria Eradication	1950-	SMF	UNICEF ICA	ME	I
Jamaica-5†	WHO/TA Public Health Administration Fellowships	1954-	WHO/TA	—	HHP/EFS	I

\* Zone and/or Washington Office advice only in 1958.

† Under previous years' awards.

**Project List—Continued**

Code	Title	Duration	Funds in 1958	Cooperating Agency	Technical Branch	Zone
Jamaica-7†	WHO Public Health Administration Fellowships	1956-	WHO	—	HHP/EFS	I
Jamaica-8	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	I
Jamaica-9	Health Insurance for Hospital and Medical Care	1958	PAHO	—	HHP	I
Jamaica-10	Mental Health	1958	PAHO	—	HHP	I
Leeward Islands-1	Tuberculosis Control	1958-	PAHO	—	HCD	I
Martinique-3†	WHO/TA Public Health Administration Fellowships	1957-58	WHO/TA	—	HHP/EFS	I
Mexico-13*	Venereal Diseases Training Course	1953-	PAHO	—	HCD	II
Mexico-14	Nursing Education	1958-	PAHO	—	EPE	II
Mexico-15*	Maternal and Child Health Services	1954-	WHO	UNICEF	HHP	II
Mexico-18	WHO Public Health Administration Fellowships	1954-	WHO	—	HHP/EFS	II
Mexico-20*	Virus Center	1954-	PAHO	—	HCD	II
Mexico-22	Integrated Health Services (Guana-juato)	1955-	WHO	UNICEF	HHP	II
Mexico-23	National Institute of Nutrition	1958-	WHO/TA	UNICEF FAO	HHP	II
Mexico-24†	WHO/TA Public Health Administration Fellowships	1957-	WHO/TA	—	HHP/EFS	II
Mexico-25	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	II
Mexico-28	Public Health Laboratory	1958-	PAHO	—	HCD	II
Mexico-30	School of Public Health	1958-	WHO	—	EPE	II
Mexico-32	Medical Education	1958-	WHO	—	EPE	II
Mexico-33	Dieldrin Toxicity Studies	1958-	SMF	—	ME	II
Mexico-53	Malaria Eradication	1949-52	WHO/TA	UNICEF	ME	II
Nicaragua-1	Malaria Eradication	1954-	SMF	—	—	—
Nicaragua-1	Malaria Eradication	1950-	WHO/TA	UNICEF	ME	III
Nicaragua-3	Public Health Services	1953-	SMF	ICA	—	—
Nicaragua-3	Public Health Services	1953-	WHO/TA	UNICEF	HHP	III
Nicaragua-5	Nursing Education	1955-	WHO	—	EPE	III
Nicaragua-7	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP	III
Nicaragua-9	Live Poliovirus Vaccine Studies	1958-	PAHO	Lederlé Labora- tories	HCD	III
Panama-1	Public Health Services	1952-	WHO/TA	UNICEF	HHP	III
Panama-2	Malaria Eradication	1952-	WHO/TA	UNICEF	ME	III
Panama-7	WHO Public Health Administration Fellowships	1955-	SMF WHO	—	HHP/EFS	III

\* Zone and/or Washington Office advice only in 1958.

† Under previous years' awards.

**Project List—Continued**

Code	Title	Duration	Funds in 1958	Cooperating Agency	Technical Branch	Zone
Panama-8	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP	III
Paraguay-1	Malaria Eradication	1951-54	WHO/TA	UNICEF	ME	VI
Paraguay-9	Leprosy Control (Survey)	1955- Apr-May,	SMF WHO	ICA UNICEF	HCD	VI
	Leprosy Control (Survey)	1954 Oct-Nov,				
		1955				
		1956-				
Paraguay-10 <sup>1</sup>	Public Health Services	1955-	WHO/TA	UNICEF	HHP	VI
Paraguay-13	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP	VI
Paraguay-15*	Smallpox Eradication (Part of AMRO-60 until 1958)	1957-	PAHO	—	HCD	VI
Paraguay-16	Administrative Methods and Practices in Public Health	1958-	PAHO	—	HHP/AOC	VI
Peru-5	Malaria Eradication	1957-	WHO/TA SMF	UNICEF	ME	IV
Peru-21	WHO Public Health Administration Fellowships	1954-	WHO	—	HHP/EFS	IV
Peru-22	Public Health Services	1956-	WHO/TA	UNICEF	HHP	IV
Peru-23	Joint Field Mission on Indigenous Populations	1952-53 1955-	WHO/TA	FAO ILO UN UNESCO	HHP	IV
Peru-25	PAHO Public Health Administration Fellowships	1958-	PAHO	—	HHP/EFS	IV
Peru-51	Smallpox Eradication (Part of AMRO-60 until 1958)	1950-	PAHO	—	HCD	IV
Surinam-1	Malaria Eradication	1953-	SMF	UNICEF	ME	I
Surinam and Neth. Antilles-1	Aedes aegypti Eradication	1952-	WHO/TA	—	HCD	I
Trinidad-3	Malaria Eradication	1953-	SMF	UNICEF	ME	I
Trinidad-6	Public Health Legislation	1957-	WHO	—	HHP	I
USA-7	WHO Public Health Administration Fellowships	1955-	WHO	—	HHP/EFS	WO
USA-10	Consultants in Specialized Fields of Public Health	1958-	WHO	—	HHP	WO
Uruguay-5	Public Health Services	1955-	WHO/TA	UNICEF	HHP	VI
Uruguay-8	WHO Public Health Administration Fellowships	1957-	WHO	—	HHP/EFS	VI
Uruguay-10	PAHO P.H.A. Fellowships	1958-	PAHO	—	HHP/EFS	VI
Uruguay-12	Smallpox Eradication (Part of AMRO-60 until 1958)	1957-	PAHO	—	HCD	VI
Uruguay-15	Waterworks Operators School	1958-	WHO	—	HES	VI
Uruguay-51	Aedes aegypti Eradication	1948-	PAHO	—	HCD	VI
Venezuela-1	Local Health Services (Survey)	1953 1955-	WHO/TA	UNICEF	HHP	I

<sup>1</sup> Formerly operated from 1950 under separate projects.

\* Zone and/or Washington Office advice only in 1958.

Project List—Continued

Code	Title	Duration	Funds in 1958	Cooperating Agency	Technical Branch	Zone
Venezuela-7*	Malaria Eradication	1955-	SMF	—	ME	I
Venezuela-10	WHO Public Health Administration Fellowships	1957-	WHO	—	HHP/EFS	I
Venezuela-12*	Smallpox Eradication (Part of AMRO-60 until 1958)	1956-	PAHO	—	HCD	I
Venezuela-16	Aedes aegypti Eradication	1958-	PAHO	—	HCD	I
Windward Islands-2	Malaria Eradication	1952-	SMF	UNICEF	ME	I
AMRO-1	Environmental Sanitation Training	1952-	WHO	—	EPE	WO
AMRO-7	Aedes aegypti Eradication (Central America and Panama)	1949-	WHO/TA	—	HCD	III
AMRO-8	Aedes aegypti Eradication (Caribbean)	1949-	WHO/TA	—	HCD	I
AMRO-10	Inter-American Program for Education in Biostatistics	1952-	WHO/TA	—	HCE	WO-VI
AMRO-16	Assistance to School of Public Health	1953-	WHO	—	EPE	WO
AMRO-17.4	Waterworks Training Course	Apr 14- May 3, 1958	WHO	—	HES	WO
AMRO-18	Medical Education	1953-	WHO	—	EPE	WO
AMRO-28	Advanced Nursing Education	1955-	WHO	—	EPE	WO
AMRO-29	Cultural Anthropology	1953-	WHO	—	HHP	WO
AMRO-35	Fellowships (Unspecified)	1953-	PAHO	—	EFS	WO
AMRO-39	Environmental Sanitation (Advisory Committee and Consultants)	1958-	PAHO	—	HES	WO
AMRO-45	Laboratory Services	1955-	WHO	—	HCD	WO
AMRO-46.5	Workshop on Nursing Education	Jul 6-16, 1958	WHO	—	EPE	WO
AMRO-47	Yaws Eradication and Public Health Laboratory Services (Caribbean)	1954-	WHO/TA	UNICEF	HCD	I
AMRO-54	Collaboration with INCAP	1949-	PAHO	<sup>2</sup>	HHP	
AMRO-57	Yellow Fever Studies	1952-	PAHO	GML	HCD	WO
AMRO-58*	Leprosy Control (Caribbean)	1955-	WHO	—	HCD	I
AMRO-60	Smallpox Eradication (Interzone)	1951-	PAHO	—	HCD	WO
AMRO-61	Rabies Control	1952-	WHO	—	HCD	WO
AMRO-62*	Housing Sanitation	1953-	WHO	PAU	HES	IV
AMRO-63	Assistance to Schools of Nursing	1958-	WHO	—	EPE	WO
AMRO-67	Veterinary Medicine Education	1955-	WHO	—	HCD	WO
AMRO-72	Dental Health	1954-	PAHO	KF	HHP	WO
AMRO-76	Vaccine Testing	1954-	WHO	—	HCD	WO

\*Zone and/or Washington Office advice only in 1958.

<sup>2</sup> Grants received in 1958 from:

E. I. duPont de Nemours and Co.  
 Kellogg Foundation  
 Millers National Federation  
 National Institutes of Health  
 Nutrition Foundation  
 National Livestock and Meat Board  
 Rockefeller Foundation  
 SCIDA (Servicio Cooperativo Interamericano de Agricultura)  
 United Fruit Company  
 Williams Waterman Fund

Project List—Continued

Code	Title	Duration	Funds in 1958	Cooperating Agency	Technical Branch	Zone
AMRO-77	Pan American Foot-and-Mouth Disease Center	1951-	OAS/TA	—	HCD	WO-V
AMRO-81	Pan American Zoonoses Center	1956-	WHO/TA PAHO	FAO	HCD	WO-VI
AMRO-83	Typhus Control (Bolivia-Peru)	1950-	PAHO	UNICEF (Tulane Univ.)	HCD	IV
AMRO-85	Latin American Center for Classification of Diseases	1955-	WHO	—	HCE	WO-IV
AMRO-86	Health Statistics (Zone III)	1955-	WHO	—	HCE	III
AMRO-88	Aedes aegypti Eradication	1954-	PAHO	—	HCD	WO
AMRO-89†	Fellowships in Various Health Fields (for study in Brazil per Catalogue of Services)	1956-	WHO/TA	—	HHP/EFS	WO-V
AMRO-90	Malaria Technical Advisory Services (Regional)	1955-	PAHO SMF	—	ME	WO
AMRO-92	Poliomyelitis	1955-	PAHO	—	HCD	WO
AMRO-93	Health Education (Zone II)	1955-	WHO	—	HHP	II
AMRO-94	Diarrheal Diseases in Childhood	1956-	PAHO	—	HHP	WO
AMRO-95	Environmental Sanitation (Caribbean)	1956-	WHO/TA	UNICEF	HES	I
AMRO-98	Working Group on Medical Certification	1958-	PAHO	—	HCE-	WO
AMRO-102	Assistance to Pediatric Education	1958-	WHO	—	EPE	WO
AMRO-105	Field Studies of Dieldrin and Other Insecticides	1956-58	PAHO SMF	Shell Corp.	ME	WO-II
AMRO-108*	Sanitation of Travel Centers	1956-	PAHO	—	HES	WO
AMRO-109	Malaria Eradication (PAHO Working Capital Surplus Fund)	1956-58	PAHO	—	ME	WO
AMRO-110*	Tuberculosis Prevention	1957-	PAHO	—	HCD	WO
AMRO-112*	Fundamental Education Training Center (CREFAL)	1951-53 1956-	WHO/TA	UNESCO ILO FAO UN OAS	HHP	WO-II
AMRO-114	Training Center for Malaria Eradication (Mexico)	1957-	SMF	—	ME	WO-II
AMRO-117	Malaria Technical Advisory Services (Zone I)	1957-	SMF	—	ME	I
AMRO-118	Malaria Technical Advisory Services (Zone III)	1958-	SMF	—	ME	III
AMRO-119	Malaria Technical Advisory Services (Zone IV)	1958-	SMF	—	ME	IV
AMRO-121	Malaria Eradication Evaluation Teams	1958-	SMF	—	ME	WO-III
AMRO-126	Seminar on Susceptibility and Resistance of Anophelines	Jun 23-28, 1958	SMF	—	ME	WO-III

\* Zone and/or Washington Office advice only in 1958.

† Under previous years' awards.

Project List—Continued

Code	Title	Duration	Funds in 1958	Cooperating Agency	Technical Branch	Zone
AMRO-127	Course on Administrative Methods and Practices in Malaria	Oct 20-31, 1958	SMF	—	ME	WO-III
AMRO-128	Workshop on Vehicle Management and Maintenance in Malaria Eradication	1958-	SMF	UNICEF	ME	WO-IV
AMRO 132	Operational Assistance to Country Projects in Malaria Eradication	1958-	SMF	—	ME	WO
AMRO-134	Training Center for Malaria Eradication (Kingston)	1958-	SMF	ICA	ME	I
AMRO-135	Malaria Eradication Trainees	1958-	SMF	—	ME	WO
AMRO-136	Field Studies on the Ecology of <i>A. Albimanus</i> (Panama)	1958-	SMF WHO	GML	ME	WO
AMRO-137	Training Center for Malaria Eradication (São Paulo)	1958-	SMF	—	ME	V
AMRO-138	Studies on Malaria Chemotherapy	1958-	SMF	USPHS	ME	WO
AMRO-139	Malaria Technical Advisory Services (Zone V)	1958-	SMF	—	ME	V
AMRO-140	Investigation of Tropical Anthropod-borne Viral Diseases	1958-	PAHO	USPHS	HCD	WO-III
AMRO-142	Health Aspects of Nuclear Energy	1958-	PAHO	—	DA	WO
AMRO-143	Health Statistics (Zone IV)	1956-	WHO	—	HCE	IV
AMRO-144	Health Statistics (Zone II)	1958-	WHO	—	HCE	II
AMRO-149	Leprosy Control	1958-	WHO	—	HCD	WO
AMRO-163	Epidemiology (Zone VI)	1958-	PAHO	—	HCD	VI
AMRO-164*	Seminars on Child Nutrition	Feb-March 1958	PAHO	Unitarian Serv. Committee IACI	HHP	WO
AMRO-165	Nutrition Advisory Service (Interzone)	1958-	PAHO	—	HHP	WO
AMRO-166	South American Conference on Teaching of Medical Statistics	Jul 22-28, 1958	WHO	—	HCE	WO
AMRO-181	Live Poliovirus Vaccine Studies	1958-	PAHO	Lederlé Laboratories	HCD	WO
AMRO-191	Public Health Administration Fellowships (for study in USSR)	1958-	WHO/TA	—	HHP	WO
AMRO-192	Course for Auxiliary Entomology Personnel	Oct 6-Nov 18, 1958	SMF	—	ME	WO
Inter-Regional-7	Field Trials in Rabies Treatment	1952-	WHO	USPHS	HCD	
Inter-Regional-8	Brucellosis Centers (Argentina, Mexico and USA)	1951-	WHO	FAO	HCD	
Inter-Regional-10	Influenza Centers (Argentina, Brazil, Jamaica and USA)	1952-	WHO	—	HCD	
Inter-Regional-11	International Treponematosi s Centers (J. Hopkins Univ.)	1953-	WHO	—	HCD	
Inter-Regional-13	International Shigella Centers (Atlanta, USA)	1954-	WHO	—	HCD	
Inter-Regional-14	Poliomyelitis Centers	1954-	WHO	—	HCD	

\* Zone and/or Washington Office advice only in 1958.

**Project List—Concluded**

Code	Title	Duration	Funds in 1958	Cooperating Agency	Technical Branch	Zone
Inter-Regional-15	Standardization of Virus and Rickettsial Tests	1958-	WHO	—	HCD	
Inter-Regional-21	WHO Venereal Diseases Reference Centers (Chamblee, Ga.)	1954	WHO	—	HCD	
Inter-Regional-38	Studies in Antimalarial Drugs in Food (NIH, Bethesda, Md.)	1956-	WHO	USPHS	ME	
Inter-Regional-44	Symposium on Insect Resistance to Insecticides	Feb 28- Mar 6, 1958	WHO	—	ME	
Inter-Regional-48	Inter-Regional Malaria Coordination	1958-	WHO	—	ME	
Inter-Regional-71	Meetings of Regional Malaria Advisers	1958-	WHO	—	ME	





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